The Role Of Capital Structure On Profitability During Financial Crisis: An Empirical Evidence Of Financial- Firms Listed In The Iraq Stock Exchange

Akram Ahmed Muhammed[1],
Ass.pro. Dr. Rizgar Ali Ahmed[2]

[1] Accounting Technique Department, Technical College of Administration, Sulaimani Polytechnic University, Sulaimani Kurdistan Region – Iraq
[2]Accounting Department, College of Administration and Economics, University of Sulaimani, Sulaimani Kurdistan Region – Iraq

Abstract

The purpose of this study is to analyze the role of capital structure (CS) on profitability for a sample consisting of 27 financial firms listed on the Iraq Stock Exchange (ISE) for the period (2012-2020). The Square Fully Modified Ordinary Least Squares model (FMOLS), and the Auto Regressive Distributed Lag Model (ARDL) were resorted to estimate the parameters of the regression model.

The results reveal that the CS of the current period has a negative relationship with profitability in the light of the financial crisis. Additionally, results reveal the presence of a negative and inverse relationship between mediating variables (firm size, asset structure, growth and liquidity) and capital structure. Managers and shareholders may find these findings significant, particularly when they place a high priority on their decision about the role of capital structure on company's financial profitability during financial crisis.

Keywords— Capital Structure, Profitability, mediating variables, Financial Crisis.

1. Introduction

In recent years, capital structure (CS) and its predicting capacity for firm's financial Profitability have gained more attention. Profitability, as a main goal of an enterprise strategy, is considered as a firm's capacity to make profits in relation to its related

expenditures incurred over a given time period (Willie, 2019). As a result, profitability has emerged as a critical factor in selecting on investment and financing alternatives in financial management. Therefore, in order to engage in profitable practices and activities, an optimal CS must be considered while making financial decisions. This is significant because, as the corporate environment evolves and develop innovations are embraced, organisations address a variety of challenges. Since the modern financial environment is more competitive, organizations that want to gain a sustainable competitive advantage and achieve profitability must really concentrate on an appropriate combination of CS to achieve the necessary profitability, in order to gain a distinct competitive advantage and achieve the desired goals. (Korutaro Nkundabanyanga et al., 2014) So, one of the most significant decisions to be taken is how to arrange a company's capital structure. This choice is the outcome of market conditions, corporate financial decisions, and loan allocation of funding sources.

Extensive research has been conducted in the field of CS decisions, since the first core of CS theories presented by Modigliani and Miller (1958) in their seminal work. It has become one of the most controversial topics in finance literature, with theorists and researchers often disagreeing on its significance and implications. This is due to its crucial role in financing decisions, such as how a firm's capital is formed and selected, and what ratio of elements should be blended to form it. As a result, management's discussion on selecting the preferred ratio of its constituent elements is a vital part of their efforts to maximize shareholders' wealth, profitability, and market value of shares, while also taking into account the risks and challenges they face. Thus, several alternative theories have been developed to explain these decisions. These theories include the Pecking order theory, trade-off theory, and agency theory, among others. Additionally, resource dependency theory and supervision theory have been utilized to provide explanations for financial decisions (Herrero & García, 2021). According to various theories, differences in management's choice of financing sources can lead to variations in how this decision influences the process of constructing the optimal capital structure. However, existing theories and models alone cannot provide a comprehensive and definitive answer to questions such as why some businesses prefer to issue shares or use their own internal resources while others favour borrowing methods. Therefore, finding a comprehensive

theory that can explain and fully explain the financing behaviour and CS of company's remains a challenge. Nevertheless, the CS is controlled and directed by the company's management, and it reflects a framework for regulations and incentives.

Different empirical studies have yielded varied and sometimes contradictory results on the effect of CS on profitability. Sovbetov's (2013) study on the UK banking industry found a strong negative effect between gearing and market value, supporting traditional CS theory. Mohammad & Sultan (2015) found a positive and significant effect of CS on profitability in Iraq. Nasimi & Nasimi (2018) concluded that CS has a significant effect on return on equity but not on net profit margin and return on assets in Pakistani companies. Kerim et al. (2019) found that short-term debt has a negative effect, while long-term debt and growth of instalments have a positive effect on profitability in Nigerian insurance companies. Hajisaaid (2019) found a negative effect of short-term debt and long-term debt, and a positive effect of total debt on profitability in Saudi Arabian companies. Chang et al. (2019) found a negative effect of leverage and a positive effect of growth on profitability in Taiwan, South Korea, Hong Kong, and Singapore. Ibrahim (2019) found a positive effect of total debt to capital on return on equity in Iraqi banks. Jadah et al. (2020) found that ownership rights to assets ratio, demand to assets ratio, and bank size had a positive effect, while long-term debt to asset ratio, short-term debt to asset ratio, and total debt to asset ratio had a negative effect on bank performance in Iraq. Sdiq and Abdullah (2022) found a correlation between agency cost, capital structure, and company performance in Iraqi industrial companies.

