Equity Valuation in Practice: What shall be the share price of ACLEDA Bank Plc. (ABC)?

Pisith Hok [1], Sokha Norng [2], Meardey Phlek [3], Sokhom Ma [4] & Muoyseam Chang [5]

Corresponding Author. Email: hok.pisith@acleda-aib.edu.kh
1, 2, 4 & 5. ACLEDA Institute of Business
3. ACLEDA Bank Plc

ABSTRACT

This research paper aims to explore the intrinsic value of the ABC share and to determine whether the current share price is undervalued or overvalued. It employs the Dividend Discount Model (DDM) and the Free Cash Flow Models (FCFE and FCFF), through the Pro-Forma financial statements (2021 – 2025), predicted from the actual audited consolidated financial statements (2016 – 2020) with other publicly available information, from the ACLEDA Bank Plc., the International Monetary Fund, the Cambodia Securities Exchange, and the National Bank of Cambodia. Certain assumptions and proxies were incorporated into the research analysis. The forecasted share prices were $5.50, $10.13, and $32.63, under the DDM, FCFE, and FCFF models respectively, which were all undervalued, compared to the current share price of $4.28 (31/12/2020 closing price). The findings of this study contributed significantly to the financial markets, and especially to the equity valuation of corporations in Cambodia.

Keywords: Equity valuation, Pro-Forma financial statements, Dividend Discount Model (DDM), Free Cash Flow to Equity Model (FCFE), Free Cash Flow to the Firm Model (FCFF).

1. Introduction

Established as a Non-Governmental Organization (NGO) in 1993, ACLEDA Bank Plc. became a specialised bank in 2000 and a licensed commercial bank in 2003 with a headquarters in Phnom Penh, Cambodia. It is comprised of four subsidiaries, namely ACLEDA Bank Lao Ltd., ACLEDA Securities Plc., ACLEDA Institute of Business, and ACLEDA Microfinance Institution (MFI) Myanmar Co., Ltd. The bank has 262 branches, 38 branches, and 17 branches, in Cambodia, Laos, and Myanmar respectively (ACLEDA Bank, 2021).

According to the ACLEDA Bank Plc.'s audited consolidated financial statements, by the end of 2020, the bank had the total assets of $6,551,493,988 with the shareholders' equity of $1,089,625,507, and the net profit after tax of $141,492,590 – *See Table 1: ABC Financial Highlights*.

Table 1: ABC Financial Highlights

US$' 000	2020	2019	2018	2017	2016
Gross Income	579,221	550,128	510,655	493,879	471,330
Net Profit After Tax	141,493	120,860	119,314	86,766	122,923
Assets	6,551,494	6,175,162	5,683,574	5,247,094	4,673,975
Liabilities	5,461,868	5,210,700	4,830,734	4,496,871	3,996,657
Shareholders' Equity	1,089,626	964,462	852,840	745,661	673,641

Source: Adapted from Financial Highlights, ACLEDA Bank Plc. (2021).

ACLEDA Bank Plc. had been listed on the Cambodia Securities Exchange (CSX) on May 25, 2020, with an IPO price of about $4.05 – *See Table 2: ABC IPO Information and Price Volatility*.

Table 2: ABC IPO Information and Price Volatility

IPO Price (KHR)	16,200
Par Value (KHR)	4,000
No. of listed shares	433,163,019
No. of issued shares	4,344,865
1st trading date	25-May-20
1st closing price (KHR)	16,500
31/12/2020 Closing price (KHR)	17,100
28/10/2021 Closing price (KHR)	11,180

Source: Adapted from ABC Company Profile, Cambodia Securities Exchange (2021).

As can be seen from the table, the share price was fluctuated from the IPO price of $4.05 to a higher price of about $4.28 at the end of 2020, followed by about $2.80 at the end of October 2021. The doubts have been arisen from the downward trend amongst investors, stakeholders, and the public.

