

The Impact of Inflation on The Cash Liquidity of Asiacell 2012-2023 Using Models

EGARCH, GJR-GARCH

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Received: 12 April 2025; Accepted: 08 May 2025; Published: 17 June 2025

Abstract: Based on the understanding of the impact of inflation on monetary policy, the company's policy will improve the company's financial performance by increasing the company's operating income, increasing the amount of cash, and utilizing the short-term loans received. This study aims to analyze the impact of inflation on the liquidity of Asiacell Telecommunications Company in Iraq from 2012 to 2023 by determining the impact of inflation on the company's liquidity variables (operating income, current operating surplus, cash, and short-term loans received). We used a quantitative analysis method, and the study results showed that inflation has a positive moral impact on all the components of financial flows examined in this study. The results also showed that there is conditional volatility and asymmetry in the response of the variables to cash liquidity, because for the variables operating income and cash, the response to positive shocks is greater than the response to adverse shocks, while the opposite is true for the variables current operating surplus and short-term loans received. The response to adverse shocks is greater than the response to positive shocks. This study provides analytical insights on inflation and liquidity that can help improve the financial stability of Asiacell and assist the company in formulating more effective fiscal policies.

Keywords: inflation, cash liquidity, surplus of current operations, business revenue.

Introduction:

The macroeconomic environment is a key factor affecting a company's performance and financial stability. Inflation is one of the most important factors that affect economic activities, especially in developing countries and countries with unstable economies, such as Iraq. Unstable inflation rates directly or indirectly affect the purchasing power of currency, operating costs, and the prices of goods and services, affecting companies' liquidity. High inflation rates are considered a worrying indicator of a functioning economy because they affect different countries differently, leading to currency depreciation, reducing growth opportunities, and affecting the performance of companies, institutions, and even individuals (Murzuq, Ala, 2022).

Liquidity is one of the most important indicators of a company's financial stability because it reflects its ability to meet short-term obligations and daily operating needs without facing the risk of default. Liquidity reflects the ability of a company to deal with unexpected expenses, repay outstanding debts, and meet production and operational needs promptly. Inflation will undoubtedly directly or indirectly impact cash flow because liquidity is closely related to inflation. Once inflation occurs, the stock market is most affected. The company's net income determines stock prices and depends on how much profit the company is expected to make in the long or short term. The connection between inflation and liquidity is well known.

Companies pursue conservative policies during inflationary periods, so inflation and liquidity negatively correlate (Moosa, 2014). A company's operating cycle starts with the purchase of raw materials, includes inventory turnover, continuous sales days, and ends with the collection of the company's debts. The length of the operating cycle is affected by the industry and many company-specific factors, such as the nature of operations, business model, and management efficiency. A longer operating cycle means higher investment in current assets and reduces the company's cash supply. (Naumoski & Juhasz, 2019)

First: The problem of the study:

Inflation is one of the most important factors affecting the liquidity of Asiacell Telecommunications Company, including operating revenue, operating surplus, cash balance of the company's funds, and short-term borrowings received. Given the current economic situation in Iraq, questions have arisen about the impact of inflation on the liquidity of companies, including Asiacell. Companies operating in unstable economic environments, such as the Iraqi financial environment, face many additional challenges related to high operating costs, exchange rate fluctuations, and low purchasing power, often accompanied by high inflation rates. In these situations, cash flow management becomes more complex, especially when financing sources are limited and the need to repay short-term debts increases regularly. Therefore, the main issue of this study is to analyze the impact of inflation on the liquidity of Asiacell Telecommunications Company by examining the impact of inflation on the company's basic financial components, such as revenue, operating surplus, available cash, and short-term borrowings. This study is based on the following central hypothesis: Inflation hurts a company's liquidity by reducing its purchasing power, increasing financing costs, and reducing the real value of cash.

Second: The importance of research:

This study aims to determine the impact of inflation on the liquidity of Asiacell Telecommunications Company in Iraq. The following points illustrate the importance of this study:

1. To assess the impact of inflation on the company's turnover.

- **2.** To assess the impact of inflation on the current operating surplus.
- **3.** To assess the impact of inflation on the cash in the company's accounts.
- **4.** To assess the impact of inflation on short-term loans received.