The significant of the current study stems new evidence to prior studies on the role of CS in the profitability of firms in countries suffering from financial crises. Previous studies have focused mainly on developed countries like the US and Europe, which differ greatly from emerging countries like Iraq, where the economic and political environment is distinct, and the financial sector lags behind. As a major oil exporter, Iraq's situation provides a realistic perspective on the best financing decisions for firms in developing economies. The study's findings can contribute to a better understanding of corporate financing decisions in such countries.

In order to achieve the above purpose, this study has been structured in the following manner: Section 1 comprises the introduction and a brief overview of the study, along with a review of relevant empirical literature. Section 2 provides an overview of

fundamental theories and hypotheses related to this study. Section 3 contains details about the research data, model specification and methodology. Section 4 focuses on the empirical findings and discussions. Finally, Section 5 concludes the study.

2. Theoretical Background and hypotheses development

2.1 The Capital Structure concept

The concept of CS refers to how a company manages its finances in order to expand its business activities. This involves assessing its resources, estimating its long-term financial needs, and determining how to increase its capital. A key factor in analyzing CS is the debt ratio, which indicates a company's ability to meet its obligations and the success of its financing policies. It is important to consider profits as a source of cash to pay dividends and other expenses, including debt service. Deciding between using owned or borrowed funds is a complex decision and a significant challenge for companies. (Mostafa & Boregowda, 2014).

2.2 The most significant theories about Capital Structure

CS theories present different perspectives on the impact of debt dependency and equity substitution in selecting financial sources for purchasing assets or investing in various projects (Al-Jaziri, 2000).Miller and Modigliani's "irrelevance theory" (Luigi & Sorin 2009) proposes that a firm's value is independent of its CS and the cost of capital remains unaffected by changes in the capital structure. The Trade-off Theory suggests that an ideal CS exists, achieved by combining different sources of financing while balancing the costs and benefits of debt.Deviating from this targeted ratio, whether by increasing or decreasing it, is considered undesirable and can have negative implications for the company (Chen & Strange, 2005). The Pecking Order Theory aims to explain corporate financing decisions in relation to investment decisions. It proposes that companies prioritize internal financing, followed by debt and then equity, based on their investment potential and return, because, the corporate managers have more knowledge about the company's conditions than external investors and that they have a specific order of priorities when choosing financing sources (Chen & Chen, 2011). The Market Timing Theory states that managers set the market timing of CS to exploit the information asymmetry between them and external investors (Al-Mousawi, 2015).The Agency Theory suggests that

high ownership concentration can reduce agency costs but may lead to collusion between large shareholders and management at the expense of small shareholders, negatively impacting firm performance (Myers, 1984).

2.3 Profitability

Financial and engineering management encounter various risks and obligations when developing innovative solutions that ensure the continuity and survival of companies (Udobi-Owoloja et al., 2020). One of the key aspects they face is profitability, which is a measure of an organization's overall performance and efficiency in generating returns. Profitability is a critical factor in determining the success of management, shareholders' satisfaction, investor attraction, and the long-term sustainability of the company (Alarussi & Alhaderi, 2018). In a broader context, profitability refers to a company's ability to generate profits that cover costs and enable growth, expansion, and development, meeting the market economy requirements (Momchilov, 2012).

2.4 Hypotheses Development

Based on the aforementioned concepts, the main hypothesis is:

H_1: "There is a negative role with statistical significance of capital structure on the profitability of Iraqi listed companies in the light of the financial crisis.

In addition, the following subsidiary hypotheses have been developed:

H1a: There is a negative role of the capital structure on the profitability measured by (Return on Assets) in the light of the financial crisis.

H1b: There is a negative role of the capital structure on the profitability, measured by (Return on Equity) in the light of the financial crisis.

H1c: There is a negative role of the capital structure on the profitability, measured by (Net Profit Margin) in the light of the financial crisis.

3. Methodology

3.1. Data collection and sampling

This study aims to contribute towards a very important aspect of CS role associated with the financial firms listed in Iraqi stock market from 2012 to 2020. The study focuses on a total of 55

companies, of which 27 have been selected as the research sample, representing approximately 49.1% of the study population, distributed over three main sectors: banks, insurance companies and financial investment companies, chosen based on specific criteria: First, the necessity of providing all the annual financial information required for the study. Second, in order to obtain balanced panel data, firms whose have their year-end financial data missing throughout the sample period are also left out from our sample. Third, not merging the firm with other firms during the research period.