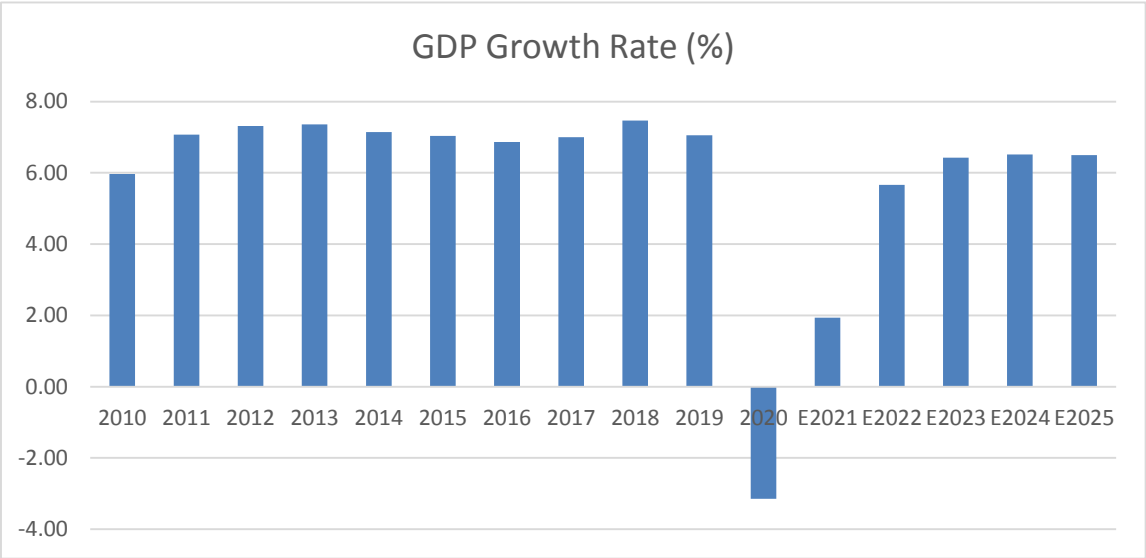
This research paper aims to explore the intrinsic value of the ABC share and to determine whether the current share price is undervalued or overvalued, by applying the Dividend Discount Model and the Free Cash Flow Models, through the Pro-Forma financial statements.

2. Pro-Forma Financial Statements

2.1 Revenue forecast

The revenue of ACLEDA Bank Plc., operated under an oligopolistic market structure, is mainly generated from the interest income, which is taken into account for forecasting the bank revenue. The Association of Banks in Cambodia has claimed, "Cambodia is a bank-based economy," meaning that the financial institutions, especially the commercial banks, are the primary source of funding (ABC, 2021). It is thus assumed that the interest income of the bank is highly correlated with the Gross Domestic Production of the economy. When the economy is growing, the demand for loans and credits, especially for micro-businesses and Small Medium Enterprises (SMEs), increases which in turn increase the revenue of the bank. In order to examine this relationship, a simple linear regression analysis was conducted. The past revenues of 11 years, from 2010 to 2020, were regressed against the nominal GDP, whereby the revenues were forecast in nominal dollars. Forecasting revenues in nominal dollars was because the forecast was mainly based on the financial statements' past-year data, which were in nominal terms while all the other financial indicators in this research were also interpreted in nominal terms.

Graph 1: Cambodian GDP Growth Rate



Source: IMF 2021 (World Economic Outlook Database, October 2021)

According to the International Monetary Fund (IMF), GDP growth rate of Cambodia is projected to be -3.14% for 2020, and recovered with 1.93% for 2021 to almost a normal growth of 6.50% in 2025 (WEO Database, October 2021) – *See Graph 1: Cambodian GDP Growth Rate.* Revenue data for ACLEDA Bank Plc. is available from its audited consolidated Financial Statements in the Annual Reports from 2010 to 2020. Therefore, a statistical analysis was conducted regressing Revenue data of the bank against the nominal GDP.

Table 3: ANOVA Result

	Coefficients	Standard Error	t Stat	P-value
Intercept	-145919413.3	38177644.78	-3.822116689	0.004076668*
Nominal GDP	0.025253314	0.001955124	12.91647529	4.10387E-07*

