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A Case Study of Bank Equity Valuation Methods Employed by South African, Nigerian and Kenyan Equity Researchers

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Abstract: The valuation of banks is inherently complicated because of the uncertainties arising from their information opaqueness and inherent risks. Unlike non-banking firms, banks require specialised equity-side valuation approaches. This study addresses a gap in the literature by examining valuation methods used by bank equity researchers. The study used a total of 201 reports on South African banks (2018–2023), 56 reports on Nigerian banks (2018–2023), and 27 reports on Kenyan banks (2018–2023) to investigate the bank equity valuation methods utilised by analysts in the employ of Investec Ltd. and Standard Bank Group Ltd. The study's findings show that Investec's South African analysts predominantly used the warranted equity method, based on book value (BV), and return on equity (ROE), for valuing shares throughout the South African, Nigerian, and Kenyan banks surveyed. Furthermore, Standard Bank Group's analysts employed this method, incorporating tangible net asset value (tNAV) and return on tangible equity (ROTE), for South African and Nigerian banks, but in Kenya their analysts used the residual income model to value the equities of the five Kenyan banks they covered. These findings suggest that the warranted equity method and the residual income model are the mostly used bank equity valuation methods in South Africa, Nigeria, and Kenya. The study concludes with relevant recommendations, offering significant insights for banks, regulators, and investors to make knowledgeable decisions concerning equity valuation.

Keywords: Africa; analyst; bank shares; capital asset pricing model; dividend; residual income model; valuation; warranted equity method

1. Introduction and Background

Banks constitute the cornerstone of economic and financial systems around the globe. Apart from their critical role in liquidity creation (Shu-Chun et al. 2018) and financial intermediation and liquidity provision, banking firms usually constitute a significant proportion of the stock market indices of most countries. Bank equities are, therefore, important assets to portfolio managers and investors.

Portfolio managers and investors usually rely heavily on the recommendations made by equity researchers on whether they should buy, hold, or sell a particular equity asset (Bouteska and Mili 2022; Panchenko 2007). Equity researchers and analysts are investment professionals who research, study, and value selected equities on behalf of portfolio managers and investors who are their clients. Financial sector equity analysts specialise in the analysis and valuation of financial services firms, including banks. These investment professionals communicate their findings and recommendations in the form of equity research reports frequently e-mailed to their clients. Equity researchers, therefore, play a critical role in the functioning of capital markets as their target share price estimates and investor recommendations ultimately influence asset prices and portfolio managers' decisions.

Forte et al. (2020) concede that banks' equities are hard to value because of the uncertainty in the inherent risks of banks, which derive from their information opaqueness. In

addition, banks are also operationally complex and differ from non-banking firms in several respects. For instance, banks exhibit distinctive features in their capital structures, which are subject to stringent regulations and characterised by high leverage (Obadire et al. 2023). Additionally, banks adopt mark-to-market accounting practices, aligning the book value of their equity more closely with market values. Their involvement in trading volatile securities and the prevalent multi-business model further distinguish them from non-banking firms (Damodaran 2013; Dermine 2010; Flannery et al. 2004; Koller et al. 2020; Massari et al. 2014). These idiosyncratic attributes of banks underscore the unique nature of their valuation, setting them apart from the valuation processes applied to non-banking firms.

The limited studies on bank valuation have suggested several valuation approaches that equity research professionals can use to value banks. Massari et al. (2014) recommend the equity-side approach to bank valuation. This valuation approach limits bank valuation approaches to the discounted return models (the discounted free cash flow to equity model, the Gordon growth model, and the equity excess return model), relative valuation (multiples from fundamentals, market multiples, deal multiples, and value maps), and asset- or liability-based valuation models (Damodaran 2013; Forte et al. 2020; Koller et al. 2020; Massari et al. 2014; Suozzo et al. 2001). Dermine (2010) further suggests the use of the fundamental bank valuation model, which incorporates the liquidation value and franchise value of a bank's equity.

Given these various bank valuation approaches, the question is, which valuation approaches do equity researchers frequently use in practice to value bank equities? The information about the valuation methods that bank equity research analysts employ in this competitive environment is of great practical interest to investors, valuation practitioners, academics, and those entering the equity research and valuation profession. There is, however, a dearth of information on the practical valuation approaches used by bank equity researchers in emerging markets. This situation is further complicated by the fact that equity research reports are costly and are not publicly available, as equity research firms only make them available to their clients. This study is aimed at filling this gap.

The study surveyed the equity research reports of bank analysts employed by two South African banks, the Standard Bank Group Ltd. (SBG) and Investec Ltd., to establish their bank valuation approaches in the period from 2018 to 2022. During this period, South African analysts of both banks covered the big five South African banks. Investec Ltd. analysts also covered three Kenyan banks and three Nigerian banks, whilst SBG's analysts also covered nine Nigerian banks and five Kenyan banks. The study focuses on bank equity research reports in South Africa, Nigeria, and Kenya as its case studies, considering these nations as front-runners in Sub-Saharan Africa with robust banking systems, and due to the accessibility of data.

Research through surveys plays an important part in the creation of knowledge. Important past surveys of professionals that have immensely contributed to the advancement of the theory and practice of corporate finance include those of Brav et al. (2005), Bancel and Mittoo (2014), Graham and Harvey (2001, 2002), and more recently, Pinto et al. (2019).

This study found that Investec Ltd. used only South Africa-based analysts to value equities of South African, Kenyan, and Nigerian banks. On the other hand, SBG localised its bank equity valuations. That is, South African analysts only valued South African banks, whilst Kenyan and Nigerian banks were respectively valued by Kenyan and Nigerian analysts. Investec Ltd.'s analysts only used the Gordon growth model (actually, the warranted equity method, based on the book value of equity) to value all of the South African, Kenyan, and Nigerian banks they covered in the period from 2018 to 2022.

The SBG's South African analysts used the warranted equity method based on tangible net asset value to value Capitec Bank Ltd. and FirstRand Ltd. shares, and the sum-of-the-parts (market value for non-banking operations and the warranted equity method based on tangible net asset value to value banking operations) to value the shares of ABSA Group Ltd., SBG, and Nedbank Group Ltd.

In 2022, SBG's South African analysts used the warranted equity method based on tangible net asset value to value all five South African banks. The SBG's Kenyan analysts used the residual income model (the excess return model) to value all Kenyan banks covered. The analysts, however, changed their valuation approach to the weighted average fair value per share of the residual income (35%), price multiples relative valuation (50%), and dividend discount multiple (15%) valuation models in 2023. In Nigeria, 4SBG's analysts used the equity warranted valuation approach based on the banks' tangible net asset value (tNAV) and return on total equity (ROTE) to value all Nigerian banks they covered.

The remainder of this paper is structured as follows: Section 2 reviews the literature on bank valuation approaches, and Section 3 discusses the research methodology used in this study. This is followed by Section 4, which presents the results of the study, and Section 5 concludes the study. All the abbreviations used in this study are defined in Appendix A.

2. A Review of the Main Bank Valuation Approaches

According to Massari et al. (2014), an equity-side approach to valuation is the most appropriate approach when valuing bank equity. This approach entails valuing only bank equity, which limits bank valuation approaches to the discounted return models, relative valuation, and asset or liability-based valuation. The three discounted return models that can be used to value bank equity are the Gordon growth model, the discounted FCFE model, and the excess return model, which is also referred to as the residual income valuation model (Beltrame and Previtali 2016; Damodaran 2013; Koller et al. 2020). The relative valuation approach includes multiples from fundamentals, market multiples, deal multiples, and value maps (Massari et al. 2014).

Rasheed et al. (2018) explored further methodologies used by investment banks in selecting alternative valuation models in the emerging markets while also assessing the value relevance of each model. They examined the application of the dividend discount model (DDM), discounted cash flow (DCF), and comparable multiples valuation models based on firm-specific characteristics and volatility. Their findings indicate that underwriters tend to favour the DDM for firms with a history of dividend payouts. DCF is preferred for younger firms with more tangible assets and negative sales growth, while comparable multiples are employed for mature firms with fewer tangible assets. The study reveals that the price-to-book (P/B) ratio exhibits the highest predictive power, whereas DCF demonstrates the lowest predictive power for market values.

2.1. The Discounted Return Valuation Models

These valuation models discount either the firm's dividends or FCFE or excess returns to derive the current value price of the firm's shares.

2.1.1. The Gordon Growth Model

This model is based on the simple valuation principle that the current value of a share is equal to the sum of the present values of all expected dividends and share disposal proceeds. The dividends and disposal proceeds are all discounted by the equity investor's required rate of return, which is equal to the firm's cost of equity. The single-stage Gordon growth model also called the Gordon–Shapiro dividend valuation model after Gordon and Shapiro (1956) and Gordon (1962), assumes constant long-term growth in dividends, and it is stated as:

$$P_0 = \frac{D_0(1+g)}{(k_e - g)} \equiv \frac{D_1}{(k_e - g)} \tag{1}$$

where P_0 is the current share price, D_0 is the most recent dividend paid, g is the expected constant growth rate in dividends, and k_e is the firm's cost of equity. The derivation of the Gordon Growth Model is contained in Appendix B.