3.2. The Variables

3.2.1 Independent Variable (Capital Structure)

By using the financial indicators represented by the Financial Leverage (FL), Debt to Equity Ratio (DE), and Equity to Assets Ratio (ETA) as cited in previous studies and models (Gibson, 2011; Sami, 2012; Stowe, 2016; El-Baz, 2018), we analysed the CS (an independent variable) of a sample of companies operating in the financial sector (banks, insurance, and financial investments).

3.2.2 Dependent Variable (Profitability)

The profitability of the companies under investigation was analyzed utilizing the return on equity (ROE), return on assets (ROA), and net profit margin (NPM), as per prior scientific models proposed by(Zahir and Muhammad , 2018 ; Hazouri , 2018 ; Hassan,2020; Abd al-Rahman and al-Hamiyani, 2021; Tuwairish, 2018 and Abbas and Al-Atabi,2019).

3.2.3 Mediating Variables

The mediating variables that were considered to have an impact on the independent variable are firm size (FS), firm growth (FG), asset structure (AS), and liquidity (Liq).

3.2.4 Dummy variable

In order to investigate the impact of financial crisis on the relationship between CS and profitability of the companies being studied. Since the financial crises are difficult to measure directly and are qualitative in nature, researchers used a dummy variable to represent financial crisis. Financial crisis polarized during the period from 2014 to 2018, included the oil price shock and the war on terrorism. This approach assigns certain values to express a

particular attribute, with the intangible variable taking only two values: 1 for the existence of an attribute and 0 for the absence of that attribute. This methodology is consistent with prior research on financial constraints, as evidenced by studies conducted by Demirgüç-Kunt et al. (2015), Proença et al. (2014), Trinh and Phuong (2016), lyubov and Heshmati (2017), Zeitun et al. (2017), and Fosberg (2012).Table 1 presents the description of the variables used in this study:

Table 1. Variables and Their description

Variable	Measure	.Abbor	Difination	Type
Profitability (Prof.)	Return on assets	ROA	Net profit after tax/ assets	dependent
	Return on equity	ROE	Net profit after tax/equity	
	net profit margin	NPM	Net profit after tax/Sales	
Capital Structure (CS)	Debt to Total Assets Ratio	FL	Debt / Total Assets Ratio	Independent
	Debt to equity ratio	DE	Debt/ equity ratio	
	Equity to Assets ratio	ETA	Total Equity / Assets ratio	
Medating variables	Firm-Size	FS	Logarithm of Total Assets	Mediator
	Growth	FG	Percentage change in the net Sales	
	Asset Structure	AS	Fixed Assets/ Total Assets	
	Liqudity	Liq.	Current Assets/ Current Liabilities	
Financial crisis	Financial crisis	Dcrisi	financial crisis period(2014-2018)	Dummy variable

3.3 Model Specification

Regarding the research model, Based on a variety of previous studies (Iqbal & Kume, 2014; Sultan & Adam, 2015; Nasimi & Nasimi, 2018; Chang et al., 2019), panel models were formulated using appropriate and suitable statistical techniques to estimate panel regression for capturing the results. Based on the longitudinal data analysis, defining the study variables, and using the following mathematical equation:

F (Prof.) = f (CS, MV, Dcrisis)

The researchers entered a logarithmic equation for the variables as it is the most suitable approach, offering several advantages. These include more realistically reflecting the description of relationships, more accurate testing of hypotheses, flexibility of independent variables, and reduction of data dispersion and removal of sharp trends. Additionally, the nonlinear model equation can be transformed into a linear equation if the original model is nonlinear. The equation was formulated in logarithmic form as follows:

Log F (Prof.) =Log f (CS, MV, and DCrisis)

Several standard models were formulated in logarithmic form based on the above general model, the expanded research models are shown in three equations.as follows:

$$Log\ (ROA_{F.Sector})_{it} = \alpha + \beta 1\ Log\ FL_{it} + \beta 2\ Log\ (DE)_{it} + \beta 3\ Log\ ETA_{it} + \beta 4\ Log\ CV + \beta 5\ Log\ DCrisis_{it} + \mu_{it} \quad \ldots\ldots 1$$

$$Log\ (ROE_{F.Sector})_{it} = \alpha + \beta 1\ Log\ FL_{it} + \beta 2\ Log\ (DE)_{it} + \beta 3\ Log\ ETA_{it} + \beta 4\ Log\ CV + \beta 5\ Log\ DCrisis_{it} + \mu_{it} \quad \ldots\ldots 2$$

$$Log\ (NPM_{F.Sector})_{it} = \alpha + \beta 1\ Log\ FL_{it} + \beta 2\ Log\ (DE)_{it} + \beta 3\ Log\ ETA_{it} + \beta 4\ Log\ CV + \beta 5\ Log\ DCrisis_{it} + \mu_{it} \quad \ldots\ldots 3$$

