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Impact of Cash Holding on Firm Performance: Empirical Evidence from Pakistan

Sania Sarfraz Raja, Shahjahan Sarfraz Raja, Eman Zainab, Shahnawaz Sarfraz Raja

Chronicle	Abstract
 Sania Sarfraz Raja is currently affiliated with Department of Management Sciences, National University of Modern Languages, Islamabad, Pakistan. **Email:** dsarfaraz@numl.edu.pk **Shahnawaz Sarfraz Raja and Shahjahan Sarfraz Raja** are currently affiliated with Khushal Dastkaar, Rawalpindi, Pakistan. **Email:** rajashahnawaz6@gmail.com **Email:**shahjahansarfrazraja@gmail.com **Eman Zainab** is currently affiliated with Department of Business Administration, University of Sahiwal, Sahiwal, Pakistan **Email:** zainabeman3@gmail.com	The study investigates the impact of cash holdings on firm performance, in the presences of firm size, debt ratio, and asset turnover. Using data from 91 firms over a six-year period (2017-2022), the study demonstrates the importance of cash reserves for boosting firm value and operating efficiency. The finding show a positive correlation between liquidity and business performance, emphasizing the strategic importance of cash management in corporate finance. This study, which examines key firm characteristics as well as cash holdings, gives insights into the intricate elements driving corporate success and valuable information for managers and policymakers trying to improve financial strategies for long-term growth.

INTRODUCTION

A significant amount of current assets is cash, which is essential for meeting a business's ongoing demands for operations (Khan et al, 2019). Different companies have different reasons for storing cash than another. Some save money for routine operations, while others save money for potential investments. Apparently, cash holding seems least profitable for the firms. Yet, in reality, it is a crucial guarantee for the company's ability to fulfill obligations, settle debt, fulfill its tax payment obligations, and do other financial operations. To handle unforeseen circumstances and reduce transaction costs, businesses typically keep more cash on hand, than they need. (Khan, 2021). The amount of cash holding is defined as a collection of assets that can be quickly obtained and quickly converted into cash having a maturity of less than three months (Shah, 2012). That is why the decision on the amount of cash to store must be wise, thorough, and thoughtful with the objective of avoid the negative effects of holding too much cash (Stater, 2007). Holding more liquid assets is the increase in the financial flexibility of firms and improves their ability to take market changes when investment and business growth are concerned (Jiang Yun, 2021). On the other hand, businesses that have insufficient cash on hand experience reduced business growth as a result of their inability to cover ongoing expenses. Large investment of cash into businesses helps management and investors by expanding their investment options, which benefits the Firm (Azmat, 2014). Although cash on hand has an impact on a business's efficiency and Firm worth (Thanh, 2019).

Furthermore, a business with greater operating capital may be able to increase sales income by lowering trade credit terms with prospective customers. Nevertheless, keeping a larger operational capital comes at a cost. Larger working capital expenditure requires additional money, which raises costs also increase the chance for declaring disaster. (Burney, 2021). The management' main objective when determining the proper amount of operating capital is to ensure the seamless operation of the business. When operating capital is properly managed, a company can reduce its amount of liquid assets while still meeting all of its financial obligations on schedule. (Dang, 2014). It is being shown that holding sufficient operating cash not only helps a company produce more money, but it is also vital. Determining and setting a suitable quantity of operating capital is challenging since it depends on a company's underlying values and the economic condition of the nation. (Habib et al., 2022). Profitability is the amount of money a business makes after deducting costs from revenue. According to Tehrani et al. (2014), profitable businesses usually have larger cash flows. Conversely, in order to reduce their risk, creditors would rather lend money to businesses that are more profitable. These companies therefore probably do not have a lot of cash on hand.

Conversely, in order to reduce their risk, creditors would rather lend money to businesses that are more profitable. As a result, market financial friction causes cash holdings to rise. Consequently, liquid assets that are both affordable and profitable are essential to an organization's budget. Solving the problem of corporations holding so much cash is not simple. There are multiple justifications for managing finances. When businesses preserve money, they do not run out of cash, and expanding the investment's foreign market might not be required (Le et al., 2018). Agency holds cash mainly because of 3 main motives, first one is the precautionary motive, second one is the transaction motive and the third one is speculative purpose (Keynes, 1936). The primary reason to analyze the determinants of accumulation of cash and cash equivalents holdings by using American corporation turned into executed via (Kim, Mauer, & Sherman, The determinates of corporate liquidity: Theory and Evidence, 1998). They said that corporations going through better expenses of external financing and consuming greater unstable profits and those with quite decrease returns on the assets hold extensively larger liquid belongings.