** $p < 0.05$.*

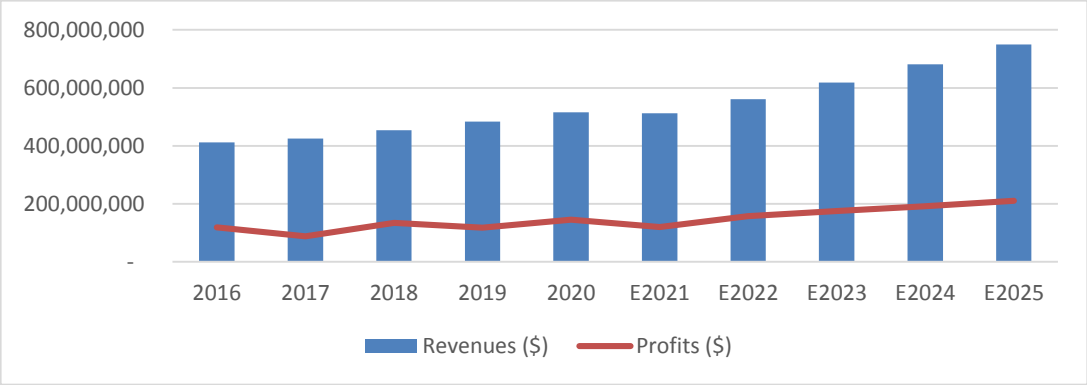
The regression provides $Revenues_i = -145{,}919{,}413 + 0.0252533\ GDP_i$

According to the regression output, it is very clear that the revenue of the bank is significantly dependent on GDP – *See Table 3: ANOVA Result*. The coefficient of GDP is statistically significant below all significant levels. This is evident from the higher T-test, the P-value and the confidence intervals. Considering the goodness of fit of the model, the R-square result indicates that almost 95% of the variance of the firm's revenue is explained by the GDP growth, which is very strong. Then, the revenues from 2021 to 2025 were forecast based on this regression result – *See Table 4: Revenues Forecast, and Graph 2: ACLEDA Bank' Revenue Forecast.*

Table 4: Revenues Forecasts

	E2021	E2022	E2023	E2024	E2025
Nominal GDP (m$) (IMF Forecast)	26,080	27,985	30,254	32,741	35,453
Revenues ($) (Interest Income)	512,687,019	560,794,583	618,094,352	680,899,345	749,386,332
Profits ($) (After Income Tax)	119,975,235	158,113,334	175,234,881	192,602,076	211,407,871

Graph 2: ACLEDA Bank' Revenue Forecast



However, there were some limitations of this estimate. The simple linear regression analysis was conducted based on ceteris paribus assumption; i.e., GDP growth is not the only factor, which affects the company revenues. There are other factors such as monetary policy, credit sectors, and regional and/or world economic growth, which have significant impacts on the company revenues since the bank is internationally operated. Due to the time constraints and limited resources, these variables were not taken into account for the analysis.