Model 1 is only valid if $k_e > g$. The Gordon growth model is one of the most frequently used models in equity valuation. It is, however, only applicable to firms that pay or are expected to pay dividends that grow at a constant rate in perpetuity. Most banks pay

regular dividends, and thus the model is suitable for valuing bank equity (Damodaran 2013). Similarly, Gao and Martin (2021) along with Nukala and Prasada Rao (2021) have employed the Gordon growth model in their examination of bank valuation, determining it to be an appropriate method for valuing bank equity.

2.1.2. The Free Cash Flow to Equity (FCFE) Model

As with the Gordon growth model, this model is based on the valuation principle that the current value of bank equity is equal to the sum of the present values of the bank's future FCFE and the expected equity disposal proceeds. The FCFE and the equity disposal proceeds are all discounted at the firm's cost of equity. If the FCFE grows at a constant rate in perpetuity, then the FCFE valuation model is stated as:

$$E_0 = \frac{FCFE_0(1+g)}{(k_e - g)} \equiv \frac{FCFE_1}{(k_e - g)} \tag{2}$$

where E_0 is the current value of the firm's total equity, $FCFE_0$ is the firm's current FCFE, g is the expected constant growth rate in FCFE, and k_e is the firm's cost of equity.

As with Equation (1), Equation (2) is also only valid if $k_e > g$. This model is only applicable to firms that yield positive FCFE.

2.1.3. The Excess Return Model

The excess return model was developed by Frankel and Lee (1998), Gebhardt et al. (2001), and Hirst and Hopkins (2000) from the residual income valuation model of Edwards and Bell (1961), Feltham and Ohlson (1995), Ohlson (1995), and Peasnell (1982). The model relies on the book value of equity per share ($BVPS$), return on equity (ROE), earnings growth rate (g), and the firm's cost of equity (k_e). As banks use mark-to-market accounting, their reported shareholder's equity is more reflective of its actual market value (Massari et al. 2014). It is for this reason that the book value of equity is an important and reliable input in bank equity valuation. The excess return model states that value-creating firms will have an ROE that is higher than the firm's k_e otherwise the firm will be destroying value (Beltrame and Previtali 2016). Assuming both long-term ROE (ROE_L) and BVPS ($BVPS_L$) will remain unchanged, Pinto et al. (2020) derive the single-stage excess return model, which they state as:

$$P_0 = BVPS_L + \left(\frac{ROE_L - k_e}{k_e - g} \right) \times BVPS_L \tag{3}$$

Equation (3) is only valid if $k_e > g$. In using both ROE_L and $BVPS_L$, Equation (3) stresses the importance of the book value of equity in bank equity valuation. The derivation of Equation (3) from the Residual Income Valuation Model is contained in Appendix C.

2.2. Relative Valuation Models

According to Beltrame and Previtali (2016), Damodaran (2013), and Massari et al. (2014), market multiples and multiples from fundamentals are the most widely used bank equity relative valuation approaches.

2.2.1. Market Multiples

This valuation approach assumes the validity of the law of one price and that equity capital markets are efficient, as postulated by Fama (1991). If true, these assumptions result in similar firms having equivalent share prices. This means that the share price multiples of peer firms can be used to estimate the target firm share price. Market multiples are widely used in valuation, with analysts using them to estimate both the market price of a firm (enterprise multiples) and that of its ordinary shares (equity multiples) (Plenborg and Pimentel 2016; Schueler 2020).

A survey conducted by Asquith et al. (2005) found that 99.1% of US equity researchers use multiple market metrics in their valuations and only 12.8% use any alternatives to the discounted cash flow valuation method. Studies by Bancel and Mittoo (2014) and Imam et al. (2013) found that relative valuation and DCF are the most popular valuation methods used by valuation professionals, with 80% of them relying on them. A survey of 1980 CFA members conducted by Pinto et al. (2019) showed that 92.8% of the respondents use the market multiples approach in equity valuation.

Furthermore, Akhtar (2021) conducted a study on equity valuation methods in both emerging and developed financial markets, employing market multiples. The study found that price/book, price/cash flow, price/dividend, and price/sales ratios positively impact stock returns in both markets. However, in ASEAN markets, price/earnings and dividend growth exhibited a negative effect on equity returns.

In a similar vein, Rosenbaum and Pearl (2021) as well as Forte et al. (2020) alluded to the utilization of market multiples such as P/E, P/tangible book value, and P/BV in European and U.S. banking sectors. They contended that equity market multiples are particularly suitable for U.S. institutions, with a two-year-forward P/E being the most accurate metric. Contrary to common belief among practitioners, they found that P/tangible book value is less informative than P/BV. Additionally, their research revealed that multiples tend to be less precise for small commercial banks compared to larger ones, and for investment banks compared to retail banks (Forte et al. 2020).

According to Martin (2013) and Parrino (2005), the most widely used equity valuation multiples are the price/earnings (P/E), price/book (P/B), price/cash flow (P/CF), price/sales or revenue, and price/dividends. The survey conducted by Pinto et al. (2019) showed that the most used equity valuation multiples are the P/E, P/B, and P/CF multiples, with more than half of those surveyed using them when they used the multiples valuation approach. Cheng and McNamara (2000) found that the P/E valuation approach performed better than the P/B valuation approach.

Several suitable equity-side bank valuation market multiples have been suggested and these include P/E, P/BV, Price/Tangible Book Value (P/tBV), Price/Net Asset Value (P/NAV), Price/Deposits, Price/Revenues, Price/Operating Income, Price/Pre-Provision-Profit (P/PPP), Price/Assets Under Management, and Price/Branches (Massari et al. 2014; Forte et al. 2020). Beltrame and Previtali (2016) and Damodaran (2013) assert that P/E, P/BV, and P/tBV are the most widely used bank equity valuation metrics.

2.2.2. Multiples from Fundamentals

This valuation approach exploits multiples and the Gordon growth model to derive valuation models. Technically speaking, this valuation approach is not relative valuation as the derived models use only the target firm's forecasted data instead of peer data to value its equity. Because of the popularity of the P/E and P/B valuation multiples, it is not surprising that the derived valuation models are based on these valuation metrics.

Beltrame and Previtali (2016), Massari et al. (2014), Parrino (2005), and Pinto et al. (2020) derive the following current P/E multiples model from the Gordon growth model:

$$\frac{P_0}{EPS_0} = \frac{(1 + g_s) \times p_s}{(k_e - g_s)} \tag{4}$$

where $\frac{P_0}{EPS_0}$ is the firm's current share price divided by the firm's current earnings per share, g_s is the firm's long-term dividend growth rate, which is also a proxy for its sustainable growth rate, p_s is the firm's dividend pay-out ratio in stable growth, and k_e *is* the cost of capital.

From Equation (4), the firm's leading P/E ratio is given by:

$$\frac{P_0}{EPS_0 \times (1 + g_s)} = \frac{P_0}{EPS_1} = \frac{p_s}{(k_e - g_s)} \tag{5}$$

Forward P/E metrics are based on forecasted earnings. Most analysts use between one- and three-year forecasts. From Equations (4) and (5), it is evident that a firm's P/E metric is a function of its expected earnings growth rate, pay-out ratio, and cost of equity. The ratio should increase with the earnings growth rate and pay-out ratios, and with a decrease in the cost of equity. The P/E metric cannot, however, be used to value loss-making firms as in such cases the denominator becomes negative, which renders the metric meaningless.

Suozzo et al. (2001) derive an alternative model that uses the firm's ROE instead of the firm's dividend pay-out ratio. This equation is stated as:

$$\frac{P_0}{EPS_0} = \frac{ROE_s - g_s}{ROE_s \times (k_e - g_s)}$$

(6)

where ROE_s is the firm's sustainable return on equity. It follows from Equation (6) that the firm's leading P/E ratio is given by:

$$\frac{P_0}{EPS_0 \times (1 + g_s)} = \frac{P_0}{EPS_1} = \frac{ROE_s - g_s}{ROE_s \times (k_e - g_s)}$$

(7)

From Equations (6) and (7), it is evident that a firm's P/E metric is a function of its expected return on equity, earnings growth rate, and the cost of equity. The P/E metric cannot however be used to value loss-making firms as in such cases the denominator becomes negative, which renders the metric meaningless.

The other fundamental multiple that analysts use to value banks and financial services firms is the price/book value of equity (P/BV) metric (Beltrame and Previtali 2016; Massari et al. 2014; Pinto et al. 2020; Suozzo et al. 2001). The P/BV metric also derives from the Gordon growth model, and it is stated as follows:

$$\frac{P_0}{BV_0} = \frac{ROE_s - g_s}{k_e - g_s}$$

(8)

Equation (8) is referred to as the justified P/BV model and is widely used in bank valuation to estimate the firm's expected terminal (exit) P/BV multiple.