Moreover, (Opler, Pinkowitz, Stulz, & Williamson, 1999) furnished proof that small firms and people with robust growth possibilities and riskier cash flows hold exceptionally excessive ratios of cash to general non-cash property. Additionally, corporations that have better acceptance to the capital markets, which includes massive corporations and those with high credit ratings, incline to hold fewer ratios of cash to general non-cash assets. Although some research reveals a favorable correlation between cash holding and firm success (Fresard & Salva, 2010; Kalcheva & Lins, 2007) other research indicates a negative correlation (Huang et al., 2013; Oler & Waegelein, 2010). Despite the fact that the correlation between cash holdings and firm success has been well examined, it is important to recognize that a number of firm-specific factors may have an impact on this relationship, such as firm size, debt ratio and turnover assets. This paper tries to bridge the gap by investigating whether firm-specific factors can influence the association between cash holdings and performance. This practice's last goal is to enhance the company financial performance. The ability to create new resources, such as money from repetitive operations of an organization for a particular period of time and often calculated from net income and cash generate by commercial operations is called company's financial performance (Olausi, 2014). However, some authors describe the advantage of cash

holdings as well as its determinants, while others have shown an inverse relationship. There are just a few studies conducted in Pakistan regarding cash holding that investigate its effect on firm financial performance. Therefore, the purpose of the current study will be to research whether cash holding has a positive or negative impact on firm performance.

THEORETICAL BACKGROUND & HYPOTHESIS DEVELOPMENT

Theoretical background of Study

There are multiple theories, which provide insight to this research are: Free Cash Flow Theory: In his study, (Jensen, 1986) hypothesized that managers at the highest levels have an excess of cash or its equivalent, and their incentive is to increase the asset for the purpose to take command of the company's choices. If they are in financial abundance and do not require outside support. The investment made by the stockholders will benefit from this. In addition to being crucial for a business to run smoothly, cash will also benefit resource management, capital expenditures, dividend policy payout, and capital structure and management of cash flow. According to this notion, a business must make sure that it has the right amounts of cash and cash equivalents in order to run efficiently.

The dividend policy yield, capital structures, cash flow management, investment choices, and working capital needs of the business are all influenced by an organization's level of cash flow understanding. The choice of whether to accept a specific sum of money is crucial for the company's management. Trade-off Theory: The trade-off theory suggests that businesses figure out how much cash they should have available at all times. This is done by calculating the costs and advantages of having cash. Due to its low level of cash and cash equivalents as well as the high fundraising expenditures, the company will have to pass up investment opportunities, which are critical to the company's growth. The primary benefit of the money that the business still has is that it acts as a safety net against asset flight, which reduces the cost of raising outside capital to support the company's expansion prospects. (Ferreira & Vilela, 2004). Finding the optimum investment in an uncertain setting is the main goal of the support for the financial cost of maintenance and financial catastrophe reduction.

Its board of directors has made a resolution regarding it, or it may be motivated by the goal to increase shareholder value through cash dividend payments, maintain the ideal amount of cash, or make more funds available for the company's growth. Pecking order Theory: (Myers & Majluf, 1984) devised pecking order theory, which is also known as the financial pyramid theory (Opler, 1999). Businesses base their funding decisions on this pyramid. First, internal finance is the source of retained earnings. Businesses should turn to outside finance, ideally debt, if there is insufficient cash to undertake investments. This is because debt is the least expensive form of capital and helps businesses with tax payments. It would also benefit from tax shield advantages for businesses. Equity financing is the final and third option, and the funding order lowers the expenses associated with asymmetric knowledge. Retained earnings are therefore the main source of funding for businesses' investments. In the event that a company files for bankruptcy or experiences financial difficulties, stockholders must receive their money after the company.