4. Empirical results

In this part, for conduct the quantitative analysis, this study will employ a panel data analysis approach that takes into account the effects of time changes and differences between cross-sectional units. Panel data will be used in this study by estimating two quantitative models among multiple quantitative models, namely the Fully Modified Ordinary Least Square (FMOLS) and the Autoregressive Distributed Lag Model (ARDL), to capture the relationship and its direction. The importance of using these models lies in avoiding the measurement problems that arose from the initial diagnosis using the Ordinary Least Square (OLS) method.

4-1 Unit Root Test

The variables and data in this study were subjected to panel unit root tests in order to ascertain the nature of the data and spot any possible long-term associations between the variables. Using the most widely used quantitative tests in practical applications, namely the Augmented Dicky-Fuller test (ADF), the IPS-Im, Pesaran, and Shin tests, and the PP-Perron test (Phillips),To increase the robustness of the results, this study performed unit root tests. All the tests assume a null hypothesis of a unit root in the panel. The findings from the three tests presented in Table 2 demonstrate that the CS and profitability, as well as the mediator variables such as asset structure, firm size, growth opportunities, and liquidity, of the financial sector's listed companies, are stationary at level I(0) and first difference I(1) at probability values of 1%, 5%, and 10%. This indicates that the variables being examined for the financial sector firms are stable and either stationary at the level or first difference. Therefore, the outcomes suggest that the null hypothesis, which assumes a unit root in the

series, is rejected, while the alternative hypothesis, which assumes no unit root, is accepted, and the series is stable and stationary.

Table 2: Unit Root tests

Variables			PP - Fisher Chi-square		ADF - Fisher Chi-square		Im, Pesaran and Shin W-stat	
			Statistic	p-value	Statistic	p-value	Statistic	p-value
CS	Level	Individual effects	100.129	0.0001	93.4191	0.0007	-3.22349	0.0006
		trends	81.2710	0.0096	68.5819	0.0875	0.20151	0.5799
	1st difference	Individual effects	147.703	0.0000	89.4869	0.0017	-2.14464	0.0160
		trends	184.560	0.0000	87.8454	0.0025	-1.42445	0.0772
Prof.	Level	Individual effects	105.703	0.0000	85.1964	0.0043	-2.11124	0.0174
		trends	141.296	0.0000	79.0718	0.0147	-0.68916	0.2454
	1st difference	Individual effects	226.537	0.0000	108.979	0.0000	-3.66219	0.0001
		trends	185.527	0.0000	73.1802	0.0422	-0.57478	0.2827
AS	Level	Individual effects	89.1547	0.0018	58.9123	0.3006	-0.35149	0.3626
		trends	85.7453	0.0039	32.8581	0.9898	1.44277	0.9255
	1st difference	Individual effects	147.337	0.0000	54.9013	0.4402	-0.16344	0.4351
		trends	160.713	0.0000	93.1073	0.0008	-1.30915	0.0952
FG	Level	Individual effects	193.323	0.0000	158.447	0.0000	-7.66648	0.0000
		trends	196.526	0.0000	111.849	0.0000	-2.43349	0.0075
	1st difference	Individual effects	282.218	0.0000	191.130	0.0000	-9.82014	0.0000
		trends	264.700	0.0000	163.276	0.0000	-4.94369	0.0000
FS	Level	Individual effects	117.227	0.0000	120.401	0.0000	-3.8264	0.0001
		trends	90.2191	0.0015	81.5909	0.0090	-0.63866	0.2615
	1st difference	Individual effects	148.247	0.0000	144.599	0.0000	-5.85544	0.0000
		trends	196.063	0.0000	120.118	0.0000	-2.3693	0.0089
LIQ.	Level	Individual effects	93.7113	0.0007	72.7875	0.0450	-1.18884	0.1173
		trends	55.7546	0.4086	88.4226	0.0022	-2.13318	0.0165
	1st difference	Individual effects	151.709	0.0000	129.393	0.0000	-5.18743	0.0000
		trends	166.605	0.0000	104.137	0.0000	-2.35591	0.0092

