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ECONOMIC VALUE ADDED (EVA) AND ITS CALCULATION FEATURES IN BANKS

As a financial organization each commercial bank in order to solve its tasks, must perform a number of operations that play a primary role not only in the bank's activities, but also in the development of the economy as a whole and its individual industries. The effectiveness of corporate governance and the use of resources directly affect the economic development of the country, providing a positive financial result. Therefore, the analysis of the bank's financial indicators is especially important for management to maintain the stability of the company and increase its market share (AL Osaimi, 2019).

The passive operations of Ardshinbank CJSC, considering possible scenarios for their change, are analyzed in the given article. The goal is to identify what additional economic value the bank creates and how attractive it is from the investors' point of view. Forecasts of EVA components for 2023 have been implemented in Excel, using the tools of Polynomial and Exponential Trend line. The impact of the given components on EVA have been considered, and the bonus plan system based on the EVA indicator for managers has been calculated, which will greatly stimulate the use of the EVA indicator in banks. A regression model has been performed to identify the mutual link between the EVA indicator and the Bonus plan. The latter can become quite an interesting tool for bank managers in management decision-making.

KEYWORDS: *bank, economic value added (EVA), polynomial and exponential trend line, bonus plan, performance evaluation, regression model*

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INTRODUCTION. In recent years, the main issue of bank management is the assessment of the effectiveness of bank owners' activities, the definition of the organization's strategy and a number of other issues (Ivashkovskaya et al., 2010). In international practice, the EVA (Economic Value Added) indicator is widely used to assess the possibility for banks to create additional value (Thampy & Baheth, 2000).

For years, companies have measured their shareholder returns in terms of size and quantity, but not quality. Thus, the banks' profits grew, but the concentration on the growth of the value was low. EVA seems to create an opportunity to solve this urgent problem. Now, managers are able to create competitive advantages. Such relevance of the evaluation and forecasting of the EVA is due to the fact that it motivates employees and managers of the bank to think and act as shareholders. The solution of the raised issues makes the chosen topic quite relevant in the conditions of the current acute competition.

The article is aimed at calculating the EVA indicator, forecasting its elements, constructing scenarios, as well as calculating the Bonus Plan, which makes it possible to assess the impact of changes in the EVA indicator on the bonus plan and vice versa. It enables the interested parties to identify the impact of the bank's performance on the decisions of both investors and managers, as well as employees of the bank.

LITERATURE REVIEW. The emphasis on the Economic value added indicator was first mentioned by the famous economist Alfred Marshall in 1890 (Kyriazis & Anastassis, 2007) then the EVA model was carefully applied by a group of consultants of Stern Stewart & Company (Stern et al., 1995). The economic literature mentions that EVA is one of the best methods of measuring the real economic profit of a company (Nikhil, 2009). This indicator is used to select the composition of the portfolio and measure the effectiveness of banks. A number of researchers note that, unlike traditional indicators of profitability, such as EBIT and EBITDA, EVA can measure net profit and best express the maximum profitability of shareholders (Grant, 2003).

There is also an opinion that EVA is one of the indicators of measuring efficiency, evaluating the value of a company and a convenient tool for making managerial decisions of a financial institution (Ahmadyan, 2021).

It is possible to identify examples of the use of the EVA indicator in American companies, which in most cases increased the profit of shareholders. In these companies, bonuses and incentive payments were paid to managers who were able to receive long-term dividends in excess of the Cost of Capital

(Ahmadyan, 2021). Thus, by calculating the value of both Liabilities and Capital, EVA gives managers an incentive to act like shareholders when making corporate investment decisions (Ahmadyan, 2021).

A review of the literature shows that EVA is also a measure of a company's financial performance. It is connected with efficiency and competitiveness, and it is this connection that is currently in the focus of special attention of investors, managers and institutions. For corporations, this task is becoming increasingly important, especially when making investment decisions to achieve desired long-term goals. In fact, it is used to measure the value that a company creates from the funds invested in it. If the company's EVA is negative, it means that the company does not create additional value from the funds invested in the business. Conversely, a positive EVA shows that the company generates value from the funds invested in it (Maulana et al., 2023).

The relationship between these or other phenomena is a support from the point of view of research, as it makes it possible to deepen the analysis of the indicators under consideration and identify their causal relationship. For example, Sivakumaran & Saravanakumar (2011) experimentally tested the relationship between EVA, EPS and ROA using the Pearson correlation coefficient. Their study included 39 Indian banks from 2005 to 2011. In the study, researchers found a link between the EVA and the stock price. Meanwhile, Costa (2012) conducted a similar study of Brazilian banks. Results have shown that EVA significantly explains the profitability and value of the company (Azeem et al., 2018). Rao in his study also examines the applicability of the EVA based on reports published in Indian banks. He comes to the conclusion that EVA is gradually beginning to be considered as a financial criterion for evaluating banking activities (Priyanka & Sudha, 2020).

From the analysis of the literature, we have concluded that different companies are implementing the concept of the EVA under the influence of various incentives. In this regard, there are two levels of EVA usage: external and internal (Andrutsky, 2008). The external level indicates that the company uses EVA as a reference tool, that is, the latter is presented as a competitive advantage and the best system for attracting new investors. Nevertheless, EVA's internal management level is focused on improving the company's efficiency, optimizing processes and improving the choice of management decisions.