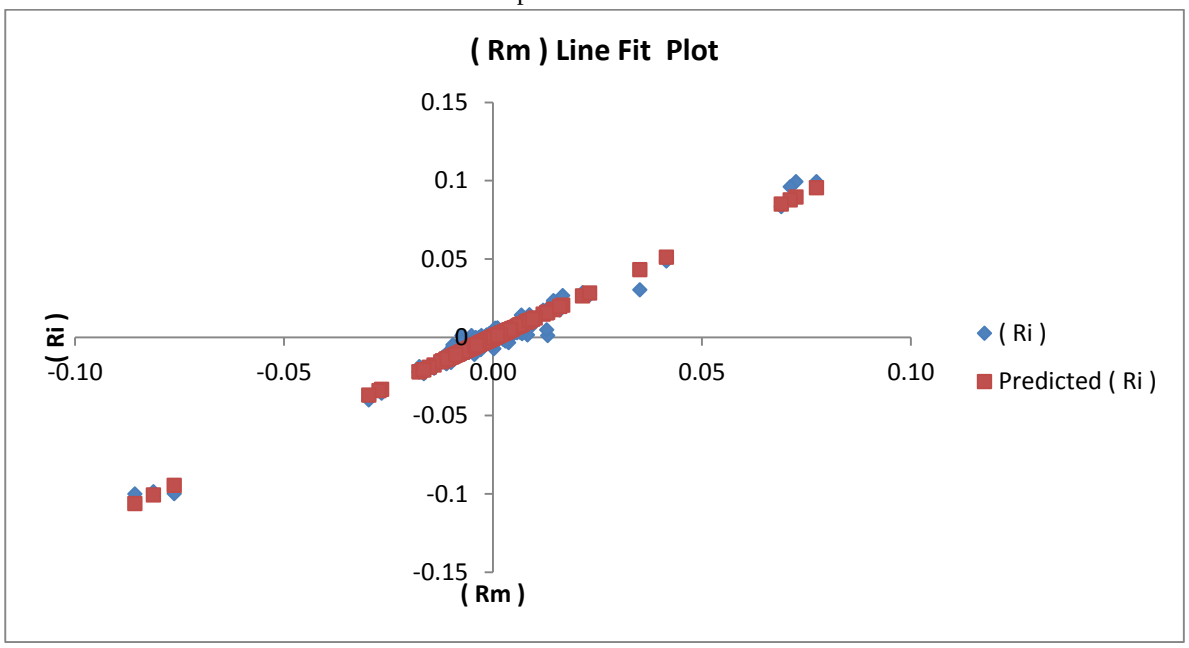
2.2 Debt/Equity (D/E) Ratio

D/E ratio was estimated, depending on the industrial Beta since the change in D/E will affect the risk of the company. Therefore, the company Beta was also computed. By using the daily price index adapted from Cambodia Securities Exchange for both ACLEDA Bank Plc. (ABC) and CSX Index, the returns of ABC (R_i) and the returns on market (R_m) were calculated. Then, the regression of R_i on R_m was conducted to find the leveraged Beta (β_L) – See Table 5: Daily Beta Summary, and Graph 3: Line Fit Plot.

Table 5: Daily Beta Summary

Period	Beta	Alpha	R-sq	P-value
25/05/2020 – 28/10/2021 (n = 344); (p < 0.05)	1.23692	-0.00013	0.97001	9.208E-262

Graph 3: Line Fit Plot



$\beta_L = 1.23692$ was selected because it was considered more reasonable compared to others from the weekly, and monthly data, with the highest n = 344 and the highest R^2 of 0.97. It is noteworthy that there is neither the current published beta for the company nor the industrial Beta from the Cambodia Securities Exchange.

By rearranging the leveraged β (Miles & Ezzell, 1980), the unleveraged β is obtained:

$\beta_U = \frac{\beta_L}{\left[1+\frac{D}{E}(1-T)\right]}$, where tax rate is 19.38%, and D/E = 5.01.

Then, $\beta_U = 0.24562$

The purpose of rearranging the β for financial leverage was to find out how the company could change their capital structure affected by the risk. The company can take advantage of more debts to finance investments due to the tax shield, but the more debts they have, the riskier it is. Hence, the company cannot borrow beyond the industrial risk ($\beta_{Industy}$); otherwise, they will face the bankruptcy cost. In other words, industry beta is considered the benchmark for D/E ratio since it will give a bad signal to the investors on bankruptcy cost if the company beta exceeds the industry beta. As there is no industrial beta available in Cambodia, the market beta is being used by assuming that the company would choose not to borrow beyond the market risk (β_M).

Therefore, the optimal D/E is:

$\beta_M = \beta_U \left[1 + \frac{D}{E}(1-T)\right]$, where $\beta_M = 1.00$

$1.00 = 0.24562 \left[1 + \frac{D}{E}(1 - 19.38\%)\right] \rightarrow \frac{\mathrm{D}}{\mathrm{E}} = 3.81$

2.3 Plug

As other items in the Pro-Forma Balance Sheet were fixed, debts and share capital were chosen for the plug. Debts were assumed to be the sum of deposits and placements of other banks and financial institutions, deposits from customers, borrowings, and subordinated debts. These debts were forecast based on their past-year proportional average of total debts – *See Table 6: Debts Assumption and Percentage Average*. Share Capital is the last plugging step, and must be plugged year by year to make the annual Balance Sheets balance, i.e., as in *Graph 4: Total Assets Vs. Total Liabilities and Total Equity*.