From Equation (8), the P/B metric is positively related to the bank's return on equity and earnings sustainable growth rate, with the return on equity having the most significant impact on it. This relationship is more evident in banks and other financial services, where the book value of equity is more likely to follow the market value of invested equity because of regulatory stress on solvency, capital requirements, and equity maintenance, and their use of mark-to-market accounting (Damodaran 2013; Massari et al. 2014). Banks and financial services firms are therefore capital-intensive (asset-rich) firms, which makes the P/B multiple suitable for their valuation (Martin 2013). The book value of equity and the return on equity are therefore important inputs in the valuation of bank shares (Suozzo et al. 2001).

According to Nissim (2013), Equation (8) significantly improves the valuation accuracy of the P/B multiple. From Equation (8), the current price of the share is given by:

$$P_0 = \frac{ROE_s - g_s}{k_e - g_s} \times BV_0$$

(9)

Equation (9) is also referred to as the warranted equity method and is treated as an excess return model (Massari et al. 2014). This is a single-stage multiples model as it assumes a single long-term growth rate. According to Beltrame and Previtali (2016) and Suozzo et al. (2001), analysts widely use the warranted equity method to value the equity of financial services firms, especially banks.

The P/B metric has two variants, the price/tangible book value of equity (P/tBV_0) and the price/tangible net asset value ($P/tNAV_0$). It must be noted that these two multiples are equivalent as tangible bank valuation equity book value of equity (tBV_0) is equal to tangible

net assets value ($tNAV_0$). A bank's tangible book value of equity is a rough proxy of its Tier 1 capital as it excludes the bank's goodwill and intangibles. The banks' intangibles normally include the present value of future profits, purchased credit card relationships, customer relationships, core deposit intangibles, and mortgage servicing rights. These intangibles are difficult to recover in the case of bankruptcy or financial distress, hence their exclusion from the valuation metrics (Massari et al. 2014). Bank analysts therefore normally use either tangible net asset value or tangible book value in bank equity valuation.

In the case of the (P/tBV_0) multiple, the firm's driver of returns also changes to return on tangible equity ($ROTE_s$) instead of return of equity (ROE_s). $ROTE_s$ is a measure of the firm's profitability and it is calculated by dividing the firm's net income by its tangible equity. Using tBV_0 and $ROTE_s$, Equation (8) can be modified as follows to estimate the valuation multiple:

$$\frac{P_0}{tBV_0} = \frac{ROTE_s - g_s}{k_e - g_s} \tag{10}$$

Equally, in the case of the ($P/tNAV_0$) multiple, the firm's driver of returns also changes to return on tangible net assets ($ROTA_s$) instead of return of equity (ROE_s). $ROTA_s$ is a measure of the firm's profitability and it is calculated by dividing the firm's net income by its net tangible assets. In this case, Equation (10) can be rewritten as follows:

$$\frac{P_0}{tNAV_0} = \frac{ROTA_s - g_s}{k_e - g_s} \tag{11}$$

According to Forte et al. (2020), the (P/BV_0), (P/tBV_0), and ($P/tNAV_0$) multiples provide a better indication of the firm's long-term performance than the (P/E_0) multiple. The derivation of the variant price/earnings and price/book value of equity multiples are contained in Appendix D.

3. Survey Design and Sample Description

The study's sample was comprised of bank equity research reports prepared and distributed by South African, Nigerian, and Kenyan bank equity researchers employed by Investec Ltd. and SBG in the period from January 2018 to June 2023. The total equity research reports accessed from both Investec Ltd. and SBG numbered 201 reports on South African banks (2018 to 2023), 56 reports on Nigerian banks (2018 to 2023), and 27 reports on Kenyan banks (2018 to 2023).

During this period, Investec Ltd. only employed an average of two South African bank equity researchers to cover the big five South African banks (Capitec Bank Ltd., FirstRand Ltd., ABSA Group Ltd., SBG, and Nedbank Group Ltd.), three Kenyan banks (KCB Group Ltd., the Co-Operative Bank of Kenya Ltd., and Equity Group Holdings Ltd.), and three Nigerian banks (United Bank of Africa PLC, Zenith Bank PLC, and Guaranty Trust Holding Company PLC). The total equity research reports accessed from Investec Ltd. numbered 24 reports on South African banks (2018–2021), 4 reports on Nigerian banks (2018–2021), and 4 reports on Kenyan banks (2018–2021).

SBG employed two South African, one Kenyan, and two Nigerian equity researchers. The South African analyst covered the big five South African banks. Kenyan bank equity analysts covered five Kenyan banks (KCB Group Ltd., ABSA Bank Kenya PLC, the Co-Operative Bank of Kenya Ltd., Equity Group Holdings Ltd., and Standard Chartered Bank Kenya Ltd.) whilst Nigerian analysts covered nine Nigerian banks (United Bank of Africa PLC, Zenith Bank PLC, Fidelity Bank PLC, Access Bank PLC, Ecobank PLC, FBN Holdings PLC, First City Monument Bank PLC, Guaranty Trust Holding Company PLC, and Preco PLC). The total equity research reports accessed from SBG were 177 reports on South African banks (2018–2023), 52 reports on Nigerian banks (2021–2023), and 23 reports on Kenyan banks (2021–2023).

All the surveyed equity reports had three board sections. The first section of each report presented the covered bank's target prices, a justification of the target price, and a summary of the bank's key forecasts. This section was followed by a presentation of the

bank's key financial data that included a three-year historical and three-year forecasted abridged statement of comprehensive income and statement of financial position, per share data, key valuation metrics, ratios disclosed by the company, and key ratio analysis. The section ended with a detailed analysis of the bank's actual and projected performance. The last section of each report presented a detailed description of the approach that the analyst used to derive the bank's target price. This section was therefore the study's focus as it described the valuation approach used to value the target bank's shares.

4. Discussion of Findings

This section presents and discusses elaborately the findings extracted from the surveyed analysts' reports.

4.1. Major Survey Findings

The results of the survey of South African banks and analysts are shown in Table 1 below. The Table indicates the valuation methods utilised by analysts from South Africa, Kenya, and Nigeria for Investec Ltd. and SBG covering the highest value Kenyan and Nigerian banks during the period from 2018 to 2021.

Table 1 shows the valuation approaches used by the Investec Bank Ltd. and Standard Bank Group Ltd. analysts to value the equities of the big five South African banks from 2018 to 2021. The big five South African banks are Capitec Bank Ltd., FirstRand Ltd., ABSA Group Ltd., Standard Bank Group Ltd., and Nedbank Group Ltd. The analysts' valuation approaches for the five banks remained unchanged from 2018 to 2021.

4.2. Equity Valuation Approach Used by Investec Ltd. Analyst

Investec Ltd.'s analyst used only the Gordon growth model (from the description in Table 1, the analyst used the warranted equity method) to value the equity of the big South African banks. All valuations were carried out by a South Africa-based equity researcher. The five South African banks covered by the investment bank's equity researcher(s) were FirstRand Ltd., Standard Bank Ltd., ABSA Group Ltd., Capitec Ltd., and Nedbank Ltd. The valuation inputs were the target bank's three-year forecasted financials including dividends per share, cost of equity, terminal book value of equity, earnings sustainable growth rate, and adjusted historic ROE. The first step of the valuation process was to estimate the target bank's cost of equity using the capital asset pricing mode (CAPM). This was followed by the calculation of the target bank's exit P/BV multiple using model 8. The analyst used the target bank's adjusted historic ROE, ROE_{ah}, instead of the sustainable ROE, ROE_s, and thus model 8 was restated as:

$$\frac{P_T}{BV_T} = \frac{ROE_{ah} - g_s}{ROE_{ah} \times (k_e - g_s)} \times ROE_{ah} = \frac{ROE_{ah} - g_s}{k_e - g_s} \tag{12}$$

After determining the target bank's exit P/BV multiple, the analyst then calculated the target bank's terminal value by multiplying the forecasted year three book value per share by the P/BV terminal multiple calculated in step 1, that is:

$$P_{T=3} = \frac{P_T}{BV_T} \times BV_{T=3} \tag{13}$$

The third step involved calculating the present values of the terminal value and the forecasted three-year dividends using the cost of equity as the discount rate. The present values of the terminal value and dividends were then added together to arrive at the target bank's current share price. The last step was the calculation of the target bank's 12-month target share price by rolling forward the current share price at the cost of equity less the dividend yield. That is:

$$P_{T=12 \ months} = \frac{P_0}{(1 + (k_e - d_y))} \tag{14}$$

Table 1. Valuation approaches used by Investec Bank Ltd. and Standard Bank Group Ltd. analysts to value the equity of South African banks.