4.2 Autocorrelation Problem

The correlation matrix among the variables is presented in Table 3, indicating a weak positive or negative relationship between the variables. The main findings reveal a statistically significant negative correlation between the three profitability indicators (ROE, ROA, and NPM) and the three CS indicators (DE, ETA, FL) for financial crisis. The correlation coefficient shows a weak negative relationship between profitability indicators and DE (-0.076807, -0.048015, and -0.045618, respectively) and a weak negative relationship with ETA (0.142008, 0.003426, -0.112455, respectively). The FL CS indicator has a weak negative correlation with profitability indicators, with a maximum correlation coefficient of 0.141876. Additionally, the financial crisis has a weak negative relationship with all profitability indicators, except for NPM which has a weak positive correlation of 0.037. The crisis has a weak positive correlation with DE (0.029) and ETA (0.0688) and a weak negative correlation with FL (-0.069) for financial crisis. There is a statistically significant positive relationship between CS and profitability in general, with a coefficient of 0.021237 in the light of financial crisis. The mediating variables have a positive relationship with profitability, except liquidity, which has a weak negative correlation of -0.0135.There is a medium negative correlation of -0.541060 between the asset structure and capital structure, and a negative correlation of -0.1089 between liquidity

and CS with weak relationship strength. Additionally, the size of the company and growth opportunities have a positive relationship of 0.23 and 0.075, respectively, with the CS in the light of financial crisis.

Table 3: Correlation Matrix

Variables	ROE	ROA	NPM	DE	ETA	FL	D_{Crisis}
ROE	1						
ROA	0.933865	1					
NPM	0.363557	0.361396	1				
DE	-0.045618	-0.048015	-0.076807	1			
ETA	-0.142008	-0.003426	-0.112455	-0.544722	1		
FL	0.141876	0.003218	0.112396	0.544598	-0.999994	1	
D_{Crisis}	-0.148911	-0.11928	0.036704	0.0294	0.068822	-0.069	1

	Prof.	CS	AS	FG	FS	Liq
Prof.	1					
CS	0.021237	1				
AS	0.364132	-0.10898	1			
FG	0.082715	0.074986	0.040883	1		
FS	0.249895	0.234014	0.476554	0.143319	1	
Liq.	-0.135111	-0.54106	-0.207852	-0.064941	-0.664726	1

4.3 Panel Co-Integration Test

In this study, the Pedroni residual Cointegrating test was used to detect the presence of a long-term equilibrium relationship between the stationary variables, either at level $I_{(0)}$ or first difference level $I_{(1)}$. This test was proposed by Pedroni in 1999 and is based on estimating the long-run relationship of the model. The test consists of two sets of statistics: four of them are related to panel statistics and three are related to group statistics. Both sets of statistics are based on the null hypothesis of the absence of co-integration relationships, and the alternative hypothesis is formulated based on the difference between them.

The results of table 4 showed all the Pedroni tests had more than 50% of the tests were significant at the probability levels of 1%, 5%, and 10% for the variables, indicating the presence of co-integration between the independent and mediating variables in the adopted models. This means that the null hypothesis of no co-integration is rejected, and the alternative hypothesis of convergence between the variables in both internal and external dimensions can be accepted. Therefore, the estimation of the standard model is considered to be correct.

Table 4: Pedroni Residual Cointegration Test

Capital Structure with Profitability				
Type of the tests	Alternative hypothesis: common AR coefs. (within-dimension)			
	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	-1.6668	0.9522	-1.712866	0.9566
Panel rho-Statistic	3.006786	0.9987	1.860186	0.9686
Panel PP-Statistic	-2.499609	0.0062	-4.792435	0.0000
Panel ADF-Statistic	-2.447341	0.0072	-4.172597	0.0000
Type of the tests	Alternative hypothesis: individual AR coefs. (between-dimension)			
	Statistic	Prob.		
Group rho-Statistic	3.920459	1.0000		
Group PP-Statistic	-6.642412	0.0000		
Group ADF-Statistic	-4.212474	0.0000		
Mediating variables				
Type of the tests	Alternative hypothesis: common AR coefs. (within-dimension)			
	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	-2.215629	0.9866	-1.044172	0.8518
Panel rho-Statistic	3.976467	1.0000	3.624932	0.9999
Panel PP-Statistic	-4.836041	0.0000	-10.66852	0.0000
Panel ADF-Statistic	-2.800147	0.0026	-3.09778	0.0010
Type of the tests	Alternative hypothesis: individual AR coefs. (between-dimension)			
	Statistic	Prob.		
Group rho-Statistic	6.127525	1.0000		
Group PP-Statistic	-15.60057	0.0000		
Group ADF-Statistic	-6.650657	0.0000		