Thus, having studied the theoretical literature on the calculation of the EVA indicator, it can be noted that the latter can serve as the best way to measure the cost and efficiency of an organization's capital. It creates an attractive investment environment, thereby ensuring the competitiveness of the company. It is also noteworthy that, the EVA indicator is not mentioned and is not calculated in the Armenian theoretical literature, analysis or research of organizations, while in international practice it is considered to be one of the widely used methods for evaluating effectiveness.

RESEARCH METHODOLOGY. During the research, comparison and historical analysis, estimation, forecasting and trend detection and regression analysis methods have been used, some formulas have been calculated to complete the analysis.

Thus, the comparison and historical analysis methods were used to compare the data of the period under consideration and to identify the features of the data presented in the series. The data of Ardshinbank CJSC for 2017-2022 on an annual basis have been analyzed. Using the assessment, trends forecasting and identification methods, the features of the presented data set have been identified. In particular, on the basis of graphs created in the Excel, trend lines are constructed in such a way that the latter makes it possible to represent deviations of actual data from the predicted ones. Two types of forecasting trend line have been used in the analysis: Exponential trend line and Polynomial trend line (ExcelTABLE Corporation). The Exponential trend line is used when the data presented in the series tend to increase or decrease continuously. Thus, the possible values of the EVA indicator are predicted. The second or Polynomial trend line is used when the data presented in the series have a simultaneous trend of growth and decrease. In such cases, the graph has one or more extreme (maximum and minimum) points. Of great importance for the accuracy of forecasting is not only the coefficient of determination (R^2), which should be greater than 0.8, but also the correct choice of the degree (order) of indicators, which should be one more than the number of extreme points. Thus, the indicators of the expected value of Cost of liabilities, Liabilities, Equity and the Expected return on equity of Ardshinbank CJSC have been forecast. As a result of using the regression analysis method in Excel, we have shown the relationship between the EVA and the Bonus Plan, thus justifying how much an increase in the EVA by one unit affects the size of the bonus plan and vice versa.

The EVA is calculated using the following formula (Thampy & Baheth, 2000).

Formula 1

$$EVA = NOPAT - WACC * C_e,$$

Where:

EVA - Economic Value added,

NOPAT - Net Operating Profit After Taxes,

WACC - Weighted Average Cost of Capital,

C_e - Capital Employed (Corporate Finance Institute).

The level of risks taken by the bank is taken into account when calculating both NOPAT and WACC (Mironov, 2018).

When $EVA > 0$ it is an incentive for further investment by owners in the enterprise. When $EVA < 0$ it leads to a decrease in the market value of the company and the loss of capital invested by the owners due to the lack of alternative profitability. If EVA is zero, then the market value of the enterprise

and the market value of net assets coincide, which means that the market profit of the owner is 0 (Arsenal CJSC):

NOPAT (Kislingerová, 2000) and WACC (Ernst&Young) are calculated as follows:

Formula 2

$$NOPAT = \text{Operating profit (OP)} - \text{taxes}$$

Formula 3

$$WACC = R_e \frac{E}{V} + R_d(1 - t) \frac{D}{V},$$

Where:

R_e - expected return on capital,

R_d - expected cost of borrowed capital,

E/V - share of equity in total capital,

D/V - share of borrowed capital in the total capital,

t -profit tax rate.

R_e is the ratio of dividends paid to authorized capital for each year, and R_d is the average effective interest rates for each obligation (Ardshinbank CJSC).

Bonus is calculated as follows (Trofimova & Soloviev, 2008):

Formula 4

$$B = TB + y\% * (\Delta EVA - EI),$$

Where:

B - bonus,

TB - target bonus,

ΔEVA - a change in the added economic value,

EI - expected change in EVA

y - the sensitivity coefficient, which is a fixed fraction of the deviation of the actual EVA level from the EVA level expected by investors, aimed at stimulating managers. B can also take a negative value. B and TB are rewards intended for managers, with the target bonus being the minimum bonus set to achieve the EVA expected by the organization's investors.

ANALYSIS. To find out what additional economic value Ardshinbank CJSC created in 2017-2022 and how the bank's passive operations affected it, we have evaluated its EVA (Table 1, Chart 1).

From 2017-2020, Ardshinbank CJSC increased its additional economic value from year to year and recorded an unprecedented growth in 2022, which was due to the provision of excess profits by the bank during this period. Since the EVA indicator turned out to be positive, and for all the years under consideration, it can be argued that the market value of the bank also grew from year to year. It can be seen from Table 1 based on the $(WACC * Ce)$ data, the

expression ($WACC * Ce$) is less than NOPAT, which means that the bank is able to raise funds cheaper and at the same time provides high profitability.

Table 1

Ardshinbank CJSC EVA for 2017-2022 (thous. AMD, %) (Ardshinbank CJSC)

Indicators	2017	2018	2019	2020	2021	2022
E	66,454,868	65,419,356	77,543,111	89,818,361	100,069,123	145,563,346
D	501,664,041	607,569,397	643,594,879	831,021,020	910,341,679	1,412,222,602
V	568,118,909	672,988,753	721,137,990	920,839,381	1,010,410,802	1,557,785,948
E/V	11,70%	9,72%	10,75%	9,75%	9,90%	9,34%
D/V	88,30%	90,28%	89,25%	90,25%	90,10%	90,66%
Re	23,98%	0,40%	0,11%	0,16%	0,32%	33,03%
Rd	5,94%	5,11%	5,51%	4,67%	4,95%	9,69%
T	20%	20%	20%	18%	18%	18%
OP	25,552,852	27,386,038	36,642,957	41,783,642	41,652,990	125,978,148
Taxes	2,347,031	1,681,510	2,387,192	1,515,519	1,959,048	3,387,168
Ce	66,454,868	65,419,356	77,543,111	89,818,361	100,069,123	145,563,346
NOPAT	23,205,821	25,704,528	34,255,765	40,268,123	39,693,942	122,590,980
WACC	6,99%	3,73%	3,95%	3,47%	3,69%	10,29%
EVA	18,560,682	23,262,891	31,195,489	37,153,117	36,001,288	107,615,793