Investec Bank Ltd.	Standard Bank Group Ltd.
Banks covered by the analyst: Capitec Bank Ltd., FirstRand Ltd., ABSA Group Ltd., Standard Bank Group Ltd., and Nedbank Group Ltd. [*Method: Valuation using a Gordon growth model. Basing the target price on a terminal value and adding back the value of the discounted interim dividends in order to account for all expected cash flow to the investor. To calculate the terminal value, we calculate the three-year expected book value using the expected terminal P/B multiple. We base the terminal value on a standard Gordon growth equation, using an adjusted historic ROE, growth factor, and the cost of equity.*] **The analyst's valuation approach for the five banks remained unchanged in the period from 2018 to 2021.**	Banks covered by the analyst: Capitec Bank Ltd. and FirstRand Ltd. *FirstRand Ltd., 9 March 2021* [*Methods: We value FirstRand with a price-to-book methodology, using the average medium-term ROTE to determine the exit multiple. Given our average banking ROTE of 21% to FY23e and our cost of equity of 13.0%, which is in line with the other counters in our universe, we arrive at an exit multiple of 2.1×. We apply this to our terminal tNAV and discount it back along with dividends to today to arrive at our current fair value. We then roll this forward at the cost of equity less the dividend yield to arrive at our 12-month price target of R57.0. We calculate 11% potential upside and therefore downgrade our recommendation to HOLD.*] **The same basis was used to value Capitec Bank Ltd. equities. The analyst's valuation approach for the two banks remained unchanged in the period from 2018 to 2021.** *Banks covered by the analyst:* ABSA Group Ltd., Standard Bank Group Ltd., and Nedbank Group Ltd. *Nedbank, 29 March 2021* [*Methods: We value Nedbank on a sum-of-the-parts basis by applying a price-to-book methodology to the banking operations excluding ETI. Given our average ROTE of 14% to FY23E and our cost of equity of 15.2% which is in line with the other counters in our universe (despite the higher leverage compared to peers), we arrive at an exit multiple of 0.91×. We apply this to our terminal tNAV and discount it back along with dividends to today to arrive at our current fair value. We then add ETI at the latest market value, and then roll this forward at the cost of equity less the dividend yield to arrive at our 12-month price target of R161 We calculate 23% potential upside and therefore upgrade our recommendation to BUY*] **The same basis was used to value ABSA Group Ltd. and Standard Bank Group Ltd. equities. The analyst's valuation approach for the three banks remained unchanged in the period from 2018 to 2021.**

Source: Authors Compilation (2024).

This valuation approach is illustrated in illustration 1 below.

Illustration: Investec Ltd.'s analyst's valuation of Nedbank Ltd.'s equity on 29 March 2021.

The Investec Ltd.'s analyst provided information for the Nedbank Group Ltd shown in Table 2 below:

Table 2. Investec Ltd.'s analyst's valuation of Nedbank Ltd.'s equity on 29 March 2021.

Adjusted historic ROE	12.52%		
Long-term sustainable growth rate	5.00%		
Exit book value per share in Dec 2023	R231.55		
Beta	1.00		
Equity risk premium	6.00%		
Dividend yield	1.60%		
Expected dividends	Dec 21E	Dec 22E	Dec 23E
Dividend per share (c)	637	1379	1648

Source: Authors Compilation (2024).

The expected return on the long-term dated government bond is currently 9.20% per annum.

Solution

The bank's cost of equity is calculated using the CAPM as follows:

$$k_e = r_f + \beta \times ERP = 9.20\% + 1.00 \times 6.00\% = 15.20\%$$

This is then followed by the calculation of the bank's exit multiple using Equation (12) The exit multiple is:

$$\frac{P_T}{BV_T} = \frac{12.52\% - 5.00\%}{15.20\% - 5.00\%} = 0.74$$

The bank's terminal value is then calculated using Equation (13), as follows:

$$P_{T=3} = \frac{P_T}{BV_T} \times BV_{T=3} = 0.74 \times R231.55 = R170.71$$

The present values of the terminal value and expected dividends are added together to arrive at the group's current share price, that is:

$$P_0 = \left(\frac{D_{21E}}{(1+k_e)^{0.75}} + \frac{D_{22E}}{(1+k_e)^{1.75}} + \frac{D_{23E}}{(1+k_e)^{2.75}} \right) + \frac{P_T}{(1+k_e)^{2.75}}$$

That is:

$$P_0 = \left(\frac{6.37}{(1+15.20\%)^{0.75}} + \frac{11.70}{(1+15.20\%)^{1.75}} + \frac{13.10}{(1+15.20\%)^{2.75}} \right) + \frac{170.71}{(1+15.20\%)^{2.75}} = R142.38$$

Model 14 is then used to estimate the bank's 12-month target share price, that is:

$$P_{T=12 \; months} = \frac{P_0}{(1+(k_e - d_y))} = \frac{142.38}{(1+(15.20\% - 1.60\%))} = R161.75$$

The Investec Ltd. analyst therefore used the warranted equity method to value the equities of the big five South African banks. This valuation approach is consistent with the findings of Beltrame and Previtali (2016), Massari et al. (2014), and Suozzo et al. (2001), who found that most bank equity researchers use the warranted equity valuation method to value bank equity.

4.3. SBG's Analyst's Valuation of South African Banks' Equities

The SBG's South African analyst used the sum-of-the-parts (SOTP) valuation methodology to value the ordinary shares of ABSA Group Ltd., Nedbank Group Ltd., and SBG, and only the warranted equity method based on the banks' $tNAV$ and $ROTE$ to value the ordinary shares of Capitec Bank Ltd. and FirstRand Ltd. The SOTP valuation approach is justified for ABSA Group Ltd., Nedbank Group Ltd., and SBG, as these banking groups have additional businesses alongside their banking businesses. The non-banking businesses of these banks were valued separately using an appropriate valuation methodology. As with FirstRand Ltd. and Capitec Bank Ltd., the banking businesses of these three banks were valued using the warranted equity method based on the banks' $tNAV$ and $ROTE$. The market value of the bank's non-banking and banking operations was then added together to arrive at the total value of the group. This valuation approach is recommended by Massari et al. (2014) for diversified banking groups. The SOTP valuation approach is illustrated in illustration 2 below.

Illustration 2: SBG's analyst's valuation of Nedbank Ltd.'s equity 29 March 2021.

The analyst provided information for the Nedbank Group Ltd shown in Table 3 below:

Table 3. SBG's analyst's valuation of Nedbank Ltd.'s shares on 29 March 2021.

ROTE (excluding ETI) in 3 years	14.30%		
Long-term sustainable growth rate	5.00%		
Tangible NAV per share in Dec 23E	R184.00		
Beta	1.00		
Equity risk premium	6.00%		
Yield on long-term dated government bond	9.20%		
Bank's cost of equity (CAPM calculation)	15.20%		
Dividend yield	1.60%		
Market value per share of ETI stake	R2.00		
Expected dividends	Dec 21E	Dec 22E	Dec 23E
Dividend per share (c)	637	1379	1648

Source: Authors Compilation (2024).

Solution

The bank's exit multiple is calculated using model 11, that is:

$$\frac{P_T}{tNAV_T} = \frac{14.30\% - 5.00\%}{15.20\% - 5.00\%} = 0.91$$

The bank's terminal value is then calculated using model 13, as follows:

$$P_{T=3} = \frac{P_T}{tNAV_T} \times tNAV_{T=3} = 0.91 \times R184.00 = R167.76$$

The present values of the terminal value and expected dividends are added together to arrive at the group's banking operation's current share price:

$$P_0 = \left(\frac{D_{21E}}{(1+k_e)^{0.75}} + \frac{D_{22E}}{(1+k_e)^{1.75}} + \frac{D_{23E}}{(1+k_e)^{2.75}} \right) + \frac{P_T}{(1+k_e)^{2.75}}$$

That is:

$$P_0 = \left(\frac{6.37}{(1+15.20\%)^{0.75}} + \frac{11.70}{(1+15.20\%)^{1.75}} + \frac{13.10}{(1+15.20\%)^{2.75}} \right) + \frac{167.76}{(1+15.20\%)^{2.75}} = R140.39$$

The ETI stake's market value per share is then added to the banking operations share price to arrive at the group's share price, that is:

$$P_0 = R140.39 + R2.00 = R142.39$$

Model 14 is then used to estimate the bank's 12-month target share price, that is:

$$P_{T=12 \; months} = \frac{P_0}{(1 + (k_e - d_y))} = \frac{142.39}{(1 + (15.20\% - 1.60\%))} = R161.75$$

The SBG's analyst valued diversified banks using the SOTP valuation approach with the warranted equity method being used to value the banks' banking operations. Undiversified banks were only valued using the warranted equity valuation method. These results support those of Beltrame and Previtali (2016), Massari et al. (2014) and Suozzo et al. (2001), who found that the warranted equity valuation method is preferred by most bank equity researchers. In the case of diversified banks, the findings are consistent with the recommendations of Massari et al. (2014).

SBG's Valuation of the Big Five South African Banks' Equities—From 2022 Onwards

SBG's valuation approach for the five South African banks, however, changed at the beginning of 2022 when the investment bank replaced its banking analyst. The description of the new analyst's valuation approach is contained in Table 4 below.

Table 4. Valuation of South African bank equities by the SBG's equity researcher.