4.5 Regression analysis

The study used FMOLS and ARDL techniques to estimate model parameters and test hypotheses. The estimation of model parameters is displayed in Table 5, the first model showed a strong relationship between independent variables and ROA, with a determination coefficient of 93%. The model was highly significant and dependable based on the probability value of 0.0000. The debt-to-equity ratio had a negative impact on ROA, while financial leverage and debt-to-assets ratios had positive effects. Therefore, the first sub-hypothesis was denied, and the alternative hypothesis was accepted. The second model examines the link between CS and the profitability of Iraqi financial companies during the financial crisis, measured by ROE. The results show a significant relationship between the independent variables and ROE, with a high coefficient of determination (93%) and low p-value (5%). The three CS indicators have an inverse correlation with ROE, meaning an increase in each of the indicators would lead to a decrease in ROE. Therefore, the second sub-hypothesis of a negative relationship between CS and profitability is accepted. The third sub-hypothesis examines the relationship between CS and net profit margin. The model used has a high determination coefficient and is statistically significant at the 5% level, indicating a strong relationship between the variables. The findings suggest that all three CS indicators have a negative impact on net profit margin, with increasing values leading to decreasing net profit margin. Therefore, the third sub-hypothesis is accepted, showing that CS

has a negative effect on profitability measured by net profit margin for listed financial sector companies between 2012 and 2020.

Table 5: Results of Models of Regression Analysis

Independent variables	Model 1(ROA)		Model 2 (ROE)		Model 3 (NPM)	
	Probability	Coeffieicent	Probability	Coeffieicent	Probability	Coeffieicent
DE	0.0000	-0.142775	0.0000	-0.021624	0.0000	-0.243799
FL	0.0000	0.165422	0.0000	-0.11236	0.0000	-0.707859
ETA	0.0000	0.410609	0.0000	-0.221097	0.0000	-3.278017
R square	0.931212		0.934269		0.938031	
Adjusted R square	0.782846		0.792495		0.804372	
S.E. of regression	0.019577		0.027967		0.863463	

Table 6 summarizes the results of a study that explores the relationship between CS and profitability for listed Iraqi companies during the financial crisis. The findings show that the independent variable of CS has a significant and long-term impact on profitability, and can help explain changes in profitability levels during the financial crisis. The interpretable variables of CS and financial leverage have a negative impact on profitability at the margin and ratio levels. However, in the long run, the relationship between CS and profitability becomes inverse. The financial crisis itself does not have a significant impact on profitability. The correction factor suggests that a deviation in the independent variable value results in a change in the dependent variable relative to the equilibrium point value. This indicates the model is accurate in predicting the relationship between CS and profitability over both short and long-term durations.

Table 6: Results of (Panel ARDL) estimation of the CS model using (PMG)

/ Dependent variable: profitability

Autoregressive Distributed Lags (ARDL)/ Pooled Mean Group (PMG)				
	Long Run Effect		Short Run Effect	
	Coeffieicent	Probability	Coeffieicent	Probability
DE	1.3990	0.0000	-2.1760	0.0719
Dcrisis	6.9602	1.0000	-2.644649	0.0695
Akaike info criterion AIC	-1.611313			
S.E. of regression .RS.E	0.307016			
Sum squared resid SSR	7.446469			
EP Equilibrium point (0.0179	-0.442802			
Disequilibrium pointDSP	-0.557198			

Table 7 illustrates the impact of the financial crisis on profitability, capital structure, and intermediate variables. The results indicate that the financial crisis has a significant negative impact on all

variables, with a strong and high relationship ranging from 69% to 99%. The correlation coefficient test showed a weak positive relationship between the financial crisis and (DE) and (ETA), and a weak negative relationship between them and (FL), indicating a relationship between the independent variables and the financial crisis. However, the model estimation shows that the other variables have an influence and intervention that changes the relationship between the variables and the financial crisis.

Table 7: Results of the relationship between financial crisis and the variables

Variables	Dcrisis	R-Squared	Adj-R-Squared	S.E
Prof.	-0.0120 (0.0018)	0.69	0.50	0.0381
CS	-0.0329 (0.0033)	0.98	0.97	0.0672
NPM	-0.3159 (0.0127)	0.71	0.53	0.7716
ROE	-0.0172 (0.0316)	0.78	0.61	0.0448
ROA	-0.0192 (0.0300)	0.82	0.64	0.0351
DE	-0.0421 (0.0407)	0.89	0.86	0.2134
FL	-0.0223 (0.0000)	0.92	0.89	0.0492
ETA	-0.0859 (0.0002)	0.88	0.84	0.2434
AS	-0.5921 (0.0001)	0.92	0.87	0.9342
FS	-0.0080 (0.0000)	0.99	0.99	0.0090
FG	-0.1527 (0.0000)	0.86	0.64	0.2455
LIQ	-0.1478 (0.0017)	0.85	0.83	0.3342

