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Debt policy score and performance score among energy companies: Empirical evidence

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ABSTRACT

The objective of this study is to examine the association between debt policy and financial performance among Saudi Arabian energy companies. The final sample consists of 18 firm-year observations listed on the Saudi Stock Exchange (Tadawul) from 2021 to 2023. This study used a quantitative-based method, and the data were hand-collected from the annual reports of the sample companies. The result of the Pooled Least Square regression (OLS) reveals a statistically significant positive relationship between debts and financial performance. This indicates that the higher the level of debt structure among energy companies in Saudi Arabia, the higher the performance they achieve. The energy companies use the debts as an external financing source to effectively and efficiently finance their investing activities. This finding backs up the trade-off and agency cost theories, which say that good debt management improves company performance by making the best use of capital structure. This study has implications for corporate finance decision-making in the energy sector, emphasizing the importance of balancing debt to foster financial growth. It contributes to the corporate finance literature by providing empirical evidence specific to the Saudi energy sector, highlighting both the benefits and complexities of debt policies. In specific, the results have significant implications for managers, investors, and policymakers regarding capital structure decisions and financial performance optimization.

Contribution/ Originality: This paper is original as it examines the relationship between debt and performance in the energy sector in Saudi Arabia by providing a broader definition of debt policy that is appropriate for capital-intensive industries. It fills certain voids in the literature concerning developing markets, emphasizing obstacles in the way of managers, investors, and policymakers who aim to enhance financial performance.

1. INTRODUCTION

It is necessary to point out that from the very beginnings of the associated disciplines with finance and accounting due to the publication of Modigliani and Miller (1958) the issue of capital structure and its importance for corporate performance has been covered in most of the scholarly work. According to Gul and CHO (2019) acquiring assets through a debt and equity mix constitutes an important step in attaining the ideal or target capital structure. Capital structure is the process by which management figures out the right mix of debt and equity financing to reach certain goals, especially the goal of increasing shareholder value. In this context, key managerial strategies such as prudent capital structure management can reduce unnecessary capital expenses while still accomplishing the company's purpose (Goyal, 2013).

Investing gives rise to the commonly known term "capital structure", which is referred to as the debt and equity mix of the firm. This attention to capital management is justified since a number of studies have sought to examine this relationship within this context while varying in the geographical location, the industry, and the methods used. For instance, several studies found a highly significant relationship between capital structure and company performance as predicted by trade-off and agency cost theories (e.g., (Abor, 2005; Berger & Di Patti, 2006; Dalci, 2018; Ghosh, 2007; Hadlock & James, 2002; Roden & Lewellen, 1995; Taani, 2013; Taub, 1975)). On the other hand, several studies reported a negative relationship between capital structure and firm performance (Ahmed Sheikh & Wang, 2012; Cai & Zhang, 2011; Fernández-Temprano & Tejerina-Gaite, 2020; Gleason, Mathur, & Mathur, 2000; Kumar & Singh, 2013; McConnell & Servaes, 1995; Mishra & Kapil, 2017; Plalniappan, 2017; Vithessonthi & Tongurai, 2015; Yasser, Mamun, & Aftab, 2017; Zeitun & Tian, 2014).

Although many researchers have attempted to examine the relationship between capital structure and the performance of the firm, previous studies usually disregard the particular context of the energy sector in developing economies like Saudi Arabia. In Saudi Arabia, the energy sector plays an important role as it supports the growth of the economy, generates funds, and provides job opportunities. Saudi Arabia's economic system acknowledges its dependence on the energy sector to generate revenue and allocate it for development (Aljaaidi & Bagais, 2020). The energy sector is of utmost importance in the country's economy as it leads the world in crude oil production and exportation (Ahmed, 2021). Centrality of reliance on the energy sector indicates its pivotal importance in the economy of the country (Kumar & Singh, 2013). Additionally, the energy sector also provides job opportunities for the people of Saudi Arabia and hence in the economy and development of the society as a whole (Assenga, Aly, & Hussainey, 2018). There are a variety of job opportunities ranging from low-skill employment to highly skilled professional employment in both upstream and downstream activities such as exploration, drilling, production, refining, and distribution as well (Jermias, 2007). It also underlines the importance of the energy sector in the government's attempts to improve the quality of life as well as to lower the employment level (Fernández-Temprano & Tejerina-Gaite, 2020).