Third: Research Objectives

The study examines inflation's impact on Asiacell Telecommunications Company's liquidity from 2012 to 2023. The following measures are being taken:

- Analyze the relationship between the inflation rate and the company's cash flow to determine the direction of price changes and the impact on cash flow.
- 2. Measure the impact of inflation on the components of cash flow in detail, including cash on hand, receivables, and other current assets.
- 3. Investigate the impact of inflation on short-term loans and its impact on the company's net liquidity.
- 4. Determine how much liquidity responds to inflationary changes in the Iraqi economic environment during the study period.
- 5. Provide recommendations to the management to improve liquidity and deal with the impact of future inflation.

6. Research Form:

The model includes an inflation rate variable for Iraq between 2012 and 2023. Although inflation data prior to 2012 are available, the company's quarterly reports were not published on the company's website or even the Iraqi depository page until early 2012, so this period is limited as it represents the dependent variable and cash liquidity variable as independent variables in four separate models (operating income, current operating surplus, cash, short-term loans received), as shown in the following equation:

First model:

$$IR_t = \alpha_0 + \alpha_1 \cdot INF_t + \varepsilon_{t1} \tag{1}$$

Where:

IRt: revenue from the business.

INF_t: Iraq Inflation Rate.

 α_0 : Fixed-term first form.

 α_1 : coefficient of the inflation variable.

 ε_{t1} : Random limit in the first model.

Second model:

$$CO_t = \beta_0 + \beta_1 \cdot INF_t + \varepsilon_{t2}$$
 (2)

Where:

CO_t: Current operating surplus is the sum of the first and second current operating surpluses.

INF_t: Iraq Inflation Rate.

 β_0 :: The hard limit of the second model.

 α_1 : Inflation variation coefficient.

 ϵ_{t2} : Random limit in the second model.

Third model:
$$CSL_t = \gamma_0 + \gamma_1 \cdot INF_t + \varepsilon_{t3}$$
 (3)

Where:

CSLt: Ready cash.

INF_t: Iraq Inflation Rate.

 γ_0 : Constant restrictions in the third model.

 γ_1 : Inflation variation coefficient.

 ϵ_{t3} : Random limit in the third model.

$$LOANS_t = \delta_0 + \delta_1 \cdot INF_t + \varepsilon_{t4}$$
 (4)

Where:

LOANS_t: Short-term borrowings.

INF_t: Iraq Inflation Rate.

 δ_0 : Fixed limit.

 δ_1 : Variable coefficient of inflation.

 ϵ_{t3} : Random term in the fourth form.

Fourth: Research hypotheses:

Hypothesis I: The impact of inflation on corporate income is significant, with a significance level of 0.05.

Hypothesis II: The impact of inflation on current

operating profit is significant, at 0.05.

Hypothesis three: The impact of inflation on cash is significant, at 0.05.

Fourth hypothesis: The impact of inflation on short-term loans is significant at 0.05.

Fifth: Research Methodology

Using quantitative analysis methods based on Asiacell's quarterly annual reports and economic models, the data are analyzed using two models, EGARCH and GJR-GARCH, to estimate the impact of inflation on the direct component of Asiacell's cash liquidity in Iraq.

The first topic: the theoretical side

1. Inflation

Inflation is a sustained general price increase due to excessive circulation of money, combined with price increases that limit access to goods and services (Tabidi & Atoli, 2024).

Inflation refers to an increase in the general price level. The flooding of monetary channels leads to an excess of money, while the supply of goods is not adequately increased. Inflation does not mean an increase in the cost of living, but is a decrease in the value or purchasing power of money. It is important to note that inflation does not occur in regular commodity exchanges, as in the trade of gold and silver. In the circulation of paper money, money is only a symbol, not real wealth, which causes inflation. In other words, inflation is not a natural process (if inflation is considered an economic phenomenon), but is directly related to human activities (McConnell et al., 2009).