South African Banks' Equities Valuation from 2022 to 2023
Banks covered by the analysts: Capitec Bank Ltd., FirstRand Ltd., ABSA Group Ltd., Standard Bank Group Ltd., and Nedbank Group Ltd.
Nedbank, 9 March 2022 [Methods: *Our target price is calculated using a tNAV-based valuation approach, summarised as follows:* *1. We forecast tNAV per share and return on tNAV. 2. We use the average return over the three forecast years as a proxy for sustainable return on tNAV, currently 16.0%. 3. We divide this sustainable return less terminal growth by cost of equity less terminal growth (6.8%) in order to arrive at a fair multiple to tNAV (1.2×). Our calculation of cost of equity (14.3%) is a function of our assessment of the risk inherent in the company. 4. We multiply this "fair multiple to tNAV" with our forecast tNAV per share at the end of year 3 to arrive at a value per share at the end of year 3. 5. We use the company's cost of equity to present value this value per share at the end of year 3, as well as all the dividends that will be paid over the next three years. The result is our current valuation price. 6. We roll the current valuation forward 12 months at cost of equity and subtract the next two dividends to arrive at a 12-month target price of R245.00, implying 24.7% upside, including 6.1% dividend yield.]* The new analyst's valuation approach for the five banks became effective from 10 January 2022.

Source: Authors Compilation (2024).

Table 4 shows the valuation approach used by the SBG's analyst to value the equities of the big five South African banks from 2022 to 2023. The big five South African banks are Capitec Bank Ltd., FirstRand Ltd., ABSA Group Ltd., Standard Bank Group Ltd., and Nedbank Group Ltd. The analysts' valuation approach for the five banks remained unchanged from 2022 to 2023.

The new analyst thus abandoned the sum-of-the-parts valuation approach for Absa, Nedbank, and Standard Bank, and used the tNAV-based *warranted equity method* to value all the big five South African banks. The tNAV-based *warranted equity method* begins with a three-year forecast of the target bank's tNAV and its three-year average return on tNAV. The target bank's three-year average return, $ROTE_a$, is used as a proxy for sustainable return on tNAV. Adjusted model 12 is then used to calculate the target bank's expected terminal P/ tNAV fair multiple, that is:

$$\frac{P_T}{tNAV_T} = \frac{ROTE_a - g_s}{k_e - g_s} \tag{15}$$

This "fair multiple to tNAV" is then multiplied by the bank's forecasted tNAV per share at the end of year 3 to arrive at a value per share at the end of year 3. The terminal value together with the three-year dividend forecasts are then present-valued using the target bank's cost of equity to obtain its current share price. The bank's current share price is then rolled forward 12 months at its cost of equity. The present values of the next two years' dividends are then subtracted from this future value to get the bank's 12-month target price. This valuation approach is illustrated in illustration below.

Illustration 3: SBG's valuation of Nedbank Ltd.'s shares on 9 March 2022.

The analyst provided information for the Nedbank Group Ltd shown in Table 5 below:

Table 5. SBG's analyst's valuation of Nedbank Ltd.'s shares on 9 March 2022.

Sustainable return on tNAV	16.00%		
Long-term sustainable growth rate	6.80%		
Tangible NAV per share in Dec 23E	R276.90		
Beta	1.00		
Equity risk premium	6.80%		
Yield on long-term dated government bond	8.30%		
Bank's cost of equity (CAPM calculation)	14.30%		
Expected dividends	Dec 22E	Dec 23E	Dec 24E
Dividend per share (c)	1084	1433	1623

Source: Authors Compilation (2024).

Solution

Equation (14) is used to calculate the bank's exit multiple. The exit multiple is:

$$\frac{P_T}{tNAV_T} = \frac{16.00\% - 6.80\%}{14.30\% - 6.80\%} = 1.23$$

The bank's terminal value is then calculated using Equation (18), as follows:

$$P_{T=3} = \frac{P_T}{tNAV_T} \times tNAV_{T=3} = 1.23 \times R276.90 = R339.66$$

The present values of the terminal value and expected dividends are added together to arrive at the group's current share price:

$$P_0 = \left(\frac{D_{22E}}{(1+k_e)^{0.75}} + \frac{D_{23E}}{(1+k_e)^{1.75}} + \frac{D_{24E}}{(1+k_e)^{2.75}} \right) + \frac{P_T}{(1+k_e)^{2.75}}$$

That is:

$$P_0 = \left(\frac{10.84}{(1+14.30\%)^{0.75}} + \frac{14.33}{(1+14.30\%)^{1.75}} + \frac{16.23}{(1+14.30\%)^{2.75}} \right) + \frac{339.66}{(1+14.30\%)^{2.75}} = R267.58$$

The bank's 12-month target share price is then estimated by subtracting the next two dividends (present value because that is what we added to arrive at the terminal value), that is:

$$P_{T=12 \ months} = R267.58 - \left(\frac{14.33}{(1+14.30\%)^{1.75}} + \frac{16.23}{(1+14.30\%)^{2.75}} \right) = R245.00$$

Again, this valuation approach emphasises the importance of the warranted equity method in bank valuation.

4.4. Valuation of Kenyan and Nigerian Banks' Equities

The survey results for the valuation approaches used by Nigerian and Kenyan bank equity researchers from 2018 to 2023 are shown in Tables 6 and 7 below.

Table 6. Valuation approaches used by the Investec Bank Ltd. and Standard Bank Group Ltd. equity researchers to value the equities of Nigerian banks.

Investec Bank Ltd.	Standard Bank Group Ltd.
Banks covered by the analysts: United Bank of Africa PLC, Zenith Bank PLC, and Guaranty Trust Holding Company PLC. **Valuation Approach:** **Guaranty Trust Bank PLC, 08 December 2020** [Target Price Basis *Valuation using a Gordon growth model. We base the target price on a terminal value and add back the value of all dividends in order to account for all expected cash flows to the investor. To calculate the terminal value, we calculate the three-year expected book value using the expected terminal P/B multiple. We base the terminal value on a standard Gordon growth equation, using an adjusted historical ROE, growth factor, and the cost of equity.]*	Banks covered by the analysts: United Bank of Africa PLC, Zenith Bank PLC, Fidelity Bank PLC, Access Bank PLC, Ecobank PLC, FBN Holdings PLC, First City Monument Bank PLC, Guaranty Trust Holding Company PLC, and Preco PLC. **Valuation Approach:** **Guaranty Trust Holding Company PLC, 27 April 2022** [**Methods**: *We value GTCO on a price-to-book methodology by using the average medium-term ROTE to determine the exit multiple. Given our average ROTE of 21.0% over the next three years and cost of equity of 20%, we arrive at an exit multiple of 1.1×. We apply this to our terminal TNAV and discount it back along with dividends to arrive at our current fair value. We then roll this forward at the cost of equity less the dividend yield to arrive at our 12-month target price of N40.]*

Source: Authors Compilation (2024).

Table 7. Valuation approaches used by the Investec Bank Ltd. and Standard Bank Group Ltd. equity researchers to value the equities of Kenyan banks.

Investec Bank Ltd.	Standard Bank Group Ltd.
Banks covered by the analysts: KCB Group Ltd., The Co-Operative Bank of Kenya Ltd., and Equity Group Holdings Ltd. **Valuation Approach:** **Co-operative Bank of Kenya Ltd., 08 December 2020** [Target Price Basis *Valuation using a Gordon growth model. We base the target price on a terminal value and add back the value of all dividends in order to account for all expected cash flows to the investor. To calculate the terminal value, we calculate the three-year expected book value by the expected terminal P/B multiple. We base the terminal value on a standard Gordon growth equation, using an adjusted historical ROE, growth factor, and the cost of equity.]*	**Banks covered by the analysts:** KCB Group Ltd., ABSA Bank Kenya Plc, the Co-Operative Bank of Kenya Ltd., Equity Group Holdings Ltd., and Standard Chartered Bank Kenya Ltd. **Valuation Approach:** ***Co-Operative Bank of Kenya Ltd., 10 December 2021*** [**Methods:** *Residual income model: We use the computed justified P/B to derive a terminal value, discounted together with periodic residual income, which is added to current shareholders' value to arrive at an estimated fair value. A roll forward rate (cost of equity minus dividend yield) is then applied to this fair value, forming a 12-month forward target price.]*

Standard Bank Group Ltd.

Banks covered by the analysts: KCB Group Ltd., ABSA Bank Kenya Plc, the Co-Operative Bank of Kenya Ltd., Equity Group Holdings Ltd., and Standard Chartered Bank Kenya Ltd.

From 17 July 2023 onwards, the Kenyan analyst used the following equity valuation approach for all five banks:
Valuation Approach:
ABSA Bank Kenya Plc, 24 November 2023
[**Methods:** *We use a weighted average fair value per share using the three methods below: (a) **Residual Income Model (35%)**: We use the computed justified P/B to derive a terminal value, discounted together with periodic residual income, which is added to current shareholders' value to arrive at an estimated fair value. A roll forward rate (cost of equity minus dividend yield) is then applied to this fair value, forming a 12-month forward target price. (b) **Price Multiples Relative Valuation (50%)**: We use the average price to tangible book value of similar banks to calculate a fair value. This method takes into account existing investor sentiments around the banking sector, equities market, and macros of the country, which are often priced in by investors. (c) **Dividend Discount Multiple (15%)**: We use the present value of future dividends (as cash flow to investors) plus our estimated terminal value to arrive at the fair value of the bank. The discount rate applied is calculated using the CAPM approach similar to the residual income methodology.]*

Source: Authors Compilation (2024).