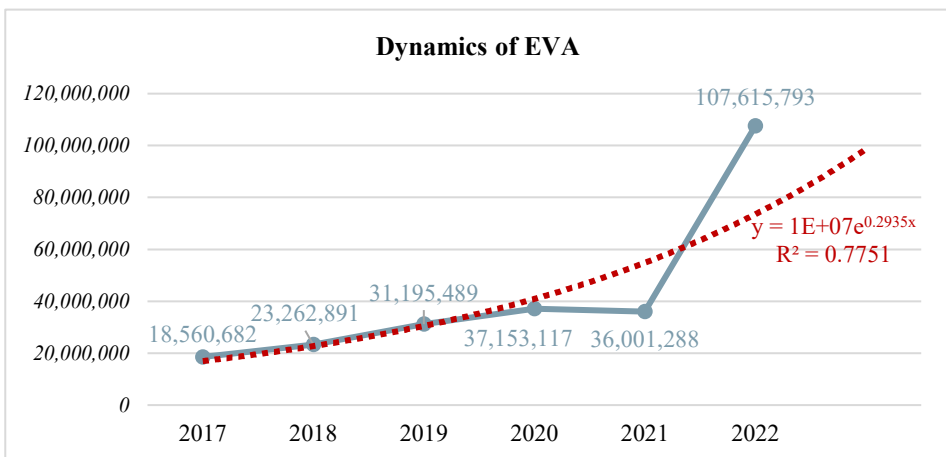


Chart 1. Dynamics of Ardshinbank CJSC EVA for 2017-2022 (thous. AMD,%)

It should be noted that on a macroeconomic scale, capital return is the factor that has the greatest impact on the economy and GDP growth. Any economy is characterized by a certain "reserve" of capital, which leads to the formation of a new GDP. The higher the productivity of the capital, the more GDP is created. Thus, achieving the maximum possible positive value of EVA is a positive factor not only for shareholders from the point of view of managing the value of the company, but also for the entire economy. In practice, the latter characterizes the possibilities of a more efficient redistribution of capital from one sphere to another, which allows industries to develop and receive additional income.

To use the predicted EVA values in the analysis, we have created an Exponential EVA trend line in Excel. In the equation, x is replaced by the time period for the expected EVA values for 2017-2023. The impact of changes in the expected value of Liabilities and the Expected return on equity on the EVA indicator are also examined, as a result of which possible scenarios for changes in the EVA indicator for 2023 are presented.

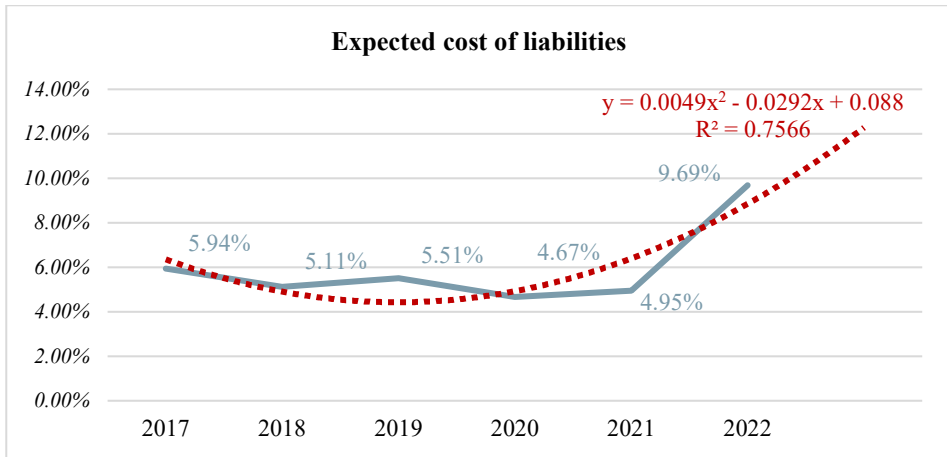


Chart 2. Forecast of Expected cost of liabilities of Ardshinbank CJSC for 2023 (%)

To calculate the Expected cost of liabilities for 2023, a forecast in Excel was performed using the Trend line tool, which allows to calculate the expected value of the future period based on the data presented in Chart 2 so a Polynomial trend line is constructed. The accuracy of the forecast depends on the coefficient of determination or R^2 (the more the coefficient tends to 1, the greater the accuracy of the forecast) and the correctly selected indicator (based on the number of points of extreme) (ExcelTABLE Corporation).

The data presented in Chart 2 most closely correspond to two indicators of the polynomial trend line. In this case, $R^2=0.7566$, which is a pretty good indicator. The calculation has been also done when the order is 5 (this is also the number of extreme points). In this case, $R^2 = 1$, but the predicted value is higher than 20%, which is not true in the conditions of the current refinancing rate.