The energy sector in Saudi Arabia represents a profitable sector for both local and international investors wishing to invest in infrastructure, technology, and even innovation (Ahmed Sheikh & Wang, 2012). This can be attributed to the strategic positioning of Saudi Arabia as one of the leading oil producers as well as making progress towards varying its energy sources and fostering sustainable growth and economic change (Zeitun & Tian, 2014). Even as attempts have been made to change the structure of the economy, the energy sector in Saudi Arabia is still an integral part of the economic picture and hence plays a major role as a driver of growth and diversification. This remains obvious (Hussein, 2020). The Vision 2030 program of the government aims to enhance non-oil industries, but the energy sector is still the bedrock of the economy (Sareh & Reja, 2020). As an active participant in the global energy market, it is important to highlight at this point the need for Saudi Arabia's capability to alter with the changing nature of the market (Bagais & Aljaaidi, 2020). The position of the sector as a leading player in the world energy market, with developments that have global repercussions for oil prices, supply matrix, and world order stabilization, attests to the importance of the sector as one of the bedrocks of sustainable development and diversification (Haniffa & Hudaib, 2006; Shaik, Ali, & Alanazi, 2023). As a result, it is important to note the specifics of the energy sector as they may be relevant to policymakers, investors, and businesses in attempting to position themselves in the economy of Saudi Arabia (Twairesh, 2014).

Research without particular emphasis on emerging markets has also been common among such studies since it does not offer a clear picture of issues such as debt and regulations. The majority of past research designs have not well integrated composite debt and performance measures for the industry. Regarding the aforementioned subject, there has been a tendency to overly rely on single figures, such as the debt-equity ratio and ROA, which often have narrow definitions. These simplistic strategies are not likely to properly assess the financial performance of such industries that require substantial capital and have significant swings, such as the energy sector.

It is noteworthy that research on the effect of debt on the performance of firms in Saudi Arabia is quite scarce; it's for this reason that exploring with the lens of indebtedness is quite valuable. Addressing this subject will help scholars understand the economics of leveraging and the impact of debt on the operations of firms in Saudi Arabia, which in turn supports the economic development of the nation. This study also has practical relevance as it provides clear guidelines for policymakers, government representatives, regulators, and creditors about the pros and cons of debt financing, which in turn helps develop better policies and regulations that promote economic stability and growth. The exploration of the field of debt and corporate performance in Saudi Arabia holds enormous strategic relevance for corporate management in the country. This would also allow companies to change how they use leverage, which could lead to better corporate financial strategies, risk management, capital structure, investment management, competitive advantage, and long-term success in the market. In addition, studies on this matter might increase the attractiveness of Saudi Arabia as a place for investments. Domestic and foreign investors look for evidence that will show them the reasons for the excellent performance of the corporations before making any investments. Such research can provide confidence to the investors and help in capital inflows to the country by providing empirical evidence on the debt performance relationship, thus helping the nation's economic growth and development positively.

Research on the impact of debt on the performance of the concerned corporation can produce several benefits, most importantly concerning debt literacy and education in the Kingdom of Saudi Arabia. Such studies therefore allow publishing to a wider audience the dramatic consequences of debt, which are vital to the operational choices of organizations, investors, and decision-makers. Furthermore, such studies might also support the wider agenda of the Kingdom of Saudi Arabia in seeking to diversify the economy. In the effort of a nation to reduce its reliance on oil revenue and grow non-oil activities, it becomes more and more important to understand how companies in these industries can employ borrowing techniques as capital in growing and innovating. That being said, looking into how debt affects the performance of businesses is likely to help the country reach its goal of making its economy more stable and diverse.