5. Discussion

Based on the statistical analysis and hypothesis testing conducted on companies listed in the Iraq Stock Exchange from 2012 to 2020, the study has found that the CS of these companies significantly affects their profitability. Specifically, the debt-to-assets ratio has a negative impact on return on equity and net profit margin, but a positive impact on return on assets. These findings are consistent with some previous studies (Chang et al. and Hajisaaid, 2019), but differ from others (Sultan& Adam, 2015).Moreover, the study has highlighted the negative impact of financial crises on the profitability of listed companies, emphasizing the need for careful management during such times. The size of the company and its liquidity ratio have also been found to have varying effects on profitability. Furthermore, the study has shown that company growth has a weak positive impact on profitability, while the asset structure has a positive effect on return on assets and a negative effect on two other profitability indicators. Overall, the results of

this study suggest that investors and risk managers in the Iraq Stock Exchange should consider the factors that impact the CS of companies when developing investment strategies and managing risks. By taking these factors into account, investors and managers can make informed decisions that can lead to improved profitability and overall success in the market.

References

Alarussi, A.S. and Alhaderi, S.M. (2018), "Factors affecting profitability in Malaysia", Journal of Economic Studies, Vol. 45 No. 3, pp. 442-458. https://doi.org/10.1108/JES-05-2017-0124.

Chang, C. C., Batmunkh, M. U., Wong, W. K., & Jargalsaikhan, M. (2019). Relationship between capital structure and profitability: Evidence from Four Asian Tigers. Journal of Management Information and Decision Sciences, 22(2), Available at SSRN: https://ssrn.com/abstract=3411977 or http://dx.doi.org/10.2139/ssrn.3411977.

Chen, J., & Strange, R. (2005). The determinants of capital structure: Evidence from Chinese listed companies. Economic change and Restructuring, 38(1), 11-35.

Chen, L. J., & Chen, S. Y. (2011). How the pecking-order theory explain capital structure. Journal of International Management Studies, 6(3), 92-100.

Demirgüç-Kunt, A., Martinez Peria, M. S., & Tressel, T. (2015). The impact of the global financial crisis on firms' capital structure. World Bank Policy Research Working Paper, (7522).

Fosberg, R. H. (2012). Capital structure and the financial crisis. Journal of Finance and Accountancy, 11, 1.

García, C. J., & Herrero, B. (2021). Female directors, capital structure, and financial distress. Journal of Business Research, 136, 592-601.

Gibson, Charles H. (2011) Financial Statement Analysis, 13rd International Edition, South Western, CENGAGE Learning.

Hajisaaid, A. M. S. A. (2020). The Effect of Capital Structure on Profitability of Basic Materials Saudi Arabia Firms. Journal of Mathematical Finance, 10(4), 631-647.

Ibrahim, S. S. (2019). The Impacts of Capital Structure on Bank Performance: A Case of Iraqi Private Banks. Koya University Journal of Humanities and Social Sciences, 2(1), 118-123.

Jadah, H. M., Hameed, T. M., & Al-Husainy, N. H. M. (2020). The impact of the capital structure on Iraqi banks' performance. Investment Management & Financial Innovations, 17(3), 122.

Kerim, A., Alaji, J., & Innocent, I. O. (2019). Effect of Capital Structure on the Profitability of Listed Insurance Firms in Nigeria. American International Journal of Economics and Finance Research, 1(2), 36-45.

Hassan, Rania. (2020). A study of the effect between underwriting premiums and profitability index in private insurance companies operating in Syria during the period 2008-2017. Tishreen University Journal. Economic and legal sciences, 42 (3).

Korutaro Nkundabanyanga, S., M. Ntayi, J., Ahiauzu, A., & K. Sejjaaka, S. (2014). Intellectual capital in Ugandan service firms as mediator of board governance and firm performance. African journal of economic and management studies, 5(3), 300-340.

Luigi, P., & Sorin, V. (2009). A review of the capital structure theories. Annals of Faculty of Economics, 3(1), 315-320.

Lyubov, T., & Heshmati, A. (2019). Impact of financial crises on the dynamics of capital structure: evidence from Korean listed companies. The Singapore Economic Review, 1950049.

Momchilov, H. (2012). Analysis of profit and profitability of the company (the example of the" BISER OLIVA", Stara Zagora). Trakia Journal of Sciences, 10(4), 53-56.

Mostafa, H. T., & Boregowda, S. (2014). A brief review of capital structure theories. Research Journal of Recent Sciences, 3(10), 113-118, ISSN, 2277, 2502.