The trend line equation shown in Chart 2 is the following:

$$y = 0.0049x^2 - 0.0292x + 0.088$$

Where:

y is the Expected cost of liabilities calculated by the Polynomial trend line equation,

x is a time period.

Table 2 shows the Expected cost of liabilities calculated by the equation of the Polynomial trend line for 2017-2023, which are compared with the actual values.

Table 2

The values of the Expected cost of liabilities calculated by the equation of Polynomial trend line for 2017-2023, %

<i>Time periods</i>	2017	2018	2019	2020	2021	2022	2023
Sequence number for time periods	1	2	3	4	5	6	7
Expected cost of liabilities actual values	5.94%	5.11%	5.51%	4.67%	4.95%	9.69%	
Expected cost of liabilities actual values predicted values	6.37%	4.92%	4.45%	4.96%	6.45%	8.92%	12.37%
Variation Coefficient (Sadovnikova et al., 2008)	3.49%	1.89%	10.64%	3.01%	13.16%	4.14%	

From the data in Table 2, it can be seen that the coefficient of variation is less than 33%, while it does not exceed 13.16%, which indicates the accuracy of the predicted values (12.37%) which is also quite accurate.

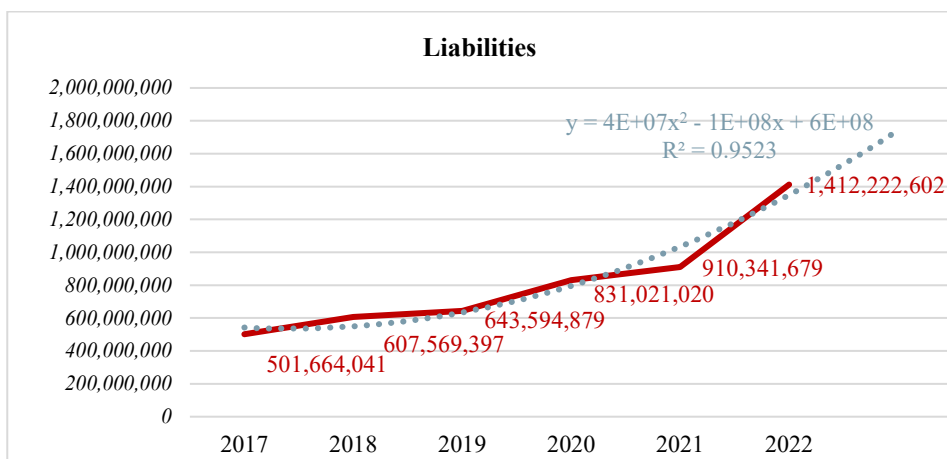


Chart 3. Forecast of the volume of liabilities of Ardshinbank CJSC (thous. AMD)

The forecast for 2023, shown in Chart 3, is done using the Polynomial trend line, taking the indicator of 2, as a result of which $R^2 = 95.23\%$, and the forecast equation is the following:

$$y = 4 * 10^7 * x^2 - 1 * 10^8 * x + 6 * 10^8$$

Table 3

The values of liabilities calculated by Polynomial trend line equation for 2017-2023, thous. AMD

Time periods	2017	2018	2019	2020	2021	2022	2023
Sequence number for time periods	1	2	3	4	5	6	7
Liabilities' actual values	501,664,041	607,569,397	643,594,879	831,021,020	910,341,679	1,412,222,602	
Liabilities' predicted values	540,000,000	560,000,000	660,000,000	840,000,000	1,100,000,000	1,440,000,000	1,860,000,000
Variation Coefficient	3.68%	4.07%	1.26%	0.54%	9.43%	0.97%	

Chart 3 shows that $R^2 = 98.17\%$, which means that the predicted value is not characterized by the available data by only 1.83%, which is a pretty good indicator. The data in Table 3 show that the predicted values are quite accurate, since the coefficient of variation does not exceed 9.43%. Therefore, it can be assumed that with a probability of 98.17% in 2023, the amount of Liabilities will amount to 1,860,000,000 thous. AMD.

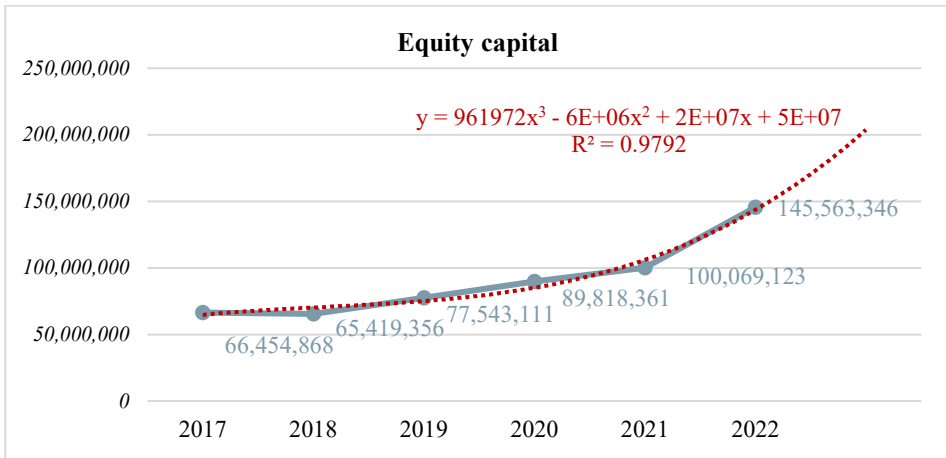


Chart 4. Forecast of Ardshinbank CJSC Equity capital (thous. AMD)