Table 6: Debts Assumption and Percentage Average

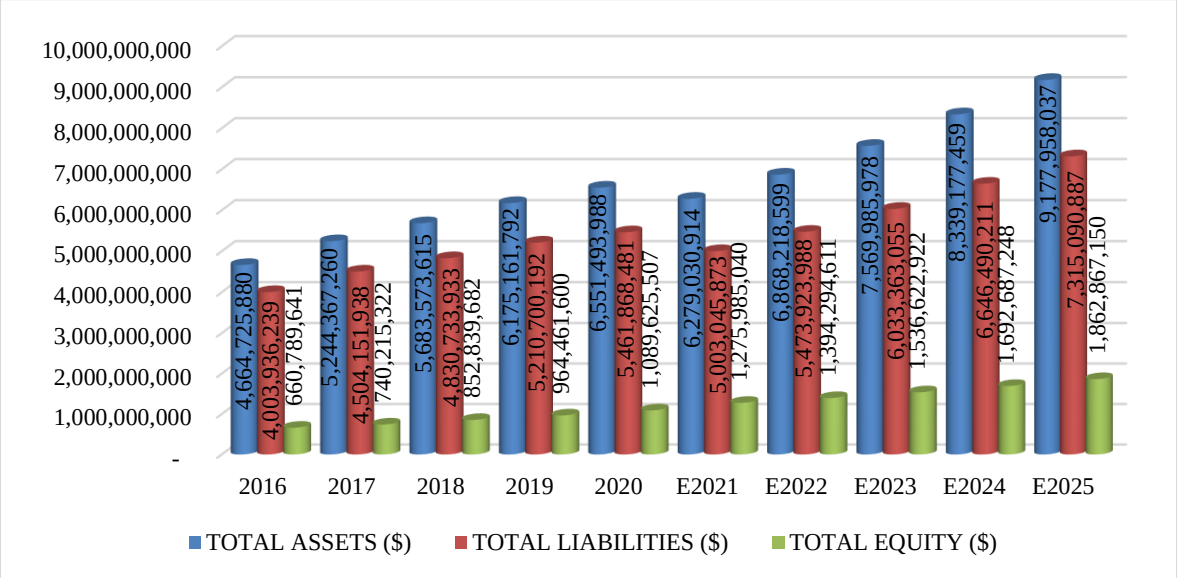
Debts Assumption	2016	2017	2018	2019	2020	Percentage Average
Deposits and placements of other banks and financial institutions	9.38%	4.93%	6.09%	5.62%	5.96%	6.40%
Deposits from customers	71.78%	71.72%	75.57%	80.49%	80.71%	76.05%
Borrowings	15.99%	20.85%	16.70%	11.14%	10.19%	14.98%
Subordinated debts	2.84%	2.50%	1.64%	2.75%	3.14%	2.57%
Total Debts	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Then the D/E ratio is incorporated into the plug, so that the company can maintain the D/E of 3.81 – *See Table 7: Plug Calculation* below.

Table 7: The Plug Calculation

	E2021	E2022	E2023	E2024	E2025
Total Assets	6,279,030,914	6,868,218,599	7,569,985,978	8,339,177,459	9,177,958,037
Total Liabilities without Debts	141,773,234	161,913,246	179,107,142	197,657,392	217,903,363
Equity	1,275,985,040	1,394,294,611	1,536,622,922	1,692,687,248	1,862,867,150
Total Debts	4,861,272,639	5,312,010,742	5,854,255,914	6,448,832,819	7,097,187,523
D/E ratio	3.81	3.81	3.81	3.81	3.81
Share Capital	**691,705,153**	**693,638,102**	**703,898,068**	**714,939,716**	**726,286,174**
Deposits and placements...(6.40%)	**310,994,359**	**339,829,814**	**374,519,329**	**412,556,707**	**454,034,458**
Deposits from customers (76.05%)	**3,697,165,920**	**4,039,967,831**	**4,452,364,032**	**4,904,560,326**	**5,397,656,495**
Borrowings (14.98%)	**728,023,325**	**795,525,783**	**876,732,324**	**965,776,055**	**1,062,873,540**
Subordinated debts (2.57%)	**125,089,035**	**136,687,314**	**150,640,229**	**165,939,731**	**182,623,030**

Graph 4: Total Assets Vs. Total Liabilities and Total Equity



3. Cost of Capital

The interest rate on deposits and loans in KHR, extracted from the National Bank of Cambodia (NBC), was used to find out the equity risk premium (R_m-R_f) – *See Table 8: Risk Premium*. The Cambodian government does not issue any treasury bills or bonds; therefore, the weighted average interest rate on saving deposits was used as a proxy for the R_f (Risk free rate). The CSX Index cannot yet represent the diversified market portfolio, and often generates

negative rate of returns. The normal rate of return in the market, especially for bank-based economy like Cambodia, is the interest rate on term deposits. In this sense, the weighted average interest rate on term deposits was used as a proxy of the R_m (Market Return).