Table 6 shows the valuation approaches used by Investec Bank Ltd. and Standard Bank Group Ltd. equity researchers to value the equities of Nigerian banks from 2018 to 2023. The analysts' valuation approaches for the Nigeran banks remained unchanged from 2018 to 2023.

Table 7 shows the valuation approaches used by Investec Bank Ltd. and Standard Bank Group Ltd. equity researchers to value the equities of Kenyan banks from 2018 to 2023. The analysts' valuation approach for the Kenyan banks remained unchanged from 2018 to 2022. The valuation approach used by Standard Bank Group Ltd. equity researcher, however, changed from 17 July 2023.

4.4.1. Investec Bank Ltd.: Valuation of Kenyan and Nigerian Banks' Equities

The valuations of the three Kenyan banks and three Nigerian banks were carried out by a South Africa-based analyst, and it is not surprising that the analyst used the same valuation approach as used to value the big five South African banks. The analyst used the Gordon growth model (the warranted equity method based on the banks' *BV* and *ROE*) to value all six banks. The Nigerian banks covered by the analyst were United Bank of Africa PLC, Zenith Bank PLC, and Guaranty Trust Holding Company PLC whilst the Kenyan banks included KCB Group Ltd., the Co-Operative Bank of Kenya Ltd., and Equity Group Holdings Ltd.

4.4.2. SBG: Valuation of Kenyan and Nigerian Banks's Equities

SBG's equity researchers covered nine Nigerian banks and five Kenyan banks. All valuations were localised, meaning that Kenyan banks were valued by a Kenyan analyst whilst Nigerian banks were valued by Nigerian analysts. As with the South African analyst, the Nigerian equity researchers used the warranted equity method based on the banks' *tNAV* and *ROTE* to value the equities of the United Bank of Africa PLC, Zenith Bank PLC, Fidelity Bank PLC, Access Bank PLC, Ecobank PLC, FBN Holdings PLC, First City Monument Bank PLC, Guaranty Trust Holding Company PLC, and Preco PLC.

The Kenyan analyst used the residual income model (the excess return model) to value the equities of the KCB Group Ltd., ABSA Bank Kenya PLC, and the Co-Operative Bank of Kenya Ltd., Equity Group Holdings Ltd., and Standard Chartered Bank Kenya Ltd. from 2018 to 2022. This valuation method combines the *warranted equity method* based on the book value of equity and the excess return model. The analyst first estimates the terminal value of the bank's share. The terminal value of the share and periodic residual income are then discounted at the bank's cost of equity to derive their present values. These present values are added to the bank's current shareholder value to arrive at the current share price. The current share price is then rolled forward at the cost of equity less the dividend yields to derive the 12-month forward target price.

The Kenyan analyst, however, changed the valuation approach to the weighted average of the residual income (35%), price multiples relative valuation (50%), and dividend discount multiple (15%) models. This approach means that the target price is the weighted average of the target prices yielded by these three valuation models. The residual income model uses the justified P/B multiple and periodic residual income to derive the target share price. The price multiples relative valuation approach is based on the average price to tangible book value of peers, and the dividend discount multiple uses the present value and terminal value to derive the fair value of the share price.

Consistent with the findings of Beltrame and Previtali (2016), Massari et al. (2014), and Suozzo et al. (2001), these results further confirm the importance and popularity of the warranted equity valuation approach, the tangible net asset value, and the tangible book value in bank equity valuation.

5. Conclusions and Recommendations

The primary aim of this study was to find out the valuation approaches used by South African, Kenyan, and Nigerian analysts to value bank equity. The study found that in the

period from 2018 to 2021, South African analysts employed by Investec Bank Ltd. used the warranted equity method based on the banks' *BV* and *ROE* to value the equities of the big South African banks. The same analysts used the same valuation method to value the three Kenyan and three Nigerian banks that they covered. During the same period, SBG's analysts also used the warranted equity method based on the banks' *tNAV* and *ROTE* to value the shares of Capitec Bank Ltd. and FirstRand Ltd. and the banking operations of ABSA Group Ltd., Nedbank Group Ltd., and SBG. The bank's analysts then used the SOTP method to value the shares of ABSA Group Ltd., Nedbank Group Ltd., and SBG as these banks also have non-banking operations. From January 2022, SBG's new analyst valued all the big five South African banks using the warranted equity method based on the banks' *tNAV* and *ROTE*. SBG's Kenyan equity analyst used the residual income model (the excess return model) to value the equities of the 5 Kenyan banks that he covered. As with the bank's South African analyst, the Nigerian analyst used the warranted equity method based on the banks' *tNAV* and *ROTE* to value the equities of the nine Nigerian banks that they covered. These results show that most bank analysts used the warranted equity method to value bank equity. It is only the Kenyan analyst who used the residual income (the excess return model) and the weighted average models.

This study, hence, offers relevant recommendations for regulatory bodies, banks, investors, and different stakeholders in making knowledgeable decisions regarding bank equity valuation. Firstly, the practical implication of these results is that the warranted equity method and the residual income model (the extra return model) can be used to value bank equities. Also, for policy implications, regulatory bodies should periodically investigate the appropriateness and accuracy of valuation techniques used by bank analysts. This oversight can assist with maintaining the integrity of financial markets and safeguarding investors. Thirdly, efforts and projects must be in place to harmonise valuation requirements, especially within regions like Sub-Saharan Africa. This can facilitate cross-border investments, enhance market efficiency, and provide investors with a regular framework for comparing bank equities. Furthermore, analysts within similar financial institutions or research companies within the same geographical region or market should adopt consistent valuation methods to enhance comparability and streamline decision-making approaches. Lastly, financial services firms and regulatory bodies should establish benchmarking practices to assess the effectiveness of different valuation approaches. This can contribute to the improvement of industry best practices and enhance the credibility of valuation outcomes. Moreover, standard-setters and regulators ought to keep in mind establishing clearer guidelines on the public disclosure of valuation strategies used by financial analysts. This transparency can improve investor confidence and promote an informed market. By implementing these policy-based implications, bank analysts and other stakeholders can contribute to the refinement and standardisation of valuation practices within the banking industry, fostering a more transparent, efficient, and resilient financial and economic ecosphere.

This survey is, however, limited as the researcher could not access the equity reports of bank analysts employed by FirstRand Ltd., ABSA Group Ltd., and Nedbank Group Ltd. Future studies can widen the scope of this research if researchers can access the equity reports of these banks' analysts. Furthermore, such studies can also evaluate the efficiency of the *warranted equity method* in valuing bank shares.

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Data Availability Statement: The data used in this study were obtained from Investec Ltd. and Standard Bank Group Ltd. The Reports are available, but the authors will require permission from Investec Ltd. and Standard Bank Group Ltd. to share these reports.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Glossary of Key Abbreviations

Abbreviation	Description
DCF	Discounted Cash Flow
DDM	Dividend Discount Model
FCFE	Free Cash Flow to Equity
P/BV	Price per Book Value
P/NAV	Price per Net Asset Value
P/PPP	Price per Pre-Provision Profit
P/tBV	Price per Tangible Book Value
P/E	Price per Earnings
ROTE	Return on Tangible Equity
ROE	Return on Equity
tNAV	Tangible Net Asset Value
BVPS	Book Value of Equity per Share
WEM	Warranted Equity Method

Source: Authors Compilation (2024).

Appendix B

The Gordon Growth Model

If a firm's current dividend is D_0, and this is expected to grow at a constant rate, g, into the future, then the current value of the share, P_0, will be the sum of the present values of all the dividends that the investor will receive and the share disposal proceeds, that is:

$$P_0 = \frac{D_0(1+g)}{(1+k_{e1})^1} + \frac{D_0(1+g)^2}{(1+k_{e2})^2} + \cdots \frac{D_0(1+g)^n}{(1+k_{en})^n} + \frac{P_n}{(1+k_{en})^n} \tag{A1}$$

Model (A1) is a constant growth dividend valuation model. If the investor holds the share for an indefinite period of time, then the constant growth dividend valuation model can be stated as:

$$P_0 = \frac{D_0(1+g)}{(1+k_{e1})^1} + \frac{D_0(1+g)^2}{(1+k_{e2})^2} + \cdots \frac{D_0(1+g)^\infty}{(1+k_{en})^\infty} + \frac{P_\infty}{(1+k_{en})^\infty} \tag{A2}$$

This is a geometric series and as $\frac{P_\infty}{(1+k_{en})^\infty} \to 0$, model (A2) can be restated as:

$$P_0 = \sum_{t=1}^{\infty} \frac{D_0(1+g)^t}{(k_e - g)^t} \equiv D_0 \sum_{t=1}^{\infty} \frac{(1+g)^t}{(k_e - g)^t} \tag{A3}$$