Myers, S. C. (1984). Capital structure puzzle. NBER Working Paper, (w1393).

Nasimi, A. N., & Nasimi, R. N. (2018). Effect of Capital Structure on Firms' Profitability: An empirical evidence from Pakistan Stock Exchange (PSX). Research Journal of Finance and Accounting, 9(11), 57-68.

Proença, P., Laureano, R. M., & Laureano, L. M. (2014). Determinants of capital structure and the 2008 financial crisis: evidence from Portuguese SMEs. Procedia-Social and Behavioral Sciences, 150, 182-191.

Sdiq, S. R., & Abdullah, H. A. (2022). Examining the effect of agency cost on capital structure-financial performance nexus: empirical evidence for emerging market. Cogent Economics & Finance, 10(1), 2148364.

Sovbetov, Y. (2013). Relationship between Capital Structure & Profitability: Evidence from UK Banking Industry over the Period of 2007-2012. MBA Thesis.

Sultan, A., & Adam, M. (2015). The effect of capital structure on profitability: An empirical Analysis of listed firms in Iraq. European Journal of Accounting, Auditing and Finance Research, 3(2), 61-78.

Trinh, T. H., & Phuong, N. T. (2016). Effects of financial crisis on capital structure of listed firms in Vietnam. International Journal of Financial Research, 7(1), 66-74.

Udobi-Owoloja, P. I., Gbajumo-Sheriff, M. A., Umoru, B., Babatunde, S. A., & Ilimezekhe, D. (2020). Capital Structure and Firm's Profitability: Evidence from Listed Consumer Goods Sector in Nigeria. Journal of Accounting, Business and Finance Research, 9(2), 50-56.

Willie, C. I. (2019). Liquidity and profitability of Nigerian Breweries Plc (2008-2017). Department of Accounting, Ignatius Ajuru University of Education.

Zeitun, R., Temimi, A., & Mimouni, K. (2017). Do financial crises alter the dynamics of corporate capital structure? Evidence from GCC countries. The Quarterly Review of Economics and Finance, 63, 21-33.

Al-Jaziri, Khairy Ali (2000). “Financial Management (2).” First edition, Arab House for Publishing and Distribution, Cairo, Egypt.

Al-Mousawi, Sabiha Qasim Hashem. 2015. Modern Finance Structure Theories: A Practical Application of Capture Theory and Its Impact on Firm Life: An Analytical Research of a Sample of Foreign Firms. Journal of Economic and Administrative Sciences, 21 (83), p. 64-85.

Sami, for Zaar Muhammad. (2017). Financial analysis of the financial statements according to the financial accounting system, master's thesis, majoring in financial management, Mentouri University, Constantinople.

Stowe, Safaa, and Abdel Baki, Boudiaf. (2016). The impact of liquidity ratios and indebtedness ratios on the market value of a company quoted on the stock exchange: a study of a sample of companies listed on the Qatar Stock Exchange during the period 2009-2014 (unpublished master's thesis). Kasdi Merbah University - Ouargla, Ouargla. Retrieved from http://search.mandumah.com/Record/1017886.

El-Baz, Majid Mustafa Ali. (2018). "An Applied Framework and Accounting Vision to Analyze the Impact of Capital Structure on the Profitability of Commercial Banks in Emerging Financial Markets: Evidence from the Egyptian Banking Sector (2007-2016)". Ain Shams University, Faculty of Commerce, Department of Accounting and Auditing, 22 (2): 80-132. Egypt.

Hazouri, Hassan. (2018). Factors affecting the profitability of banks (an analytical study on a sample of private banks in Syria). Al-Furat University Journal, Basic Sciences Series, 10 (40), 73-92.

Zahir, G. T. and Muhammad, A.K. (2018). Analysis of liquidity, profitability, financial leverage in the light of banking risk management, the Commercial Bank of Iraq, a case study 2005-2015, Muthanna Journal of Administrative and Economic Sciences, 8 (1).

Tuwairish, Abdullah Owaid. (2018). Working capital and its impact on profitability: an applied study on Jordanian industrial companies. Arab Journal of Management, 38(2), 89-106.

Abd al-Rahman, N. I., and al-Hamiyani, M. M. (2021). The impact of working capital on the profitability of Saudi joint stock companies - an applied study on the food production companies sector. Journal of Economic, Administrative and Legal Sciences, 5 (7), 138-122

Abbas, H. A. and Al-Atabi, H. A. J. (2019). Risks of the investment portfolio of the insurance company and its impact on profitability rates. Journal of Accounting and Financial Studies, 14 (48).