Hypothesis Development

The significance of cash holdings for company performance has been brought to light by recent studies, especially when it comes to giving businesses financial flexibility and

allowing them to take advantage of investment opportunities. Research from 2017 to 2023 indicates that companies with larger cash reserves perform better because they can reduce the costs associated with financial hardship and react quickly to changes in the market (Almeida et al., 2019; Boubaker et al., 2022). On the other hand, excessive cash holding have also been associated with potential agency issues and inefficient use of resources (Chen et al., 2019).

H1: Cash Holdings have a significant impact on firm performance.

Recent empirical studies show that a firm size plays a role of significant importance in determining its performance due to factors such as market power, economies of scale, and capital availability. Smaller businesses are generally less profitable and charge higher costs per unit (Lee et al., 2019; Nguyen & Nguyen, 2020). In addition, a company of larger size frequently benefits from lower capital costs and better investor attitudes, both of which boost its performance (Goddard et al., 2017; Wang & Wang, 2022).

H2: The firms size have a significant influence on the firm performance.

The bidual impact of the debt/equity ratio on a company's performance, as revealed in recent studies. High leverage leads to financial risk and interest payment, which negatively affects the firm's performance, although the optimal debt-to-equity level enhances firm value by reducing the capital cost. According to Liang et al., 2018, Tran & Le, 2020. Based on research, while a high level of leverage may lead to financial distress and low profitability, moderate debt levels can straighten out the management and enhance firm performance (Ahmed Sheikh & Wang, 2020; Ilyukhin, 2022).

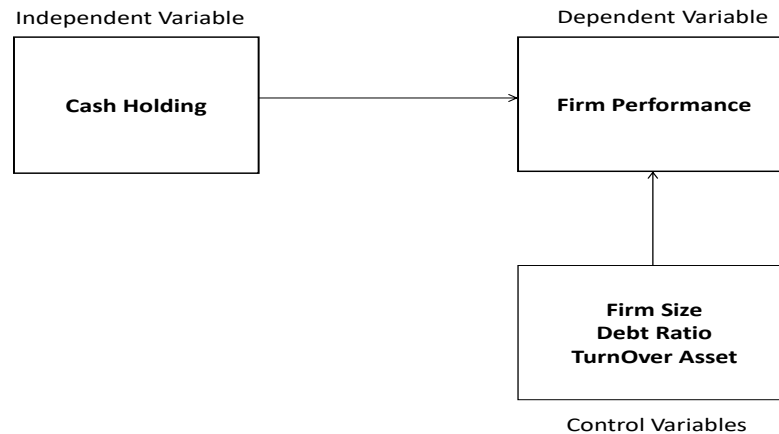**H3:** Debt/equity ratio has a significant influence on firm performance.

Figure 1:
Conceptual Framework

H4: There is a significance impact of Turnover assets on firm performance.

An essential metric of operational effectiveness is asset turnover, which gauges how well a company uses its assets to create income. Elevated asset turnover rates indicate that the company is efficiently employing its resources to generate revenue, demonstrating operational efficacy and maybe culminating in increased profitability (Demsetz &

Villalonga, 2001). On the other hand, low asset turnover ratios can be a sign of operational inefficiencies or a lack of assets, which would hurt performance. Studies show that asset turnover and firm success are positively correlated, highlighting the significance of effective asset management.

DATA & RESEARCH METHODOLOGY

The research sample size for this paper consisted of non-financial companies that were listed between 2017 and 2022 on the Karachi Stock Exchange (KSE). The population of this study is 91 listed companies that were listed in PSX. This study selected 25 companies from 3 different sectors, including textile sector, food sector, manufacturing sector, out of which 66 companies were not considered due to outliers in the data, and missing of some data. The data regarding the dependent, independent and control variables were collected from annual financial statements of firms and from State Bank of Pakistan website. We consider non-financial firms and exclude the financial companies because of their rules and regulations different to nonfinancial firms.

Table 1:
Sector & companies' selection

Sector	Listed companies	Selected Companies	Percentage
Textile	30	25	83%
Food	22	20	91%
Manufacturing	39	35	90%

Measurements of variables

The dependent variable of research is the firm performance. This study use return on assets (ROA) as a measure for firm performance; ROA proxy for accounting measure was used in Saudi Arabia (Alnori, 2020). ROA is operationalize as ratio of net income divided by total assets. It measures the performance of firm i at time t.

ROA = Net Income/ Total Assets

The independent variable in this research is the cash holdings. Cash holdings are calculated by the ratio of cash and cash equivalents divided by total assets as computed in previous research done by (Ghaly, Dang, & Stathopoulos, 2015).