The forecast for 2023 presented in Chart 4 is again performed using the Polynomial trend line, taking order of 3, as a result of which $R^2 = 97.92\%$, and the forecast equation is the following:

$$y = 961972x^3 - 6 * 10^6 * x^2 + 2 * 10^7 * x + 5 * 10^7$$

Table 4

Ardshinbank CJSC Capital values calculated using the equation of the Polynomial trend line for 2017-2023, thous. AMD

Time periods	2017	2018	2019	2020	2021	2022	2023
Sequence number for time periods	1	2	3	4	5	6	7
Capital actual values	66,454,868	65,419,356	77,543,111	89,818,361	100,069,123	145,563,346	
Capital predicted values	64,961,972	73,695,776	81,973,244	95,566,208	120,246,500	161,785,952	225,956,396
Variation Coefficient	1.12%	6.33%	2.86%	3.20%	10.08%	5.57%	

Chart 4 shows that $R^2 = 97.92\%$, which means that the predicted value is not characterized by the available data by only 2.08%, which is pretty good. The data in Table 4 show that the predicted values are quite accurate, since the coefficient of variation does not exceed 10.08%. Therefore, it can be assumed that with a probability of 97.92% in 2023, the equity capital will amount to 225,956,396 thous. AMD.

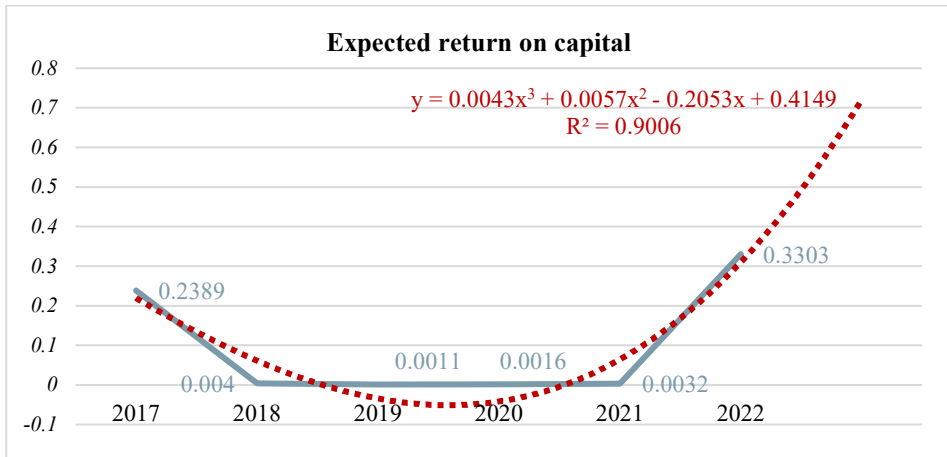


Chart 5. Forecast of Ardshinbank CJSC Expected return on equity (%)

Similarly, the Expected return on equity for 2023 is calculated, while $R^2 = 90.06\%$, taking the order of 3. The low indicator is explained by the fact that the decision to pay dividends is due not only to the values fixed in previous periods, but also to a number of unforeseen circumstances, for example, the addition of Buffer 1 and Buffer 2 by the bank under Bazel 3, which may contribute to strengthening the financial stability of the bank. As a result, the Expected return on equity in 2023 will be 73.20%:

Based on the predicted indicators EVA possible scenarios have been presented for 2023. In particular, we have considered those cases when the volume of equity and the expected return on equity simultaneously increased in case of best scenario (respectively 225,956,396 thous. AMD and 73.20%) and decreased respectively by 10% in case of worst scenario (131,046,621 thous. AMD and 29.73%), and the volume of liabilities and the expected value of liabilities simultaneously increased (1,860,000,000 thous. AMD and 12.37%) and decreased by 10% (respectively 1,271,000,342 thous. AMD and 8.72%) compared to the previous period (Table 5).

As we can see, all other things being equal, the higher the expected value of Liabilities and the Expected return on capital, WACC and, consequently, the lower the EVA. When considering these scenarios, we have also taken into account the change in total Equity and Liabilities. Based on these data, we have calculated EVA for those cases when the Expected return on equity and the Expected value of Liabilities will increase or decrease simultaneously. In case of an increase, EVA will be equal to 84.237.457 thous. AMD, in case of a decrease - 110.458.595 thous. AMD. Obviously, the simultaneous increase or decrease of the WACC components will have a greater impact on the value of the overall coefficient.

One of the main strategic goals of management is to increase the value of the business. For this reason, the effective management of the EVA relies on ensuring a stable non-negative value of this indicator. When calculating Ardshinbank CJSC EVA, we have noticed the positive dynamics of the latter, which means that the management of the bank's activities is qualitative and ensures the efficiency of capital in use (Capital OJSC). Consequently, with the growth of EVA, the investment attractiveness of the organization increases, and vice versa, if there is a tendency of EVA decrease we can conclude about a decrease in the value of the company and a decrease in the interest of external investors in it. Therefore, it is desirable to present ways to increase the EVA indicator (Gerasimov, 2001).