This study aims to redress such gaps by analyzing the Saudi Arabian energy sector within the time frame of 2021 through 2023, employing a composite metric of debt policy and performance. By using a more thorough analysis method, this study shows that there is a positive relationship between the amount of debt and the financial performance of the energy sector. This is essential information for corporate leaders in emerging economies.

This paper organizes the remaining sections as follows: Section two reviews both theoretical and empirical literature and develops the testable hypothesis; section three discusses the research method; part four highlights the analysis and empirical results, and section five concludes the paper.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Management plays a significant role in choosing the optimal capital structure for companies to maximize their value. According to Amzi, Ispriyahadi, and Kholil (2024) evaluating a company's level of success is essential as it influences how the organization's management views the efficiency of future leadership. The increasing debt value suggests that the company has a solid long-term investment strategy, making it attractive to investors looking to acquire shares due to the perceived profit potential and anticipation of a substantial return on investment (Andira, Imronudin, & Achmad, 2024). As Tailab (2014) states, leverage, which forms the foundation of capital structure, is akin to debt-based financing. In recent times, debt financing has become increasingly popular among companies seeking additional funding for growth and investment purposes (Gajdosikova & Pavić Kramarić, 2023). According to Azhagaiah and Gavoury (2011) capital structure is defined as a company's approach to funding its operations, comprising varying amounts of debt and equity. To achieve optimal outcomes, management must make decisions regarding a company's financial structure.

While a number of studies have explored the impact of capital structure on firm performance, the findings are far from conclusive. For instance, various studies reported a significant positive relationship between capital structure and firm performance using the predictions of trade-off and agency cost theories (e.g., (Abor, 2005; Berger & Di Patti, 2006; Dalci, 2018; Ghosh, 2007; Hadlock & James, 2002; Roden & Lewellen, 1995; Taani, 2013; Taub, 1975)). On the other hand, capital structure and firm performance were found to have a negative relationship in some studies (Ahmed Sheikh & Wang, 2012; Cai & Zhang, 2011; Fernández-Temprano & Tejerina-Gaite, 2020; Gleason et al., 2000; Kumar & Singh, 2013; McConnell & Servaes, 1995; Mishra & Kapil, 2017; Plalniappan, 2017; Vithessonthi & Tongurai, 2015; Yasser et al., 2017). But these studies were mostly about different types of markets and didn't look at the problems that businesses in emerging economies face, like how hard it is to get debt financing and how different the rules are for running businesses. These different results show that the link between debt and performance depends on a lot of factors. This means that areas like Saudi Arabia's energy sector that haven't been studied much need more research. In particular, several researchers have highlighted the absence of studies on the influence of capital structure on corporate performance in the Arab World; in particular, little to no attention has been paid, for example, to whether the relationship between capital structure and business performance is stable in Saudi Arabia (Jadah, Hameed, & Al-Husainy, 2020; Taani, 2013). Moreover, the methodologies employed in prior studies are subject to critique. Many early works (e.g., (Berger & Di Patti, 2006; Ghosh, 2007)) relied on single debt-to-equity ratios, which may oversimplify the multifaceted nature of debt. Later studies by Dalci (2018) and Zeitun and Tian (2014) attempted to address this by incorporating more sophisticated measures of debt and performance, yet the lack of sector-specific analyses remains a significant limitation. This study contributes to the literature by focusing specifically on the Saudi energy sector and developing composite debt and performance measures that account for the unique financial dynamics of this industry.

But because rules and laws aren't always the same in different countries and industries, this study builds on the models of earlier research by adding the following testable hypothesis directly to the context of Saudi Arabia:

H_1: There is a relationship between debt policy score and performance score.

3. DATA AND METHODOLOGY

The research method of the study highlights the sample and data collection, variable measurements, and the study's model. The association between the debt policy score and financial performance score was examined using the ordinary least squares regression model.