CH = Cash and Cash Equivalents/ Total Assets

Control Variables: Firm Size measured by using the logarithm of total assets, shows that a bigger firm size, offering greater equity guarantees and stability of cash flows, should be inversely proportional to the probability of default.

Size = log Total Assets

Debt to Equity ratio affects firm performance as value of outstanding bonds and shares used to finance the assets of firm's changes with time. Debt, on one hand, gives jump start to cash starving firms and, on the other hand, introduces financial risk in addition to the business risk of a firm. This may decrease or increase the weighted average cost of capital. As Myers & Majluf (1984) used debt to equity ratio to measure the leverage. This research also uses debt to equity ratio to evaluate firm performance. It is measured as follows.

Debt to equity Ratio = Total Debt/ Total Equity

Turnover of firm assets shows how resourcefully a firm practices its assets to produce commodities or good. The association between performance and turnover depend on how efficiently the company is uses its tangible and non-tangible assets. If a company is effectual in managing its total assets, a positive association can be forecasted between turnover and the performance, (Hasan, Kobeissi, Liu, & Wang, 2018): or else, the association maybe negative. In this research total assets turnover ratio is obtain by dividing net revenue with average total assets.

Turnover = Net Revenue/ Average Total Assets

RESEARCH METHODOLOGY

This study utilizes descriptive statistics to quantitatively describe various features of the data. Furthermore, mean, standard deviation, skewness, and kurtosis are employed for this purpose. Additionally, it employs correlation matrices to explain the relationships between the variables.

Regression Equation

The following equation here presents the regression model.

$FP_t = \alpha + \beta Cash_t + \beta 1 Size_t + \beta 2\ ^{D}\!/E_t + \beta 4 Turn_t + \beta 5\ IR_t + \varepsilon$

Where;

FP = (ROA=Return on Assets)

CASH = Cash Holding

SIZE = Firm Size

D/E = Debt to Equity Ratio

TURN = Turnover of Firm Assets

IR = Interest Rate

This study is estimating the equation (1) to analyze the impact of cash holdings on firm performance while using the regression analysis. Regression analysis is a statistical technique used to examine the relationship between one dependent variable and one or more independent variables. The descriptive statistics for the variables AT, CH, DR, FP, and FS show key distributional properties. The means range from 0.2873 for CH to 3.4752 for FS, indicating different average levels. AT has the broadest range, with values ranging from 0.2218 to 1.9970, whereas CH has a more concentrated distribution between 0.0524 and 0.4979. The standard deviations show varying levels of variability, with AT having the most dispersion (0.5254) and CH having the lowest (0.1334). Skewness values near zero across all variables indicate a generally symmetrical distribution, whereas kurtosis values near 3 indicate near-normal distribution shapes, except for AT and CH, which show more flat-topped distributions (kurtosis < 3). These statistics show a snapshot of the variables' distributions, emphasizing both central tendency and variability. The table exhibits a correlation matrix that shows relationships between five variables: CH (Cash Holding), FP (Financial Performance) measured as ROA, FS (Firm Size), DR (Debt Ratio), and AT (Asset Turnover). Cash Holding (CH) has a positive relationship with Financial success (FP) of 0.340, indicating that higher financial performance is significantly associated with higher cash holdings.

EMPIRICAL RESULTS

Table 2:
Descriptive Statistics

Statistic	AT	CH	DR	ROA	FS
Mean	1.0985	0.2873	0.3490	1.1071	3.4752
Maximum	1.9970	0.4979	0.5959	1.5588	4.3034
Minimum	0.2218	0.0524	0.1016	0.6420	2.6890
Std. Dev.	0.5254	0.1334	0.1407	0.1967	0.2922
Skewness	0.0088	-0.2316	-0.0643	0.2247	-0.0552
Kurtosis	1.7827	1.8070	2.0004	2.4204	3.0115

Table 3:
Correlation

	CH	ROA	FS	DR	AT
CH	1	0.34	-0.011	-0.093	0.059
ROA	0.34	1	0.36	-0.139	0.747
FS	-0.011	0.36	1	-0.002	0.102
DR	-0.093	-0.139	-0.002	1	-0.004
AT	0.059	0.747	0.102	-0.004	1

The correlation between CH, firm size (FS), and debt ratio (DR) is very weak and negative, indicating little to no link. Financial Performance (FP) has a significant positive association with Asset Turnover (AT) at 0.747 and a moderate positive correlation with Firm Size (FS) at 0.360, suggesting that stronger financial performance is associated with increased asset efficiency and firm size. The remaining correlations are often weak, implying little or no substantial association.