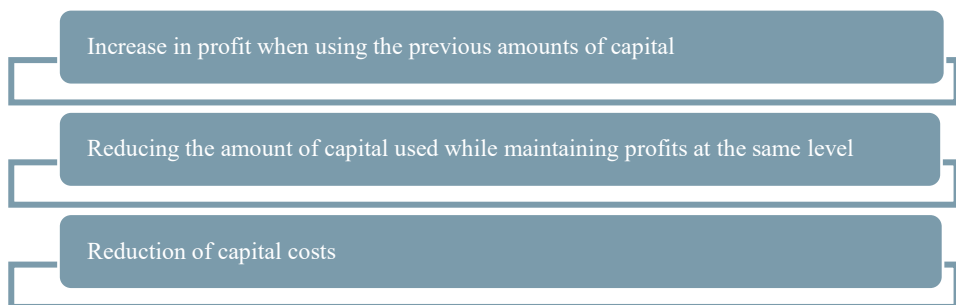


Chart 6. Ways to increase the cost of EVA

Table 5

Possible scenarios of Ardshinbank CJSC EVA (thous. AMD, %)

<i>Indicators</i>	<i>2022</i>	<i>2023</i> <i>D, Rd</i> ↑	<i>2023</i> <i>D, Rd</i> ↓	<i>2023</i> <i>E, Re</i> ↑	<i>2023</i> <i>E, Re</i> ↓	<i>2023</i> <i>D, Rd, E, Re</i> ↑	<i>2023</i> <i>E, Re, D, Rd</i> ↓
E	145,563,346	145,563,346	145,563,346	225,956,396	131,046,621	225,956,396	131,046,621
D	1,412,222,602	1,860,000,000	1,271,000,342	1,412,222,602	1,412,222,602	1,860,000,000	1,271,000,342
V	1,557,785,948	2,005,563,346	1,416,563,688	1,638,178,998	1,543,269,223	2,085,956,396	1,402,046,963
E/V	9.34%	7.26%	10.28%	13.79%	8.49%	10.83%	9.35%
D/V	90.66%	92.74%	89.72%	86.21%	91.51%	89.17%	90.65%
Re	33.03%	33.03%	33.03%	73.20%	29.73%	73.20%	29.73%
Rd	9.69%	12.37%	8.72%	9.69%	9.69%	12.37%	8.72%
T	18%	18%	18%	18%	18%	18%	18%
Ce	145,563,346	145,563,346	145,563,346	225,956,396	131,046,621	225,956,396	131,046,621
NOPAT	122,590,980	122,590,980	122,590,980	122,590,980	122,590,980	122,590,980	122,590,980
WACC	10.29%	11.80%	9.81%	16.94%	9.79%	16.97%	9.26%
EVA	107,615,793	105,407,948	108,311,598	84,303,808	109,756,828	84,237,457	110,458,595

The increase in profit when using the previous amounts of capital can be carried out through the development of new products, as well as new market segments. In order to achieve a reduction in the amount of capital used while maintaining profits at the same level, the liquidation of unprofitable or insufficiently profitable areas of activity is carried out, and the reduction of capital raising costs occurs due to changes in the capital structure.

That is, in fact, the added economic value can be increased by increasing profitability, which can be achieved by investing capital in programs with growing profitability. Various incentive and reward systems are also built on the basis of the EVA indicator. In order to avoid accidental fluctuations and smooth out bonus payments, a so-called bonus bank has been created. According to this system, the bonus is paid not when the goal is achieved, but in a certain period of time. At the same time, in order to receive an already earned bonus, it is necessary to constantly reach the target value of EVA. We have applied this method for Ardshinbank CJSC for 2022. The target bonus is set by this organization itself. Usually it is set to 1% of the expected EVA. To predict the expected EVA indicator for 2017-2023 in the Excel, an Exponential trend line has been plotted (Chart 1, Table 6)

Table 6

EVA calculated using an Exponential trend line in 2017-2023, thous. AMD

<i>Time periods</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>	<i>2023</i>
<i>Sequence number for time periods</i>	1	2	3	4	5	6	7
<i>EVA actual values</i>	18,560,672	23,262,891	31,195,489	37,158,117	36,001,228	107,615,793	
<i>EVA predicted values</i>	13,399,126	17,953,659	24,056,335	32,233,387	43,189,923	57,870,725	77,541,716
<i>Variation Coefficient</i>	16.15%	12.88%	12.92%	7.10%	9.08%	30.06%	

Based on Table 7, the bonus for managers for 2022 is calculated (Table 7).

Table 7

Calculation of Ardshinbank CJSC bonus for 2022 (thous. AMD,%)

<i>Indicators</i>	<i>2021</i>	<i>2022</i>
<i>Actual EVA</i>	36,001,288	107,615,793
<i>Predicted EVA</i>	-	57,870,725
<i>EI</i>	-	21,869,437
Δ EVA	-	71,614,505
<i>TB</i>	-	578,707
<i>Y</i>	-	60,75%
<i>B</i>	-	30,798,836

To find the sensitivity coefficient, we subtract the actual EVA of the previous year from the predicted EVA and divide by the last one (Popov, 2003).

$$y = \frac{(57,870,725 - 36,001,288)}{36,001,288} * 100\% = 60.75\%$$

Therefore, the higher the sensitivity coefficient, that is, the higher the expected return of EVA, the higher the bonus value will be. Since managers have exceeded the plan, they have earned more bonuses and can receive them, constantly providing the target value. In other words, managers are entitled to receive a targeted bonus if they can meet investors' expectations regarding performance.

To show the relationship between the EVA and the Bonus Plan, a regression model is built based on the 2018-2022 indicators (Table 8).

