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THE ROLE OF BANKS IN THE FINANCIAL CONTROL SYSTEM

Summary. *The financial sector has become the most important factor in the last two decades as a result of globalization and technological development. As a result, financial products increased, operating boundaries expanded, and new financial markets emerged. These developments increased and diversified the risks that the banking sector had to manage. Poor governance and a lack of risk control have led to global financial crises. In a modern market economy, the state applies a system of financial control to ensure the development of the economy, to protect it from potential negative effects, to prevent crisis risks. At the same time, it provides current and periodic control to regulate monetary policy and ensure balance by using the services of investment and commercial banks, especially the policy of the Central Bank. Only well-structured commercial and investment banks can meet this requirement, as comprehensive supervision of the financial market requires an extensive database. For this reason, the development of the working principles and database of actual banks operating in the financial market keeps the relevance of control systems. The main purpose of the article is to study the position of investment and commercial banks in the system of financial control in our country and abroad, the effectiveness and efficiency of data collection, and analysis functions arising*

from their activities in financial markets nowadays. The article did an empirical analysis based on the Eviews program and revealed a link between the level of unemployment and the level of inflation. A Dickey-Fuller test (ADF) was conducted which allows us to test the null hypothesis that a unit root is present in the time series of a sample. All these aspects require additional efforts of the Central Bank both in terms of assessing the situation in banks and making relevant recommendations. This work should be carried out jointly with the World Bank in the framework of international projects for the reconstruction of the country's banks.

Key words: *finance, control, bank.*

Introduction. As part of its on-going efforts to address bank supervisory issues and enhance supervision through guidance that encourages sound risk management practices, the Basle Committee on Banking Supervision is issuing this framework for the evaluation of internal control systems. A system of effective internal controls is a critical component of bank management and a foundation for the safe and sound operation of banking organizations. A system of strong internal controls can help to ensure that the goals and objectives of a banking organization will be met, that the bank will achieve long-term profitability targets, and maintain reliable financial and managerial reporting. Such a system can also help to ensure that the bank will comply with laws and regulations as well as policies, plans, internal rules and procedures, and decrease the risk of unexpected losses or damage to the bank's reputation. The paper describes the essential elements of a sound internal control system, drawing upon experience in member countries and principles established in earlier publications by the Committee. The objective of the paper is to outline a number of principles for use by supervisory authorities when evaluating banks' internal control systems.

Methodology. Materials and Method After regaining independence in 1991, the Republic of Azerbaijan started to accomplish its dominator rights in the economic sector, therewith it started to implement independence policy. The major factor of this policy is the arrangement of the economic system, changing the market economy, and opening gates to the countries to integrate into the global world.

The study investigated the impact of bank-specific and macroeconomic factors on bank profitability and has been investigated in the Azerbaijani economy. In order to determine the impact of these factors on profitability, Least Square Method (LSM) was used. The most common application of this method aims to create a straight line that minimizes the sum of the squares of the errors. In order to operate LSM, some assumptions must be met. These are autocorrelation, heteroscedasticity, and normally distributed.

To define the autocorrelation Breusch-Godfrey LM test was used. The null hypothesis of the LM Test is no serial correlation in residuals at the lag of the order. The null for heteroscedasticity test claims that there is no heteroscedasticity in the residuals. Jarque-Bera was used for normality tests.

In the empirical part, the unit-roots of variables are examined. Then, based on the results of unit root tests it is determined whether the variable series is stationary or not. Augmented Dickey-Fuller (ADF) tests by Dickey and Fuller (1981) are employed to examine the stationarity of variable series.

Data. The Republic of Azerbaijan is an Asian country which is situated along with the Caucasian

Data Using annual data from the database of the State Statistics Committee of Azerbaijan, the paper examines the relationship between inflation and unemployment in Azerbaijan. The data used related to the period of 1990-2020. The following line graphs show the inflation and unemployment in Azerbaijan in this period.