Table 4:
Regression Analysis

Statistic	R-squared	Adjusted R-squared	S.E. of regression	F-statistic
Value	0.7418	0.7346	0.1013	104.1262
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**(p-value)**
Constant (C)	0.0653	0.1036	0.6302	0.5295
Cash Holdings (CH)	0.4304	0.0626	6.8782	0.0000
Firm Size (FS)	0.1967	0.0286	6.8844	0.0000
Asset Turnover (AT)	0.2617	0.0159	16.4518	0.0000

The regression study shows that the model explains a significant proportion of the variation in Return on Assets (ROA), with an R-squared value of 0.7418. This suggests that the independent variables: Cash Holdings (CH), Firm Size (FS), Asset Turnover (AT), and Debt Ratio (DR) account for roughly 74.18% of the variability in ROA. Cash Holdings has a positive and statistically significant effect on ROA, as the coefficient is found at 0.4304 with a p-value of 0.0000, indicating higher profitability due to the larger cash holdings. Firm size has a positive influence on ROA, as evidenced by a coefficient of 0.1967 and a p-value of 0.0000, implying that larger enterprises are more profitable. The highest positive coefficient is for Asset Turnover at 0.2617, with a p-value of 0.0000. This suggests that high returns are based on proper asset utilization. In the same light, a highly significant negative coefficient is obtained from Debt Ratio at -0.1519 with the p-value being 0.0114,

suggesting that higher financial leverage has a negative effect on profitability. On the whole, the model is robust because the F-statistic is fairly significant, that is, 104.1262, p-value = 0.0000. Also, the Durbin-Watson statistic of 2.2261 portrays no serious autocorrelation difficulties. This approach of course puts emphasis on the roles of asset efficiency and business scale in profit enhancement while implying risks associated with excessive debt. Variance Inflation Factors (VIF) are employed to find multicollinearity between variables in a regression model. The table contains the Centered Variance Inflation Factors, VIF for the model, representing the multicollinearity values adjusted by variables' mean. The Centered VIF values for all the variables are respectively CH, 1.0124; DR, 1.0086; FS, 1.0108; and AT, 1.0141, far less than the commonly accepted threshold value of 10. This implies that multicollinearity is not an issue in the model, suggesting that the independent variables do not have a high linear correlation, which supports the stability and reliability of the regression coefficients.

The White heteroskedasticity test was implemented to determine whether the error terms in the regression model had constant variance. The test findings show (Table 6 in Appendix) that the Fstatistic (0.861906) has a probability of 0.6013. The Chi-Square values for the Obs*R-squared (12.30736) and Scaled explained SS (11.32323) are likewise statistically insignificant, with pvalues of 0.5816 and 0.6605, respectively. These results show that there is no indication of heteroskedasticity in the model, which supports the null hypothesis of homoskedasticity. The regression equation shows several interaction components and quadratic effects, none of which are statistically significant at conventional levels, as evidenced by their high p-values. The R-squared value of 0.082049 indicates that the model explains low proportion of the variance in the dependent variable, whereas the Durbin-Watson statistic.

The Breusch-Godfrey Serial Correlation LM Test results show that there is no significant indication of serial correlation in the residual data. The test returns a p-value of 0.1462 for the Fstatistic and 0.1388 for the Chi-Square statistic, both of which are greater than usual significance values (e.g., 0.05). As a result, we are unable to reject the null hypothesis of no serial correlation at up to one lag, implying that serial correlation does not exist in our model. Furthermore, the Durbin-Watson statistic is 1.9609, which is nearly equal to the optimum value of 2. This supports the assumption that the residuals have no significant autocorrelation. As a consequence, the model does not have autocorrelation problems: it reveals that the residuals are independently distributed and the assumption of the model is as follows.