Table 8: Risk Premium

Year	Term Deposits%	Saving Deposits%	Premiums%
Dec-15	5.90	1.17	4.73
Jun-16	6.71	1.41	5.30
Dec-16	6.44	1.47	4.97
Jun-17	5.29	1.15	4.15
Dec-17	4.70	1.19	3.51
Jun-18	5.28	1.00	4.28
Dec-18	5.09	0.59	4.50
Jun-19	3.99	0.62	3.37
Dec-19	4.10	0.60	3.50
Jun-20	5.05	0.69	4.36
Dec-20	5.34	0.60	4.74
Jun-21	4.47	0.61	3.86
A.A.	5.20%	0.92%	4.27%

Source: Adapted from Banks' Interest Rate on Deposits and Loans, NBC (2021).

Using the Capital Asset Pricing Model (CAPM), $R_e = R_f + \beta\ (R_m - R_f)$, developed by William Sharpe (1964), the cost of equity (R_e) was calculated to be 6.21%.

Cost of debt (R_d) was calculated as the average of the interest rate from the annual Finance Cost of the Interest-Bearing Debts, generated from the adjusted income statements and the adjusted balance sheets (2016 -2020), and the R_d was computed to be 3.52%.

Finally, the Weighted Average Cost of Capital (WACC), as referenced by Modigliani and Miller (1958), $R_a = \left[\frac{D}{V} * (1 - T) * R_d\right] + \left(\frac{E}{V} * R_e\right)$, was calculated based on these costs of capital and the D/E ratio – *See Table 9: Costs of Capital.*

Table 9: Costs of Capital

Cost of Equity			Cost of Debts	
Rf	0.92%		2016	3.88%
Beta (L)	1.2369		2017	3.89%
Rm - Rf	4.27%		2018	3.53%
			2019	3.32%
			2020	2.97%
Re	6.21%		Rd	3.52%
	WACC (Ra)	3.54%		

4. Explicit Forecast Period and Terminal Value

The length of the forecast period was decided to be 5 years because it was a medium-term forecasting. The 3-year forecast is considered to be moderately short for such valuations; whereas the 10-year one is considered to be too long, hence the valuation will not be that precise as the internal and external factors will change in the long run. The internal factors can be the company growth prospects, discontinuous earnings, new earnings, acquisitions, etc. The external factors can be the interest rates, the market sentiment, GDP growth rate, etc. Therefore, the ideal forecast should be in a medium term of 5 years, i.e., from 2021 to 2025.

The maximum dividend distribution ratio was taken as 50% of the net profits, as stated in the bank's dividend policy. Hence, the terminal value was calculated by discounted dividends or free cash flows with an incorporated growth rate of 2.27% in perpetuity. This growth was derived from the trailing fundamental P/E ratio as follows:

$$\frac{P_0}{E_0} = \frac{(1-b)(1+g)}{r-g} \rightarrow \frac{4.28}{0.33} = \frac{(1-50\%)(1+g)}{6.21\%-g} \rightarrow g = 2.27\%$$

Then, the Gordon Growth Model (GGM), $TV_t = \frac{CF_t(1+g)}{r-g}$, had been applied to derive the terminal value for both the dividend discount and free cash flow models. (Gordon & Shapiro, 1956).

5. Valuation

The valuation of the bank was made using discounted cash flow models, which are namely Dividend Discount Model (Gordon, 1959) and Free Cash Flow Model approaches (Damodaran, 1994). Under free Cash Flow approaches, it is basically examined how a company generates and consumes cash. There are two major sub approaches under the free cash flow: Free Cash Flow to Equity and Free Cash Flow to the Firm.

5.1 Dividend Discount Model (DDM)

Under Dividend Discount model, cash flows are defined as expected future dividends. In order to estimate the present value of the streamed of expected future dividends, the maximum dividend distribution ratio was taken as 50% of the net profits, since this ratio can be considered the sustainable ratio, taking into consideration of the bank's past trend of paying dividends. As estimated above, the cost of equity and the growth rate at perpetuity were taken as 6.21% and 2.27%, respectively.

$$P_o = \frac{Div._1}{(1+R_e)^1} + \frac{Div._2}{(1+R_e)^2} + \cdots + \frac{Div._t}{(1+R_e)^t} + \frac{TV_t}{(1+R_e)^t}$$

The result of the valuation was summarised in *Table 10: Dividend Discounted Model* below. Under this valuation method, the price per share was estimated to be $5.50. However, it should be noted that maintaining dividends are at the discretion of the management, especially in a situation where new owners have the discretion over dividend distributions; hence, the dividend policy may be affected. Therefore, valuation under Free Cash Flow models becomes more relevant.