For the purpose of empirical analysis, the study employs monthly data over the period from 2017/01 to 2019/12 for the variables which are bank capital, size, liquidity risk, loans, deposits, change in oil price, non-oil GDP growth and change in inflation. Data sets were taken from the website of CBAR and Oilprice.com. E-views 9 was used for all estimations.

Table 1

Explanation of variables

Variables	Description
Bank Profitability - ROA	Net profits / Total assets
Capital – BC	Total equity / Total assets
Size – BS	Total assets
Liquidity risk – LR	Total loans / Total deposits
Loans	Total loans / Total assets
Deposits	Total deposits / Total assets
Oil Price Change - OPC	$(OPC_t – OPC_{t-1}) / OPC_{t-1}$
Non-oil GDP growth - NOGG	$(NOGG_t – NOGG_{t-1}) / NOGG_{t-1}$
Change in inflation - CII	$(CPI_t – CPI_{t-1}) / CPI_{t-1}$

Source: compiled by the author based on Eviews program

Bank profitability is a dependent variable, bank capital, bank size, liquidity risk, loans, and deposits define bank-specific factors, change in oil price, non-oil GDP growth, and change in inflation indicate macroeconomic factors.

Empirical findings. The analysis in this paper carried in three phases. Firstly, I conducted unit roots using the test namely: Augmented Dickey-Fuller test (ADF test), to avoid spurious Regression. Secondly, I performed the Engle-Granger Cointegration Test. Thirdly, I performed the Granger Causality Test.

Our model will be: $\ln UNEt = \alpha + \beta 1i \ln INFt + \varepsilon i$

Where it is the unemployment rate, it is inflation which is measured by the consumer price index, while α and β are the coefficients to be estimated and the εi is the error term. Also, "ln" standing for the natural logarithm. The following table shows the regression results using OLS. There is a weak and positive correlation between inflation and unemployment in Azerbaijan. Here, r-

squared is approximately equal to zero, which means that no association between variables.

Table 2

Unit root test

Dependent Variable: UNEMPLOYMENT Method: Least Squares Date: 07/08/17 Time: 12:22 Sam ple: 1990 2016 Included observations : 27				
Variable	Coefficient	Std. Error	t-Statis tic	Prob.
INFLATION	0.000682	0.000995	0.685149	0.4996
C	0.066723	0.003934	16.96008	0.0000
R-s quared	0.018431	Mean dependent var		0.067556
Adjus ted R-s quared	-0.020832	S.D. dependent var		0.019242
S.E. of regres sion	0.019441	Akaike info criterion		-4.971633
Sum squared res id	0.009449	Schwarz criterion		-4.875645
Log likelihood	69.11705	Hannan-Quinn criter.		-4.943091
F-s tatistic	0.469430	Durbin-Wats on stat		0.743657
Prob(F-s tatistic)	0.499554			

Source: compiled by the author based on Eviews 9 program

The first step in empirical work was to test stationary vs. non-stationary of the series and to determine the degree of integration of both variables. The ADF unit root test with "intercept" and with "intercept and trend" adopted to check whether the series is stationary or they contain a unit root, which means they are non-stationary. The results of the ADF test were reported in the Table for the level as well as for the first difference of each variable. According to the ADF test, the series are stationary at first difference. Here, k is the optimal lag length chosen by AIC (Akaike Information Criteria). Symbol Δ means the first difference.

Table 3

ADF test

ADF	**(Intercept)**			**(Intercept and Trend)**		
Variables	k	t-Statistic	P value	k	t-Statistic	P value
ln INF	4	-135.2382	0.0000*	4	-90.6488	0.0000*
Δ ln INF	2	-4.8157	0.0009*	2	-4.7166	0.0053*
ln UNE	0	-2.3465	0.1659	0	-2.6849	0.2501
Δln UNE	*0*	-6.1163	0.0000*	*0*	-6.1644	0.0002*

Source: compiled by the author based on Eviews 9 program

Cointegration Analysis First, we model the relationship between inflation (INF) and unemployment (UNE). Since the variables follow an I (1) process, we can proceed with the Johansen integration analysis. Using VAR, taking six as a maximum lag length, and applying each of the lag selection criteria, we obtain the results shown in Table.