3.1. Data Source and Collection

This study utilizes data from the financial statements of publicly listed energy companies in Saudi Arabia, obtained from the Saudi Stock Exchange (Tadawul) over the period from 2021 to 2023. We initially identified 25 energy companies listed on the Tadawul Exchange. After filtering for companies with complete financial data for the variables of interest, a final sample of 18 companies was selected for analysis. The data include key financial indicators such as debt levels, revenue, assets, and profitability measures, which were manually extracted from the companies' annual reports.

3.2. Sample and Variables

The sample consists of 18 firm-year observations from companies in the energy sector listed on the Tadawul Exchange. The dependent variable Financial Performance Score (FPS) was derived after taking into account four ratios, namely return on assets, return on equity, return on invested capital, and return on common equity. These measures were combined to form a composite performance indicator. In order to determine the overall strength of the performance evaluation scale, an aggregate value that was termed performance evaluation score (FPS) was also computed. It is useful to finish off the evaluation of a company by including a discounting measure, which is obtained

by calculation of a performance index. In previous works, including, it is emphasized how important it is to create a composite indicator of some specific phenomenon in order to measure its components from different angles (Agrawal & Knoeber, 1996; Beneish, 1997; O'Sullivan, Percy, & Stewart, 2008; Onesti, Monaco, & Palumbo, 2022; Piotroski, 2000; Soliman, Ragab, & Eldin, 2014; Ward, Brown, & Rodriguez, 2009).

The dependent variable in this study is the Debt Policy Score (DPS), which indicates profit level within consideration of incurred indebtedness as targeted by the companies' debt policy. It consists of various ratio forms of the firm's debt financing measure, known as the Debt Analysis Score (DAS) or Interest and Debt Coverage Score (IDCS).

These factors, in addition to the Capital Ratio, encompass equity and/or non-interest-bearing (total assets), which are used to calculate the debt-equity and total capital ratios. The short-term and long-term debt are compared to the short-term and long-term assets. The different current and liquidity ratios are composed of easy availability, including Cash & Short-Term Investments/Sales, Cash & Short-Term Investments/Current Liabilities, Total Debt/Equity, Total Debt/EBITDA, Net Debt/EBITDA, and Total Debt/EBITDA-Capex. We calculate a weighted aggregate index, also known as the Debt Aggregate Score (DAS), to combine all components of the debt policy effectiveness.

The previous studies did not take into account the characteristics of energy companies, which could influence debt repayments. Other authors have consequently combined measurements by selecting and calculating the indicators that best applied anticipation and would support their study's conclusions (Abor, 2005, 2007; Aljaaidi & Bagais, 2020; Bagais, Aljaaidi, & Alothman, 2021).

3.3. Model

The relationship between the debt policy score and financial performance score was examined using the Pooled Ordinary Least Squares (OLS) model as follows:

$$FPS = \beta_0 + \beta_1 DAS + \beta_2 IDCS + \beta_3 TR + e \quad (1)$$

Where:

FPS = Financial performance score, a composite score that includes return on assets (ROA), return on equity (ROE), return on total capital (ROC), and return on common equity (ROCE).

DAS = Debt analysis score, a composite score of Total Debt/Equity, Total Debt/Capital, Long-Term Debt/Equity, Long-Term Debt/Capital, and Total Liabilities/Total Assets.

IDCS = Interest and debt coverage score, a composite score of Current Ratio, Quick Ratio, EBIT/Interest Expense, EBITDA/Interest Expense, (EBITDA-Capex)/Interest Expense, Total Debt/EBITDA, Net Debt/EBITDA, Total Debt/(EBITDA-Capex), and Net Debt/(EBITDA-capex).

TR = Firm size, logarithm for total revenues.

e = Error term.

3.4. Control Variable

Recent studies have shown that there is a relationship between a company's success and its size. The log of a company's annual revenue is the most common way to figure out how big it is. This number is used in the model to take into account how size affects performance evaluation based on the variable financial performance score (Aljaaidi & Bagais, 2020; Aljaaidi & Hassan, 2020; Bagais & Aljaaidi, 2020).