Table 10: Dividend Discount Model

(DDM)		**E2021**	**E2022**	**E2023**	**E2024**	**E2025**	**TV**
		US$	US$	US$	US$	US$	US$
Expected Total Dividends		59,987,618	79,056,667	87,617,441	96,301,038	105,703,935	2,743,099,468
TPV (Re=6.21%)	2,383,382,767	56,481,117	70,084,475	73,133,365	75,682,875	78,216,698	2,029,784,237

# Shares	433,163,019
Intrinsic P_0	**$5.50**
Current P_0 (31/12/2020)	$4.28

5.2 Free Cash Flow to Equity Model (FCFE)

FCFE is the cash available to the common equity holders of the company after meeting all the operating, investing and financing needs. It considers the debt; i.e., the financing decision of the firm is taken into account. To estimate the cost of equity, the levered beta was taken in consistence with our forecast of relying more on debts. Furthermore, adjustments to cash balance were made, considering them parts of the working capital. As summarised in *Table 11: Free Cash Flow to Equity* below, the value of a share under this approach was more than that of under DDM model due to the estimated higher terminal value in perpetuity.

$$FCFE = (OCF + \Delta Cash) - ICF + NB + Other\ NCL$$

$$P_o = \frac{FCFE_1}{(1+R_e)^1} + \frac{FCFE_2}{(1+R_e)^2} + \cdots + \frac{FCFE_t}{(1+R_e)^t} + \frac{TV_t}{(1+R_e)^t}$$

Table 11: Free Cash Flows to Equity

(FCFE)	E2021	E2022	E2023	E2024	E2025
	US$	US$	US$	US$	US$
Free Cash Flows	(29,575,866)	147,037,018	162,404,862	180,678,011	200,936,495
PV (Re=6.21%)	(27,847,046)	130,349,694	135,557,646	141,994,642	148,684,995
TV	5,214,458,596				
PVTV	3,858,491,455				
TPV	4,387,231,386				
# Shares	433,163,019				
Intrinsic P_0	**$10.13**				
Current P_0 (31/12/2020)	$4.28				

5.3 Free Cash Flow to the Firm Model (FCFF)

Under FCFF model, debts are not taken into account since it considers cash available to firm after meeting the operating and investment needs, but before considering the distribution to (collection from) debts and equity holders. Therefore, the relevant discount rate is WACC. However, as explained above, the company should be more dependent on debts when considering the cost of financing. In that scenario, under FCFF, debts were underestimated. In consistence with these, the value of a share was higher than that under FCFE model – *See Table 12: Free Cash Flows to the Firm*.

$$FCFF = (OCF + \Delta Cash) + Int.(1 - T) - ICF + Other\ NCL$$

$$P_o = \frac{FCFF_1}{(1+R_a)^1} + \frac{FCFF_2}{(1+R_a)^2} + \cdots + \frac{FCFF_t}{(1+R_a)^t} + \frac{TV_t}{(1+R_a)^t}$$

Table 12: Free Cash Flows to the Firm

(FCFF)	E2021	E2022	E2023	E2024	E2025
	US$	US$	US$	US$	US$
Free Cash Flows	(22,296,383)	205,479,174	217,253,551	241,338,493	268,568,399
PV (Ra=3.54%)	(21,534,876)	191,683,072	195,745,060	210,018,958	225,732,862

TV	21,648,666,683
PVTV	18,195,794,812
TPV	18,997,439,888
# Shares	433,163,019
Intrinsic P_0	**$43.86**
Current P_0 (31/12/2020)	$4.28

V_0 (Debt)	4,861,272,639
V_0 (Equity)	14,136,167,249
Intrinsic P_0	**$32.63**

6. Investment Summary

The intrinsic value of ACLEDA Bank Plc.'s share price had been predicted under three discounted cash flow models, DDM, FCFE and FCFF, in order to compare them with the current share price (31/12/2020 closing price). It is clear from the table that the current share price of ABC was less than the entire three discounted cash flow models – *See Table 13: Share Prices Summary*. Therefore, ABC share price was "undervalued". Thus, based on these results, the recommendation for the both retail and institutional investors who want to invest in ABC share is a "strong buy". This is because the current share price is undervalued, and it is expected to increase to the intrinsic value in the future.

Table 13: Share Prices Summary

Models	FCFF	FCFE	DDM	Current price
Share price	$32.63	$10.13	$5.50	$4.28

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