Table 4

Results of ADF unit root tests

Variables	**Level**	**1st difference**	**Result**
	Actual value	Actual value	
ROA	-2.159527	-6.800404***	I(1)
BC	-1.957340	-3.901436***	I(1)
BS	-1.584943	-3.335054**	I(1)
LR	-2.660657	-4.466209***	I(1)
Loans	-2.193352	-4.025600***	I(1)
Deposits	-1.953580	-7.116317***	I(1)
OPC	-2.349801	-5.407766***	I(1)
NOGG	-2.259727	-8.378192***	I(1)
CII	-2.192252	-5.245947***	I(1)
Note: *, ** and *** accordingly indicates rejection of null hypothesis at 10%, 5% and 1% significance levels.			

Source: compiled by the author based on Eviews program

But when the ADF tested outcomes for the first different forms of bank-specific and macroeconomic factors, it was found that the first differences of the variables had no unit-roots. As an outcome of the ADF test, all variable series were found to be I(1) or in other terms, stationary at first difference form.

In order to interpret the result of the model, we need to explain residual diagnostics. Test results for residuals of the LSM model are illustrated in table 6. According to Table 6, the null hypothesis claims that there is no autocorrelation among error terms and the p-value is more than 5%. Therefore, there is no serial correlation or autocorrelation among the residual series. Analogically, the outcomes of heteroscedasticity and normality test for error terms in table 6 state that the residuals are normally distributed and there is no heteroscedasticity problem.

Table 5

The results of the model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OIL_PRICE_CHANGE	0.001561	0.000705	-2.213000	0.0355
NON_OIL_GDP_GROWTH	0.125391	0.064872	2.932916	0.0238
LOANS	-3.145885	0.963253	-3.265899	0.0030
LIQUIDITY_RISK	2.084719	0.644302	3.235622	0.0032
DEPOSITS	1.622997	0.537117	3.021682	0.0054
CHANGE_IN_INFLATION	0.324267	0.131840	2.459552	0.0206
BANK_SIZE	0.035148	0.014796	2.375489	0.0249
BANK_CAPITAL	-0.065269	0.027226	-2.397288	0.0237
C	-2.011117	0.511957	-3.928296	0.0005

Source: compiled by the author based on Eviews program

The result of the model shows all macroeconomic factors are statistically significant. Let's detail Non-oil GDP is positively related to the bank's profits. It makes sense, as banks commonly lend to households and companies operating in the non-oil sphere. Finding tells us the banks account for inflation level exists in the economy. The main point is how correctly banks are able to predict this variable. The last macroeconomic determinant to talk about is the oil price. As we know, our economy is oil-dependent and big changes in oil prices can bring unwanted consequences for each area of the economy. Banks should have a separate department or team comprised of professionals for analyzing and forecasting macroeconomic factors precisely.

Banks should evaluate all these variables carefully and develop an appropriate strategy and take the necessary steps in order to involve potential investors. A more detailed analysis of these factors has been written in the next chapter.

Table 6

VAR model results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	78.79099	NA 15.37823	2.29e-06	-7.313428	-7.213949	-7.291838
1	87.76163	3.513206	1.43e-06	-7.786822	-7.488387	-7.722053
2	90.06717	2.584234	1.70e-06	-7.625445	-7.128053	-7.517498
3	92.00534	6.263877	2.15e-06	-7.429080	-6.732732	-7.277955
4	97.48624	2.196703	1.99e-06	-7.570118	-6.674813	-7.375814
5	99.79277	46.55222*	2.62e-06	-7.408836	-6.314574	-7.171353
6	160.8926		1.37e-08*	-12.84691*	-11.55369*	-12.56625*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level) FPE: Final prediction error
AIC: Akaike information criterion SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Source: compiled by the author based on Eviews 9 program