2. The concept of cash liquidity

Liquidity in the absolute sense refers to cash (money). In contrast, liquidity in the technical sense refers to the ability of assets to be converted into liquid funds to meet current or short-term obligations (Abdul Hamid, 2000). In other words, liquidity refers to the ability of a bank to meet its obligations immediately by converting assets into cash quickly and without loss of value (Abu Qahf, 1993). Therefore, liquidity is a relative term that describes the relationship between cash and assets that can be easily converted into cash (quasi-cash assets) and outstanding liabilities that need to be met (Abdul

Hamid, 2000). Liquidity represents the ability of a bank to manage deposit withdrawals, settle outstanding liabilities, and meet credit demands promptly (Abdul Hamid, 2000). A company's liquidity can be measured using liquidity ratios such as the current, quick, and cash ratios. These ratios indicate the extent to which a company can meet its short-term obligations using current assets, inventory, cash, and cash equivalents (Nindy & Arfan, 2025).

• Business Activity Revenue

Business activities are the backbone of the global economy. It is a commercial organization that provides and markets services or products to generate long-term revenue (Plutus Education).

Current Operations Surplus.

A company's operating surplus measures the difference between production revenues and expenditures, i.e., the production surplus or deficit. It is calculated before any interest, lease, or similar expenses are incurred on non-productive financial or tangible assets borrowed or leased by the business, and before any interest, lease, or similar income is generated on the business's property (Eurostat).

Available Cash

means, in respect of any financial quarter, all of the current assets of the Company as of the end of such quarter less such amount of cash reserves as the Members may reasonably determine to be necessary or appropriate to (a) ensure the smooth functioning of the Company (including reserves for future capital expenditures and anticipated future borrowing requirements of the Company) and then to allocate to the Real Estate Fund the cash available for distribution to Unitholders as dividends. The value of cash available for distribution is calculated based on the assets of the Fund, which have fewer operating costs and current capital expenditures (Investopedia).

Short-term loans

The level of "short-term debt and long-term investment" of energy enterprises is measured by the difference between the short-term debt ratio (short-term debt divided by total debt) and the short-term asset ratio (short-term assets divided by total assets). This is a positive indicator reflecting the compatibility of the term structure between investments (Gong & Zhang, 2025).

The second topic: presentation and analysis of the results: analysis of the relationship between the variables of the study

First: Testing the stability of variables

The stability of the study variables was tested using the Eviews.12 program, and the extended Dickie Fuller test (ADF) was performed to determine the stability. The results are shown in Table 1.

Table 1: Dickie-Fuller's Extended Root Test

Variable	Level			The first difference		
	Non	А	В	Non	А	В
Inflation (INF)	-1.937	-3.188*	-3.147	-	-	-
Business Revenue (IR)	-2.793*	-7.590*	-	-	-	-
Surplus of Current Operations (CO)	-2.774**	-2.870	-	-	-	-
Ready cash (CSL)	-3.248*	-1.893	-3.839*	-	-	-

Short-term loans	-669.055*	-1119.67	-1508.342*	-	-	-
(LOANS)						

A: represents a regression involving only one secant.

B: means regression containing a secant and a general direction.

Non: means regression has no specific or general direction.

The results of Table (1) show that inflation is stable at the level without cutoff and direction, but unstable at the level of cutoff and direction; business income is stable at the level without cutoff and direction, but unstable at the level of cutoff and direction; the current account surplus variable cash is stable only when there is no cutoff and direction; short-term loans are stable when there is no cutoff and direction, and stable when there is cutoff and direction, but unstable when there is cutoff and direction. Classification, that is, contains a unit root at the 5% significance level, so the time series is stable at the level of taking first-order differences below the 5% significance level.

Second: ARCH Effect Test:

Table 2: ARCH Effect Test

Model Number	F	Prob(F)	Obs*R²	Prob (Chi²)	Total
1	5.662	0.0216	5.253	0.0219	There is an ARCH effect
2	5.218	0.0271	4.884	0.0271	at 5%
3	38.198	0.000	21.579	0.000	
4	11.022	0.0018	9.247	0.0024	

The results in Table 2 show the test results for the presence of ARCH effect using the F-statistic and $Obs*R^2$ statistics and the corresponding p-values in the four models examined. The results show that the ARCH effect exists in all models, although to different extents. In the first model, the F-value is 5.662, and the probability is 0.0216, indicating the presence of the ARCH effect at the 5% significance level. The results of the second model also show an ARCH effect, with an Fvalue of 5.218 and a probability of 0.0271, which is D at the 5% level. The results of the third model are similar to the first and second models, with an F-value of 38.198 and a probability of 0.000, which are significant at the 5% level. In the fourth model, the results show the presence of ARCH. Here, F (11.022) and probability (0.0018) are also significant, corresponding to a significance of 5%. The results of the ARCH test confirm

that ARCH exists in all models. This requires using the GARCH model or its extended form (such as EGARCH or GJR-GARCH) in time series analysis to evaluate the performance of cash liquidity under inflation changes.