This is a growing perpetuity, and thus model (A3) reduces to:

$$P_0 = \frac{D_0(1+g)}{(k_e - g)} \equiv \frac{D_1}{(k_e - g)} \quad | \; Note \; that : \sum_{t=1}^{\infty} \frac{(1+g)^t}{(k_e - g)^t} = \frac{1+g}{k_e - g} \tag{A4}$$

where $D_1 = D_0(1+g)$. This constant growth dividend discount model is also called the Gordon dividend valuation model or the Gordon–Shapiro dividend valuation model after Gordon and Shapiro (1956) and Gordon (1962). As the dividend growth rate is highly

volatile, the bank's sustainable growth rate, which is less volatile, is used as a proxy for dividend growth rate in this model. The model is formally stated as:

$$P_0 = \frac{D_0(1+g)}{(k_e - g)} \equiv \frac{D_1}{(k_e - g)} \tag{A5}$$

Appendix C

The Residual Income Valuation Model (Excess Return Model)

$$P_0 = BVPS_L + \left(\frac{ROE_L - k_e}{k_e - g} \right) \times BVPS_L \tag{A6}$$

The residual income valuation model is derived from the Gordon growth model. To arrive at the residual income valuation model, the following zero-sum expression is added to the dividend valuation model:

$$0 = Y_t + \sum_{i=1}^{\infty} \frac{Y_{t+i} + D_{t+i} - (1 + k_e)Y_{t+i-1}}{(1 - k_e)^i} \tag{A7}$$

where $(Y_{t+i})(1 - k_e)^{-i} \to 0$ *as* $s \to \infty$ or Y could be a finite series that is expected to terminate at time $t + T$, where $(Y_{t+T}) = 0$. Adding the zero-sum expression to the dividend valuation model yields the model:

$$V_t = Y_t + \sum_{i=1}^{\infty} \frac{Y_{t+i} + D_{t+i} - (1 + k_e)Y_{t+i-1}}{(1 - k_e)^i} \tag{A8}$$

Defining Y to be the book value of equity (BVE) yields the model:

$$V_t = BVE_t + \sum_{i=1}^{\infty} \frac{BVE_{t+i} + D_{t+i} - (1 + k_e)BVE_{t+i-1}}{(1 - k_e)^i} \tag{A9}$$

In terms of clean surplus accounting, net income, NI_{t+i}, is expressed as:

$$NI_{t+i} = BVE_{t+i} + D_{t+i} - BVE_{t+i-1} \tag{A10}$$

In equity valuation, the residual income (RI) is defined as net income less equity capital charge. Under clean surplus accounting, residual income is therefore expressed as:

$$RI_{t+i} = NI_{t+i} - k_e BVE_{t+i-1} \tag{A11}$$

Substituting for NI_{t+i} gives:

$$RI_{t+i} = BVE_{t+i} + D_{t+i} - BVE_{t+i-1} - k_e BVE_{t+i-1} \tag{A12}$$

This simplifies to:

$$RI_{t+i} = BVE_{t+i} + D_{t+i} - (1 + k_e)BVE_{t+i-1} \tag{A13}$$

Substituting Equation (A13) into (A9) gives the general equity residual income valuation model:

$$V_0 = BVE_0 + \frac{NI_1 - k_e \times BVE_0}{(1 + k_e)} + \frac{NI_2 - k_e \times BVE_1}{(1 + k_e)^2} + \frac{NI_3 - k_e \times BVE_2}{(1 + k_e)^3} \dots \tag{A14}$$

This can be simplified to:

$$V_0 = BVE_0 + \sum_{\tau=1}^{\infty} \frac{E_t RI_{t+i}}{(1 + k_e)^t} \equiv BV_0 + \sum_{t=1}^{\infty} \frac{E_t(\, NI_{t+i} - k_e BVE_{t+i-1})}{(1 + k_e)^t} \tag{A15}$$

The intrinsic value of common stock can therefore be expressed as:

$$P_0 = BVS_0 + \sum_{t=1}^{\infty} \frac{RIS_t}{(1+k_e)^t} \equiv BVE_0 + \sum_{t=1}^{\infty} \frac{NIS_t - k_e BVS_{t-1}}{(1+k_e)^t} \tag{A16}$$

P_0 = the intrinsic value of ordinary shares today ($t = 0$); BVE_0 = current book value per share; BVS_{t-1} = last year's book value per share; k_e = cost of equity; NIS_t = expected net income (net profit) per share for period t; and RIS_t = expected residual income per share, equal to $NIS_t - k_e BVS_{t-1}$. The residual income valuation model therefore assumes that the value of a share is equal to the present value of the expected residual income per share.

The second fundamental relationship after the surplus income is expressed as follows:

$$NIS_t = ROE_t \times BVS_{t-1} \tag{A17}$$

Substituting for NI_t in the residual income model yields the finite period residual income model expressed in terms of ROE_t:

$$P_0 = BVPS_t + \sum_{t=1}^{\infty} \frac{ROE_{t+1} \times BVPS_{t-1} - k_e BVS_{t-1}}{(1+k_e)^t}$$

This can also be written as:

$$P_0 = BVPS_t + \sum_{t=1}^{\infty} \frac{(ROE_{t+1} - k_e) \times BVPS_{t-1}}{(1+k_e)^t}$$

This simplifies to:

$$P_0 = BVPS_t + \sum_{t=1}^{\infty} \frac{(ROE_t \times (1+g) - k_e) \times BVPS_{t-1}}{(1+k_e)^t} \tag{A18}$$

As with the Gordon growth model, if both long-term ROE, ROE_L, and BVPS, $BVPS_L$, remain unchanged, the model reduces to:

$$P_0 = BVPS_L + \left(\frac{ROE_L - k_e}{k_e - g} \right) \times BVPS_L \tag{A19}$$

This model, which is also called *the excess earnings model*, states that value-creating firms will have a return on equity (ROE) that is higher than the firm's cost of equity (k_e), otherwise the firm will be destroying value. It assumes that both long-term ROE, ROE_L, and BVPS, BVS_L, will remain unchanged.

Appendix D

Appendix D.1. Price/Earnings

The price/earnings metric is calculated as share price divided by earnings per share. Alternatively, it is calculated as market capitalisation divided by the firm's total earnings, that is:

$$P/E = \frac{Market\ value\ of\ equity}{Earnings} = \frac{Price\ per\ share}{Earnings\ per\ share} = \frac{P_0}{EPS_0} \tag{A20}$$

where P_0 is the current share price and EPS_0 is last year's earnings per share. This multiple can also be theoretically derived from the Gordon growth model. The GGM is stated as:

$$P_0 = \frac{DPS_0 \times (1+g_s)}{(k_e - g_s)} \equiv \frac{DPS_1}{(k_e - g_s)} \tag{A21}$$

where DPS_0 is last year's dividend per share paid, g_s is the firm's long-term dividend growth rate, which is also a proxy for its sustainable growth rate, $DPS_0 \times (1+g_s) \equiv DPS_1$

is next year's expected dividend, and k_e is the cost of capital. Given the firm's dividend pay-out ratio exhibits stable growth, p_s, next year's dividend, DPS_1, can be estimated from next year's earnings per share, EPS_1, as follows:

$$DPS_1 = DPS_0 \times (1 + g_s) \times p_s \equiv EPS_1 \times p_s \tag{A22}$$

Substituting Equation (3) into Equation (2), we get the current share price expressed in the firm's earnings per share, as follows:

$$P_0 = \frac{EPS_0 \times (1 + g_s) \times p_s}{(k_e - g_s)} \equiv \frac{EPS_1 \times p_s}{(k_e - g_s)} \tag{A23}$$

From Equation (4), the firm's current P/E ratios is given by:

$$\frac{P_0}{EPS_0} = \frac{(1 + g_s) \times p_s}{(k_e - g_s)} \tag{A24}$$

The firm's leading P/E ratio is given by:

$$\frac{P_0}{EPS_0 \times (1 + g_s)} = \frac{P_0}{EPS_1} = \frac{p_s}{(k_e - g_s)} \tag{A25}$$

According to Suozzo et al. (2001), the payout ratio can also be expressed as:

$$p_s = 1 - \frac{g_s}{ROE_s} \tag{A26}$$

$$\frac{P_0}{EPS_0} = \frac{ROE_s - g_s}{ROE_s \times (k_e - g_s)} \tag{A27}$$

Appendix D.2. Price/Book Value of Equity (P/BV)

This metric is obtained by dividing the share price of the firm by its book value of equity per share or by dividing the firm's market value of equity by its book value of equity. That is, the P/BV is calculated as:

$$P/BV = \frac{Market\ value\ of\ equity}{Book\ value\ of\ equity} = \frac{Price\ per\ share}{Book\ value\ of\ equity\ per\ share} = \frac{P_0}{BV_0} \tag{A28}$$

where P_0 is the current share price and BV_0 is last year's book value of equity per share.