As can be seen from the table all the employed criteria prefer three as an optimal lag length. Moreover, the VAR specification with 6 lags has no serial correlation in the residuals. Two or more variables are said to be co-integrated if they share a common trend. In other words, the series are linked by some long-run equilibrium relationship from which they can deviate in the short-run but they must return to in long run, i.e. they exhibit the same stochastic trend. The results of the Trace and Maximum Eigenvalue co-integration Tests, demonstrate that between inflation (INF) and unemployment (UNE) are not co-integrated and that there is no long-term relationship between them. The Johansen-Juselius procedure of Co integration enables us to examine the existence of Co-integration between two non-stationary series, which requires that the matrix Π does not have full rank (zero < r (Π) = r < n) where (r) is the number of Co-integration vectors. This procedure depends on the Trace test (λ trace) and The Maximum Eigenvalues test (λ max) to determine the number of Co-integration vectors between variables based on a likelihood ratio test (LR). The trace test (λ trace) defined as:

$$Trace = -T\Sigma \log(\lambda) i = r+1$$

The null hypothesis is that the number of Co integration vectors is ≤ r against the alternative hypothesis that the number of Co integration vectors = r. The maximum eigenvalues test (λ max) defined as:

$$\textbf{Maximum Eigenvalue} = -T \log(1-\lambda)$$

Which tests the null hypothesis that the number of Co integration vectors = r against the alternative that they are r+1.

Table 7

Unres tricted Cointegration Rank Test (Trace)

Hypothes ized No. of CE(s)	Eigenvalue	Trace Statis tic	0.05 Critical Value	Prob.**
None At most 1	0.177502 0.066368	6.337980 1.648162	15.49471 3.841466	0.6556 0.1992
Trace test indicates no cointegration at the 0.05 level * denotes rejection of the hypothes is at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values Unres tricted Cointegration Rank Test (Maxim um Eigenvalue)				
Hypothes ized No. of CE(s)	Eigenvalue	Max-Eigen Statis tic	0.05 Critical Value	Prob.**
None At most 1	0.177502 0.066368	4.689818 1.648162	14.26460 3.841466	0.7804 0.1992

Source: compiled by the author based on Eviews 9 program

Max-eigenvalue test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothes is at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

The above analysis suggests that there does not exist a long-run relationship between government revenue and expenditure in the country. However, in order to determine which variable causes the other, the granger causality test was used. The Granger causality test results are presented in the table below. (UNE) on (INF) is not statistically significant at the 5% level, implying that there is no causality running from (INF) to (UNE). The F statistics imply that the null hypothesis (INF) does not granger cause (UNE) can't be rejected at the 5% significance level. On the other hand, (INF) (UNE) is not

statistically significant at a 5% level and the F statistics imply that the null hypothesis that (UNE) does not granger cause (INF) can't be rejected at the 5% significance level.

Table 8

Null Hypothesis

Null Hypothesis:	Obs	F-Statistic	Prob.
INFLATION does not Granger Cause UNEMPLOYMENT UNEMPLOYMENT does not Granger Cause INFLATION	25	0.79866 0.68104	0.4638 0.5174

Source: compiled by the author based on Eviews 9 program

This indicates that there is no causation relationship between unemployment and inflation in Azerbaijan. Thus, there is no trade-off relationship between unemployment and inflation for the period of the study in Azerbaijan.

Conclusion. The roles of central banks in the advanced economies have expanded and multiplied since the beginning of the crisis. The conventional monetary policy roles - setting interest rates in the pursuit of macroeconomic stability and acting as lender of last resort (LLR) and market maker of last resort (MMLR) to provide funding liquidity and market liquidity to illiquid but insolvent counterparties - have both been transformed. With official policy rates near or at the effective lower bound, the size of the central bank's balance sheet and the composition of its assets and liabilities have become the new, 'poor man's', monetary policy instruments. The lender of last resort and market maker of last resort roles has expanded to include solvency support for systemically important private financial institutions and, in the euro area, the provision of liquidity support and solvency support for sovereigns also. Concentrating too many financial stability responsibilities, including macro-prudential and micro-prudential regulation, in the central bank risks undermining the independence of the central bank where it is likely to be useful – setting interest rates and the LLR and MMLR functions.

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