Third. Estimation of GARCH / GJR-GARCH / EGARCH models

The first model: The impact of inflation on operating income

Results Table (3) shows the estimation of the impact of inflation on corporate revenue using GJR-GARCH for Model 1. The results of the initial model estimation show that there is a positive and statistically significant relationship between inflation rate and Asiacell Telecom's business revenue, with a significance level of (0.0131), which is below the 5% significance level, which

^{*:} means moral at the level of moral 5%.

means that high inflation rates are associated with increased revenue, which may be attributed to the impact of inflation on service pricing or demand. It also shows that the GARCH coefficient is positive and statistically significant, with a significance level of (0.000) below the 5% significance level, indicating that time series shock fluctuations play an important role in explaining revenue changes, i.e., h. The model reflects the existence of conditional fluctuations in the financial statements reviewed. At the variance equation level, the results also show an asymmetric effect, with the negative shock coefficient (RESID(-1)^2*(RESID(-1)<0)) being negative and the function shock coefficient (-0.603) being negative. The significance level (0.000) is below the 5% significance level, confirming that the

variance is more affected by adverse shocks than by positive shocks, which is consistent with the properties of the GJR-GARCH model. The GARCH(-1) coefficient is also statistically significant (0.000) below the 5% significance level, indicating a longer performance in the conditional variance process, i.e., h. Previous fluctuations continue to affect current variances. The goodness of the model fit indicates that the model has good explanatory power, with a coefficient of determination (R-squared) of about 0.54, i.e., the model explains 54% of the turnover variation, while the adjusted R-squared coefficient is about 0.53. The Durbin-Watson statistic (2.052) also indicates no autocorrelation in the rest of the model, which increases the reliability of the first model results.

Table 3: Results of the first model estimation

Variable	Non-standard coefficient	Standard error	Z	Significance level	
ARCH	2.02E-09 3.91E-10		5.156837	0.000	
Inflation	2350.315	947.1316	2.481508	0.0131	
COMMERCIAL_ACTI	VITY_REVENUE = 2.01737389		+ 2350.3145026	9*INFLATION	
	Estimating	variance			
С	-1.86E+14	3.67E+14	-0.506664	0.6124	
RESID(-1)^2	0.125134	0.060246	2.077052	0.0378	
RESID(-1)^2*(RESID(-1)<0)	-0.603045 0.059949		-10.05927	0.000	
GARCH(-1)	1.025371	0.055608	18.43943	0.000	
GARCH = -1.86172738831e-	-14 + 0.125133508812*RESID 1.02537088658	-	172088*RESID(-	1)^2*(RESID(-1)<0) +	
Coefficier	t of determination		0.54		
Adjusted coefficient of determination			0.5	3	
Druppen-Watson			2.052		

Model Two: The impact of inflation on operating profit

Results Table (3) shows the estimation of Model 2 using GJR-GARCH to understand the impact of inflation on the current activities' surplus. The model was estimated, and the results show that the model's significance level is less than 5%. The results of the second model

estimation show that there is a positive and statistically significant relationship between inflation and the operating activities surplus of Asiacell Telecom, with a significance level (0.0142) below the moral level of 5%, which means that a high inflation rate is associated with the company's operating activities surplus. The results also show that the GARCH coefficient is positive and