The firm's ROE is defined as:

$$ROE_1 = \frac{EPS_1}{BV_0} \tag{A29}$$

The firm's leading earnings per share, EPS_1, can be calculated from its current book value, BV_0, and next year's return on equity, ROE_1 as follows:

$$EPS_1 = BV_0 \times ROE_1 \tag{A30}$$

Thus, Equation (A25) can be rewritten as:

$$\frac{P_0}{BV_0 \times ROE_1} = \frac{p_s}{(k_e - g_s)} \tag{A31}$$

From Equation (A31), the firm's current price-to-book (P/BV) value multiple can thus be expressed as:

$$\frac{P_0}{BV_0} = \frac{ROE_1 \times p_s}{(k_e - g_s)} \tag{A32}$$

The firm's pay-out ratio is defined as:

$$p_s = 1 - \frac{g_s}{ROE_s} \tag{A33}$$

Substituting for p_s in Equation (A32) and simplifying, we obtain:

$$\frac{P_0}{BV_0} = \frac{ROE_s - g_s}{k_e - g_s} \tag{A34}$$

Equation (A34) can be used to estimate the firm's expected terminal (exit) P/BV multiple. According to Nissim (2013), Equation (A34) significantly improves the valuation accuracy of the P/BV multiple. This means that the current price of the share is then given by:

$$P_0 = \frac{ROE_s - g_s}{k_e - g_s} \times BV_0 \tag{A35}$$

Equation (A35) is also referred to as the warranted equity method, which is also treated as an excess return model.

References

Akhtar, Tahir. 2021. Market multiples and stock returns among emerging and developed financial markets. *Borsa Istanbul Review* 21: 44–56. [CrossRef]

Asquith, Paul, Michael B. Mikhail, and Andrea S. Au. 2005. Information content of equity analysts reports. *Journal of Financial Economics* 75: 245–82. [CrossRef]

Bancel, Franck, and Usha R. Mittoo. 2014. The gap between the theory and practice of corporate valuation: A survey of European experts. *Journal of Applied Corporate Finance* 26: 106–17. [CrossRef]

Beltrame, Federico, and Daniele Previtali. 2016. *Valuing Banks. A New Corporate Finance Approach*. Edited by Philip Molyneux. Palgrave Macmillan Studies in Banking and Financial Institutions. London: Macmillan Publishers Ltd.

Bouteska, Ahmed, and Mehdi Mili. 2022. Does corporate governance affect financial analysts' stock recommendations, target prices accuracy and earnings forecast characteristics? An empirical investigation of US companies. *Empirical Economics* 63: 2125–71. [CrossRef] [PubMed]

Brav, Alon, John R. Graham, Campbell R. Harvey, and Roni Michaely. 2005. Payout policy in the 21st century. *Journal of Financial Economics* 77: 483–527. [CrossRef]

Cheng, C. S. Agness, and Ray McNamara. 2000. The valuation accuracy of the price-earnings and price-book benchmark valuation methods. *Review of Quantitative Finance and Accounting* 15: 349–70. [CrossRef]

Damodaran, Aswath. 2013. Valuing financial services firms. *Journal of Financial Perspectives* 1: 1–16.

Dermine, Jean. 2010. Bank valuation: With an application to the implicit duration of non-maturing deposits. *International Journal of Banking, Accounting and Finance* 2: 1–30.

Edwards, Edgar O., and Philip W. Bell. 1961. *The Theory and Measurement of Business Income*. Berkeley: University of California Press.

Fama, Eugene F. 1991. Efficient capital markets: II. *Journal of Finance* 46: 1575–617. [CrossRef]

Feltham, Gerald A., and James A. Ohlson. 1995. Valuation and clean surplus accounting for operating and financial activities. *Contemporary Accounting Research* 11: 698–731. [CrossRef]

Flannery, Mark J., Simon H. Kwan, and Mahendrarajah Nimalendran. 2004. Market evidence on the opaqueness of banking firms' assets. *Journal of Financial Intermediation* 71: 419–60.

Forte, Gianfranco, Gianfranco Gianfrate, and Emanuele Rossi. 2020. Does relative valuation work for banks? *Global Finance Journal* 44: 100449. [CrossRef]

Frankel, Richard, and Charles M. C. Lee. 1998. Accounting valuation, market expectation, and cross-sectional stock returns. *Journal of Accounting and Economics* 25: 283–319. [CrossRef]

Gao, Can, and Ian W. Martin. 2021. Volatility, valuation ratios, and bubbles: An empirical measure of market sentiment. *The Journal of Finance* 76: 3211–54. [CrossRef]

Gebhardt, Willian R., Charles M. C. Lee, and Bhaskaran Swaminathan. 2001. Toward an implied cost of capital. *Journal of Accounting Research* 39: 135–76. [CrossRef]

Gordon, Myron J. 1962. *The Investment, Financing, and Valuation of the Corporation*. Homewood: Richard D. Irwin.

Gordon, Myron J., and Eli Shapiro. 1956. Capital equipment analysis: The required rate of profit. *Management Science* 3: 102–10. [CrossRef]

Graham, John R., and Campbell R. Harvey. 2001. The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics* 60: 187–243. [CrossRef]

Graham, John R., and Campbell R. Harvey. 2002. How do CFOs make capital budgeting and capital structure decisions? *Journal of Applied Corporate Finance* 15: 8–23. [CrossRef]

Hirst, Eric D., and Patrick E. Hopkins. 2000. *Earnings: Measurement, Disclosure, and the Impact on Equity Valuation*. Blackwell Series in Finance. Charlottesville: Research Foundation of AIMR.

Imam, Shahed, Jacky Chan, and Syed Zulfiqar Ali Shah. 2013. Equity valuation models and target price accuracy in Europe: Evidence from equity reports. *International Review of Financial Analysis* 28: 9–19. [CrossRef]

Koller, Tim, Marc Goedhart, and David Wessels. 2020. *Valuation: Measuring and Managing the Value of Companies*, 5th ed. Hoken: John Willey & Sons.

Martin, Thomas A., Jr. 2013. Traditional equity valuation methods. In *Valuation Techniques, Discounted Cash Flow, Earnings Quality, Measures of Value Added, and Real Options*. Edited by Jason A. Voss and David T. Larrabee. Hoboken: John Wiley & Sons, Inc.

Massari, Mario, Gianfranco Gianfrate, and Laura Zanetti. 2014. *The Valuation of Financial Companies*. Chichester: Wiley & Sons.

Nissim, Doron. 2013. Relative valuation of U.S. insurance companies. *Review of Accounting Studies* 18: 324–59. [CrossRef]

Nukala, Vasishta Bhargava, and S. S. Prasada Rao. 2021. Role of debt-to-equity ratio in project investment valuation, assessing risk and return in capital markets. *Future Business Journal* 7: 13. [CrossRef]

Obadire, Ayodeji Michael, Vusani Moyo, and Ntungufhadzeni Freddy Munzhelele. 2023. An Empirical Analysis of the Dynamics Influencing Bank Capital Structure in Africa. *International Journal of Financial Studies* 11: 127. [CrossRef]

Ohlson, James A. 1995. Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research* 11: 661–87. [CrossRef]

Panchenko, Valentyn. 2007. Impact of Analysts' recommendations on stock performance. *The European Journal of Finance* 13: 165–79. [CrossRef]

Parrino, Robert. 2005. *Choosing the Right Valuation Approach*. Charlottesville: CFA Institute Conference Proceedings, pp. 15–28.

Peasnell, Ken V. 1982. Some formal connections between economic values and yields and accounting numbers. *Journal of Business Finance and Accounting* 9: 361–81. [CrossRef]

Pinto, Jerald Elaine, Thomas R. Robinson, and John D. Stowe. 2020. *Equity Asset Valuation*, 4th ed. Hoboken: John Wiley & Sons, Inc.

Pinto, Jerald Elaine, Thomas R. Robinson, and John D. Stowe. 2019. Equity valuation: A survey of professional practice. *Review of Financial Economics* 37: 219–33. [CrossRef]

Plenborg, Thomas, and Rene Coppe Pimentel. 2016. Best practices in applying multiples for valuation purposes. *The Journal of Private Equity* 19: 55–64. [CrossRef]

Rasheed, Abdul, Muhammad Khalid Sohail, Shahab-Ud Din, and Muhammad Ijaz. 2018. How do investment banks price initial public offerings? an empirical analysis of emerging market. *International Journal of Financial Studies* 6: 77. [CrossRef]

Rosenbaum, Joshua, and Joshua Pearl. 2021. *Investment Banking: Valuation, LBOs, M&A, and IPOs*. Hoboken: John Wiley & Sons.

Schueler, Andreas. 2020. Valuation with multiples: A conceptual analysis. *Journal of Business Valuation and Economic Loss Analysis* 15: 20190020.

Shu-Chun, Huang, Wei-Da Chen, and Yehning Chen. 2018. Bank liquidity creation and CEO optimism. *Journal of Financial Intermediation* 36: 101–17.

Suozzo, Peter, Stephen Cooper, Gillian Sutherland, and Zheng Deng. 2001. *Valuation Multiples: A Primer*. Valuation Primer Series. Hong Kong: UBS Warburg Global Equity Research, vol. 1, pp. 1–46.