DISCUSSION

The study explores the relationship between cash holdings and firm performance using data from 91 firms for six years (2017-2022). Cash holdings have a positive effect on firms, and it has been shown that liquidity enhances the ability of businesses to seize investment opportunities, manage risks, and increase operational efficiency. Control variables are firm size, debt ratio, and asset turnover, each of which adds to our understanding of the effects of cash holdings. Our findings reveal that larger organizations enjoy economies of scale but experience diminishing marginal benefits from higher cash holdings when compared to smaller enterprises, that mainly rely on liquidity for agility and growth. The positive association between debt ratio and business performance confirms cash's protective role as a buffer against financial distress in high-leveraged firms. Furthermore, the rapid asset turnover enhances the favorable impact of cash on performance by

increasing revenue generation, which implies that operational efficiency and liquidity should be maintained in tandem to maximize company value. These findings hold significant implications for both corporate executives and policymakers. The optimum level of cash holdings depends largely on the firm's size, structure, and operating effectiveness. Too much cash can render a company inefficient and denies it the chance to be reinvested in productive ventures. Cash insufficiency leaves a company open to shocks. Efficient management strategies for cash, therefore, help balance flexibility and efficiency. Policymakers may want to promote frameworks that encourage good cash management practices, which can improve company resilience and support economic stability. Future research could expand on these results by looking at industry-specific effects or how external economic factors like interest rates and inflation affect cash holding. Examining these new qualities might advance future studies towards offering specific advice for the management of liquidity in various settings of the economy, toward a better understanding of cash's role in company performance and resilience.

DECLARATIONS

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APPENDIX

Table 5:

White Test Heteroskedasticity

Sector	Listed companies		Selected Companies		Percentage
	F-statistic 0.8619		Prob. $F_{(14,135)}$ =0.6013		
	Obs*R-squared 12.3074		Prob. Chi-Square(14) = 0.5816		
	Scaled explained SS 11.3232		Prob. Chi-Square(14) = 0.6605		

Variable	Coefficient	Std. Error	t-Statistic	Probability	
C	-0.0959	0.1514	-0.6337	0.5273	
CH^2	0.0462	0.0786	0.5881	0.5575	
CH*DR	0.0587	0.0600	0.9783	0.3297	
CH*AT	0.0010	0.0176	0.0582	0.9537	
CH*FS	0.0180	0.0341	0.5284	0.5981	
CH	-0.1147	0.1297	-0.8845	0.3785	
DR^2	-0.0417	0.0608	-0.6856	0.4941	
DR*AT	-0.0106	0.0111	-0.9621	0.3376	
DR*FS	0.0071	0.0292	0.2437	0.8077	
DR	-0.0088	0.1156	-0.0757	0.9397	
AT^2	0.0091	0.0075	1.2149	0.2267	
AT*FS	-0.0111	0.0092	-1.2132	0.2272	
AT	0.0244	0.0347	0.7025	0.4836	
FS^2	-0.0088	0.0104	-0.8445	0.4000	
FS	0.0643	0.0779	0.8259	0.4103	

R-squared statistic	Adjusted R-squared	S.E. of regression	F-	Prob (F-Statistic	Durbin - Watson
0.0820	-0.0131 0.0141 0.8619			0.6013	1.9616

Table 6: Variance Inflation Factor

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.0107	156.8853	NA
CH	0.0039	5.7363	1.0124
DR	0.0035	7.2553	1.0086
FS	0.0008	145.1283	1.0108
AT	0.0002	5.4771	1.0141

Table 7:
Breusch Godfrey Serial Correlation LM Test

Statistic	F-statistic		Obs*R-squared	Prob. F (1,144)		Prob. Chi-Squre (1)
Value	2.1346		2.1911	0.1462		0.1388

Variable	Coefficient	Std. Error		t-Statistic
C	-0.0062	0.1033		-0.0604

Variable	Coefficient	Std. Error	t-Statistic
CH (Cash Holding)	-0.0054	0.0624	-0.0887
AT (Assets Turnover)	0.0006	0.0159	0.0353
FS (Firm Size)	0.0023	0.0285	0.0808
DR (Debt Ratio)	-0.0021	0.0590	-0.0355
RESID(-1) (Lagged Residuals)	-0.1218	0.0834	-1.4610

R-squared	Adjusted R-squared	S.E. of regression	F-statistic	Prob(F-statistic)	Durbin-Watson stat
0.014607	-0.01961	0.100019	0.426925	0.829323	1.960866