statistically significant with a significance level (0.000) below the moral level of 5%, which indicates that the volatility of shocks in the time series plays an important role in explaining the changes in sales, i.e., h. The model reflects the presence of conditional volatility in the financial reports reviewed. At the variance equation level, the results also show an asymmetric effect, with the coefficient for adverse shocks (RESID(-1)^2*(RESID(-1)<0)) being negative and the function (0.-612) being negative, with a significance level (0.000) below the 5% significance level, confirming that the variance is more affected by adverse shocks than positive shocks, which is consistent with the properties of the GJR-GARCH model. In addition, the GARCH(-1) coefficient is

statistically significant (0.000) at the 5% significance level, reflecting the long-term performance in the conditional variance process, i.e., h. Previous fluctuations continue to affect current variances. The goodness of the model fit indicates that the model has good explanatory power, with a coefficient of determination (R-squared) of about 0.54, meaning that the model explains 38% of the variation in remaining farms, while the adjusted R-squared coefficient is about 0.37. The Durbin-Watson statistic (1.96) indicates no autocorrelation in the rest of the model, which increases the reliability of the results of the second model.

Table 4: Results of estimating the second model

Variable	Non-standard coefficient	Standard error	Z	Significance level	
ARCH	2.65E-07	7.66E-08	3.459281	0.0005	
Inflation	561.7732	229.0772	2.452332	0.0142	
CURRENT_OPERATIONS_SUI	RPLUS = 2.64944316386e-07	*GARCH + 561.773	189523*INFLA	TION	
	Estimating	variance			
С	1766378	7.21E-94		0.000	
RESID(-1)^2	0.298237	1.80E-102	1.70E+101	0.000	
RESID(-1)^2*(RESID(-1)<0)	-0.612011	0.130135	-4.702901	0.000	
GARCH(-1)	0.554381	2.50E-102		0.000	
GARCH = 1766377.51539	9 + 0.29823666986*RESID(-1 0.55438097824		194*RESID(-1)/	^2*(RESID(-1)<0) +	
Coefficien	t of determination		0.39		
Adjusted coefficient of determination			0.38		
Druppen-Watson			1.96		

Model Three: The Impact of Inflation on Ready Cash

The results in Table 4 show the effect of inflation on cash estimated using E-GARCH for Model 3. The model estimation was performed, and the results showed that the model significance level was less than 5%. The estimation results of the third model showed that for

Asiacell Telecommunications Company, there is a positive and statistically significant relationship between inflation and cash with a significance level of 0.000, which is less than the significance level of 5%, which means that high inflation rates are related to cash. In comparison, the GARCH coefficient is positive and significant because it reaches (2.65E-7) and reaches

the significance level of (0.000) because it is less than 5%. This result shows that the volatility in the previous period has a positive impact on the liquidity level, as the results show that the impact of volatility is significant and asymmetric, the absolute shock coefficient is positive (0.5394-), while the asymmetric coefficient is positive and has a higher value (0.670), which indicates that positive shocks react more strongly to volatility than adverse shocks, and the results show that the coefficient. The quality of model fit shows that the

model has good explanatory power, with the determination coefficient (R-squared

) of 0.30. This means that the model explains 30% of the variation in cash holdings, and the adjusted R-squared coefficient is about 0.28. The Durbin-Watson statistic (1.85) indicates no autocorrelation in the rest of the model, which increases the reliability of the third model results.

Table 5: Results of the third model estimation

Variable	Non- standard pefficient	Standard error	Z	ignificance level
ARCH	1.670981	0.270342	6.180992	0.0005
Inflation	0.00018	3.59E-05	5.013646	0.0142
+ 0.000179787565306*4*INFLATION	, ,	098132663*	CASH = 1.67	
ariance	Estimating v			
С	13.80318	0.189288	72.92176	0.000
ABS(RESID(-1)/@SQRT(GARCH(-1)))	0.53937	0.049792	-10.8325	0.000
Absolute shock				
RESID(-1)/@SQRT(GARCH(-1))	0.670295	0.054094	12.39132	0.000
Asymmetries				
35*ABS(RESID(-1)/@SQRT(GARCH(-1))) +	D.5393689997	3.803178278	(GARCH) = 1	LOG
)/@SQRT(GARCH(-1))	922*RESID(-1	0.6702954		
Coefficient of determination		.30		(
and a section of the section is a	Adjusted coefficient of determination		0.28	(
isted coefficient of determination		,		