4. ANALYSIS AND RESULTS

4.1. Descriptive Statistics and Correlation Analysis

Table 1 displays the descriptive statistics for the dependent and independent variables used in the regression.

Table 1. Descriptive statistics.

Variables	(n= 18)			
	Mean	Min.	Max.	Std. dev.
Panel A: DV (FPS)				
Return on assets (%)	4.68	-2.18	15.90	4.63
Return on equity (%)	14.0	-36.37	42.41	17.88
Return on total capital (%)	5.65	-2.78	19.45	5.73
Return on common equity (%)	13.90	-36.37	42.41	17.91
Panel B: Hypothesized IVs				
Debt analysis (DAS)				
Total debt/Equity (%)	675.1	33.10	3369	1162.4
Total debt/Capital (%)	169.9	24.90	771	272.3
Long-term debt/Equity (%)	564.9	20.00	2864	997.6
Long-term debt/Capital (%)	109.8	15.10	655	195.6
Total liabilities/Total assets (%)	186.7	35.90	835	294.7
Interest & debt coverage (IDCS)				
Current ratio (%)	1.50	0.50	3.5	1.05
Quick ratio (%)	1.21	0.30	3.2	.957
EBIT/Interest expense (x)	6.84	0.00	29.3	8.49
EBITDA/Interest expense (x)	10.67	0.40	34.1	10.73
(EBITDA-capex)/Interest expense (x)	9.72	0.20	33.3	11.47
Total debt/EBITDA (x)	7.10	0.90	42.0	9.58
Net debt/EBITDA (x)	6.77	0.10	40.5	9.61
Total debt/(EBITDA-Capex) (x)	18.05	0.90	143.6	38.21
Net debt/(EBITDA-Capex) (x)	17.77	0.10	135.4	37.48
Panel C: Control variables				
Total revenues (TR) (m)	13935.9	1514.2	55952.5	16582.48

Note: DV is an abbreviation of the dependent variable; IV is an abbreviation of the independent variable.

Table 1 provides an overview of the descriptive statistics for both independent and dependent variables. Panel A depicts the measures used to construct the composite score of financial performance, which include the average return on assets (ROA), return on equity (ROE), return on total capital (ROC), and return on common equity (ROCE) at 4.6772%, 14.0011%, 5.6494%, and 13.8917%, respectively. Panel B shows the factors that were used to create the overall score for debt policy. These are the averages for Total Debt/Capital, Long-Term Debt/Equity, Long-Term Debt/Capital, and Total Liabilities/Total Assets, which are 675.0944%, 169.8944%, 564.8944%, and 109.7389%, respectively. Additionally, the mean firm size was 13935.9000m.

As shown in Table 2, Pearson's correlation analysis was performed to check for the absence of multicollinearity.

Table 2. Correlation matrix.

Variables	DAS	IDCS	TR
DAS	1		
IDCS	-0.332*	1	
TR	0.204*	-0.513**	1

Note: * Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Upon examining the Pearson correlation coefficients for the independent variables, we found that they were all equal to or less than -0.513. This means that there was no multicollinearity problem in this study (Kennedy, 2008; Tabachnick & Fidell, 1996). Furthermore, we found the correlation coefficients to be less than 0.8 and 0.9, which further confirms the absence of multicollinearity in this study.

The Principal Component Analysis (PCA) using the varimax rotation is applied to combine the indicators of DAS, IDAS, and FPS.

Table 3. Principal component and reliability analyses on DA, IDC, and PF.