Table 8

Regression model

<i>Regression Statistics</i>	
Multiple R	0.986113
R Square	0.972418
Adjusted R Square	0.963224
Standard Error	6577331
Observations	5

It can be seen from Table 9 that R² fixes a fairly good value, from which we can conclude that the observed indicator is included in the model by 97.2%:

The variance analysis of the model is presented in Table 9 and Table 10.

Table 9

Variance

	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	4.58E+15	4.58E+15	105.7677	0.001960439
Residual	3	1.3E+14	4.33E+13		
Total	4	4.71E+15			

Table 10

Variable interdependence

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	31782719	3294664	9.646725	0.002365	21297627.69	42267811	21297628	42267811
X	2.458706	0.239073	10.28434	0.00196	1.697869803	3.219542	1.69787	3.219542

The regression model equation is:

$$Y=31782719+2.46X,$$

Where:

Y is EVA value,

X is Bonus value.

Therefore, if the bonus is increased by 1, the EVA will increase by 2.46.

Similarly the dependence of Bonus on EVA is estimated (Table 11, Table 12).

Table 11

Regression model

<i>Regression Statistics</i>	
Multiple R	0.98611271
R Square	0.972418277
Adjusted R Square	0.963224369
Standard Error	2637968.779
Observations	5

As it can be seen from Table 12, $R^2 = 97.2\%$, which indicates the quality of the model.

Table 12

Variance

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	7.36025E+14	7.36E+14	105.7677	0.001960439
Residual	3	2.08766E+13	6.96E+12		
Total	4	7.56901E+14			

Table 13

Variable interdependence

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-12398846	2159868.844	-5.74055	0.0105	-19272512.3	-5525179	-19272512	-5525179.05
X	0.39550001	0.038456523	10.28434	0.00196	0.273114189	0.5178858	0.273114	0.517885826

The regression model equation is:

$$Y = -12398846 + 0.40X$$

It can be seen from the equation that with an increase in the EVA by 1, the bonus will increase by 0.4.

Thus, constructing a regression model based on the Bonus Plan and EVA, it can be noted that due to the coefficient of R^2 there is a strong relationship between the considered indicators.

If the EVA obtained during the period under review exceeds the expected one, the well-being of the company's shareholders increases due to an increase in the market value of the shares and/or an increase in the dividends paid. The part of the additional income of shareholders in a predetermined proportion is used for higher remuneration of managers, so this approach should ensure a close link between the remuneration of managers and changes in the welfare of shareholders (Lukasevich, 2004).

CONCLUSIONS. One of the main issues that must be solved to ensure economic growth is the assessment of possible ways and mechanisms for the formation of financial resources of the banking system. Ensuring a favorable investment environment in the country largely depends on the growth of the resource potential of banks, since its strengthening is one of the prerequisites for the activation of investment activities and economic recovery after the crisis. For the successful functioning of a commercial bank, it is important to manage not only the resources in the bank, but also to assess the possibilities of attracting the necessary financial resources.

Most banks still use traditional accounting indicators, which, as it is known, are not so effective. EVA is an alternative method of traditional performance measurement. This is the most profitable tool for determining the performance of bank managers. In the current competitive environment, banks should increase shareholders' profits and inspire them to invest more in banks. To do this, bankers must measure their performance from the point of view of the shareholder (Priyanka & Sudha, 2020). And it is for this purpose that it is necessary to apply the criterion of Economic Value Added.

Proponents of EVA claim that its use provides the maximum annual indicator created by the company. In addition, since EVA measures efficiency in terms of "value", it should be the basis of any financial management system used to develop and define corporate and business strategy, as well as to make decisions about potential investments, evaluate corporate achievements or efficiency.

Thus, having calculated various indicators and studied their features, we have come to the conclusion that it is very important for the bank to constantly increase the EVA indicator, since thanks to it, both external and internal investors trust the bank. In addition, a positive EVA further increases the investment attractiveness of the bank. The system of incentive bonuses for managers, built on the basis of EVA, is highlighted. The use of such a remuneration system as an incentive for effective management of the company can improve the quality of decisions made by managers and provide significant results in increasing the value of shares.