Fourth model: the impact of inflation on short-term loans received

The results in Table 5 show the estimation of Model 4 using E-GARCH, which is used to analyze the impact of inflation on short-term loans. The model estimation was

performed, and the results show that the significance level of the model is less than 5%. The results of the third model estimation show a positive and statistically significant relationship between inflation and short-term loans received by Asiacell Telecom, with a

significance level of 0.000, which is less than the 5% significance level, which means that high inflation rates are related to cash. At the same time, the GARCH coefficient is positive and significant, reaching 1.4898. The significance is (0.000) because it is less than 5%. The result shows that the volatility in the previous period positively impacts the liquidity level. The results show that the impact of volatility is significant and asymmetric, because the absolute shock coefficient is negative (2.898-). In contrast, the asymmetric coefficient is negative and has a higher value (2.676), which reflects that

adverse shocks are more responsive to volatility than positive shocks. The results show that the coefficient is. The quality of the model fit shows that the model has good explanatory power, as the determination coefficient (R-squared) is about 0.40. This means the model explains 40% of the variation in short-term loans received, and the adjusted R-squared coefficient is about 0.38. The Durbin-Watson statistic (1,852,094) shows no autocorrelation in the rest of the model, which increases the reliability of the fourth model results.

Table 6: Fourth Model Estimation Results

ignificance	Z	Standard	Non-standard	Variable
level		error	coefficient	
0.000	14.63526	0.101795	1.489798	ARCH
0.000	7.262145	176.5817	1282.361	Inflation
(SHORT_	TERM_LOAN	S)^(1) = 1.489	179801478*@SQRT	(GARCH) + 1282.36149568*(INFLATION)
			Estimating varia	nce
0.000	1942.352	0.018679	36.28137	С
0.000	-38.6155	0.075036	-2.89754	ABS(RESID(-1)/@SQRT(GARCH(-1)))
				Absolute shock
0.000	26.87946	0.099546	2.675746	RESID(-1)/@SQRT(GARCH(-1))
				Asymmetries
LOG	(GARCH) = 36	5.281366011 -	· 2.89754326961* <i>A</i>	ABS(RESID(-1)/@SQRT(GARCH(-1))) +
		2.67574647	7325*RESID(-1)/@S	SQRT(GARCH(-1))
0.40		Coefficient of determination		
(0.38		Adjuste	d coefficient of determination
	.094			Druppen-Watson

CONCLUSIONS

- **1.** Inflation is impacting Asiacell Communications' liquidity. GARCH and E-GARCH models provide practical tools for analysing these impacts and
- understanding the economic dynamics related to cash.
- **2.** Inflation has a positive impact on Asiacell Communications' revenue. Market volatility also

plays an important role in explaining changes in sales. Adverse shocks react more strongly than positive shocks.

- **3.** The results show that inflation positively impacts Asiacell Telecom's operating surplus, and market volatility plays an important role in explaining changes in operating surplus. The study found that economic shocks have a long-lasting effect. In addition, the volatility of adverse shocks is more pronounced than positive shocks.
- **4.** The results of this study show that inflation has a positive impact on Asiacell Telecom's liquidity and a significant indicative effect on liquidity volatility. Asymmetric effects also reflect a stronger reaction to positive than adverse shocks. The model is well-equipped to explain changes in cash holdings.
- **5.** The results confirm that inflation positively impacts Asiacell Telecom's short-term loans, while economic shocks are asymmetric.

Recommendations:

This study contains some important recommendations:

- **1.** Apply GARCH, E-GARCH, and GJR-GARCH models to analyze the impact of inflation on liquidity and understand economic dynamics.
- Management should monitor the impact of inflation on sales in order to optimize pricing and demand strategies based on the impact of inflation and market fluctuations.
- **3.** Management should manage market fluctuations in current operating earnings to develop strategies to reduce the impact of market fluctuations on current operations.
- **4.** Companies must maintain stable liquidity to ensure availability during inflation and economic fluctuations.
- **5.** Asymmetric economic shocks must be managed to establish a rapid response mechanism to adverse shocks that affect the company's financial performance.
- **6.** Company management should make long-term shock planning and develop long-term financial

strategies to cope with the impact of inflation and economic changes.

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