References

1. Ahmadyan, A. (2021). Corporate Governance and Iranian Banking Economic Value Added. *Iranian Journal of Finance*, 5(2), 47-69. Available at: https://www.ijfifsa.ir/article_129421_d3b27ed741dac180907f46f53523b5a3.pdf
2. AL Osaimi, H. (2019). The Importance of Economic Value Added (EVA) and Studies Related To It in Kuwaiti Firms: A Critical Literature Review. *JSSST journal*, 2, 259-272. https://jsst.journals.ekb.eg/article_60925_aac14fa2d9b7910390ff87ff246cf334.pdf?fbclid=IwAR16jiY37fzAorhUArTEupTR09QOa-uzHswWn49mCa2Tqegf6MUKNp_2-E
3. Andrutsky, R. (2008). A shareholder-oriented company in the light of EVA strategy. *Journal of Accounting and Finance*, 7. https://www.cfin.ru/management/controlling/eva/stockholders_target.shtml?fbclid=IwAR0WDP_PccmtdoerwetKilcBETmebrPkWnCyWlvxmbn8ogzLsWeaTgrr37c
4. Ardshinbank CJSC. Public Financial Reports, accessed from 08/07/2023 to 01/08/2023. <https://www.ardshinbank.am>
5. Arsenal CJSC. (2010). Assessment of Economic value added, accessed 09/07/2023. <https://1fin.ru/?id=240>
6. Azeem, A., Fayaz, A., & Jadoon, A. (2018). Economic value addition implications: a study of the Pakistani banking industry. *Pakistan Business Review*, 1, 892-907. <https://core.ac.uk/download/pdf/268591443.pdf>
7. Corporate Finance Institute. EVA–Economic Value Added. accessed 08/07/2023. <https://corporatefinanceinstitute.com/resources/valuation/eva-economic-value-added/>
8. Costa, O. (2012). A Framework for Implementing EVA in Brazilian Banks. *Journal of Money, Investment and Banking*, 23, 49-69. <https://deliverypdf.ssm.com/delivery.php?ID=496096085110075021114084094122089101099083089080001063109072005065125016093116084111098062036040112046109097078101109017092098054090040049087076114031115101095118087021082085017114008120088007068030094086087020000123076031017070005026007112085116100069&EXT=pdf&INDEX=TRUE>
9. Ernst&Young. (2022). Practitioner’s guide to cost of capital & WACC calculation EY Switzerland valuation best practice. accessed 08/07/2023. https://assets.ey.com/content/dam/ey-sites/ey-com/en_ch/topics/strategy/ey-2022-practitioner-cost-of-capital-wacc.pdf
10. ExcelTABLE Corporation, Trend line in excel on different charts. accessed 19/07/2023. <https://exceltable.com/grafiki/liniya-trenda-v-excel>
11. Gerasimov, N. (2001). Application of the Olson model in the valuation of the company. *Journal of Corporate Management*, 9. https://www.cfin.ru/finanalysis/value_ohlson.shtml
12. Grant, L. (2003). Foundations of Economic Value Added. *Wiley finance*, 2. <http://www.loc.gov/catdir/description/wiley037/2003269697.html>
13. Ivashkovskaya, I., Kukina, E., & Penkina, I. (2010). Economic value added. Concepts. Approaches. Tools. *Corporate Finance Magazine*, 2(14), 103-108.

- https://www.hse.ru/data//2010/12/31/1208184587/%D0%92%D1%8B%D0%BF%D1%83%D1%81%D0%BA14_i_k_p_103_108.pdf?fbclid=IwAR1RzkQ-4GFlqhDhiwrCqY2P8R-htyZQWP6dNWWbap9VxceEIDxq51OKQCY
14. Kislingerová, E. (2000). Using of the economic value added model for valuation of a company. *BIATEC*, 8, 38-39.
<https://www.nbs.sk/img/documents/biatec/kislan.pdf>
 15. Kyriazis, D., & Anastassis, Ch. (2007). The Validity of the Economic Value Added Approach: An Empirical Application. *European Financial Management*, 13(1), 71–100.
 16. Lukasevich, I., & Izrailit, A. (2004). Financial system of motivation of managers. *Jouranl of Corporate Managemenet*, 4.
https://www.cfin.ru/management/people/motivation/eva_salary.shtml
 17. Maulana, J., Rohyana, C., & Juwita, R. (2023). Analysis of The Economic Value Added (EVA) Method As A Measurement of Financial Performance at PT X Indonesia. *Journal of Advances in Applied Accounting Research*, 1(2), 56-64.
 18. Mironov, A. (2018). Distribution of the bank's capital by areas of activity from the position of risk/profitability. *Bankovski vesnik, CHERVEN*, 25-29.
<https://www.nbrb.by/bv/articles/10523.pdf?fbclid=IwAR1Tm7e2B9SVomKKGtTwaNqQXhr30Ie34c9RqJJQVWBjiiU9t60WDCGXuI8>
 19. Nikhil, Sh. (2009). Key Discriminators of Bank Profitability. *Interdisciplinary Journal of Contemporary Research in Business*, 1(2), 97–110.
 20. Popov, D. (2003). Motivation of managers. *Company Management Magazine-ZHUK*, 5.
<http://www.management.com.ua/hrm/hrm079.html>
 21. Priyanka, T., & Sudha, Dr. (2020). Concept Of Economic Value Added And It's Application In Commercial Banks. *International journal of scientific & technology research*, 9(3), 1639-1641.
<https://www.ijstr.org/final-print/mar2020/Concept-Of-Economic-Value-Added-And-Its-Application-In-Commercial-Banks.pdf>
 22. Sabol, A., & Sverer, F. (2017). A review of the economic value added literature and application. *UTMS Journal of Economics*, 8(1), 19-27.
<https://www.econstor.eu/bitstream/10419/174163/1/886552672.pdf?fbclid=IwAR04fbph5DxhX8MOOpXBWR7rveuvSPe2Bqx1B1j9Kft45kMM6QX8TRMuwrk>
 23. Sadovnikova, N. (2008). Statistics, Theory of statistics, Socio-economic statistics,
https://www.rea.ru/ru/org/cathedries/Kafedra-otraslevojj-i-biznes-statistiki/Documents/Books/ETSES_2017.pdf
 24. Sivakumaran, D., & Sarvanakumar, M. (2011). Recent analysis with respect to EVA and share price behavior of Indian Banks. *European Journal of Economics, Finance and Administrative Sciences*, 3, 112-120.
 25. Stern, J., Stewart, M., Bennett, G., & Donald, H. (1995). *The EVA Financial Management System*. *Journal of Applied Corporate Finance*, 8(2), 32–46.
 26. Thampy, A., & Baheth, R. (2000). Economic Value Added in Banks and Development Financial Institutions.
<https://repository.iimb.ac.in/bitstream/123456789/490/1/wp.iimb.149.pdf>