Variables (DAS)	Variables (IDCS)	Variables (PFS)	Factor loadings (*DAS*)	Factor loadings (*IDCS*)	Factor loadings (*PFS*)
DA1	IDC1	PF1	0.995	0.874	0.948
DA2	IDC2	PF2	0.993	0.858	0.952
DA3	IDC3	PF3	0.994	0.904	0.954
DA4	IDC4	PF4	0.876	0.870	0.952
DA5	IDC5	--	0.992	0.889	0.948
--	IDC6	--	--	-0.879	--
--	IDC7	--	--	-0.891	--
--	IDC8	--	--	-0.875	--
--	IDC9	--	--	-0.903	--
Eigenvalue			4.714	7.013	3.621
% of variance			94.272	77.925	90.515
Kaiser-Meyer-Olkin (KMO)			0.795	0.600	0.608
Bartlett's test of sphericity: Approx chi-square			309.934	218.924	283.570
df			10	36	6
Sig			0.000	0.000	0.000

In Table 3, the values of the Kaiser-Meyer-Olkin procedure for DAS, IDCS, and FPS were (.795), (.600), and (.608), respectively. Such values exceeded the significant cut-off level of .50 (Hair, Black, Babin, & Anderson, 2010). Also, all scores of the subjects were subjected to the Bartlett test, and p-value results were all 0.000 for DAS, IDCS, and FPS. The assumption also suggests that the factor analysis requirements were satisfied. The PCA also showed that the five DAS indicators—Total Debt/Equity, Total Debt/Capital, Long-Term Debt/Equity, Long-Term Debt/Capital, and Total Liabilities/Total Assets—were combined into one score for the debt analysis. The IDCS's nine indicators—Current Ratio, Quick Ratio, EBIT/Interest Expense, EBITDA/Interest Expense, (EBITDA-Capex)/Interest Expense, Total Debt/EBITDA, Net Debt/EBITDA, Total Debt/(EBITDA-Capex), and Net Debt/(EBITDA-Capex)—were also combined into one score for the interest and debt coverage. Also, the four indicators of the FPS (return on assets (ROA), return on equity (ROE), return on total capital (ROC), and return on common equity (ROCE)) were incorporated into one component that represented the financial performance score. This implies that each of the scores tested, i.e., DAS, IDAS, and FPS, has a primary orientation. DAS captures the same underlying construct of debt analysis; IDAS captures the same underlying construct of interest and debt coverage; and FPS captures the same underlying construct of financial performance. Table 3 shows the results. The latent root criterion for the number of factors to extract says that for DAS (4.714), IDAS (7.013), and FPS (3.621), there is one component loading to be extracted with an eigenvalue greater than one. The factors captured 94.272%, 77.925%, and 90.515% of the total variance in the variables for DAS, IDAS, and FPS, respectively.

4.2. Regression Results

The results of the pooled ordinary least squares regression used to test the link between debt policy scores and financial performance scores can be seen in Table 4.

Table 4. OLS analysis results.

Variables	Expected sign	Coef.	*t*	*P*> |t|
Experimental variables				
DAS	+	0.298	2.005	**0.085**
IDCS	+	1.136	6.591	**0.000**
Control variables				
TR		0.443	2.707	**0.030**
Adjusted R^2	0.804			
Model *F*-stat.	14.682			
P-value	0.002			
No. of observations	18			

Note: Bold = Significance at 1%, 5% and 10%.

The results presented in Table 4 indicate that the F-value is statistically significant at the 1% level, suggesting that the overall model can be considered reliable. An adjusted R^2 value of 0.804 signifies that the FPS model effectively explains 80.4% of the total variance in the financial performance score. This suggests that the model has excellent explanatory power and a great fit. There was a strong link between DAS and FPS ($t = 2.005$; $p = 0.085$) and a very strong link between IDCS and FPS ($t = 6.591$; $p = 0.000$) in Table 4. This supports both the trade-off theory and the agency cost theory. These results are similar to Berger and Di Patti (2006) research in developed markets, which shows that companies use debt to improve their performance in exchange for tax breaks and rules from debt holders. These studies, which mostly looked at industries that need a lot of capital, have always said that as a company's debt level rises, so does its ability to use different strategies to make more money, especially in mature industries. Our findings support that this positive relationship still applies in the case of the Saudi Arabian energy sector, which is considered an emerging market where management of debt is key for project financing.

Still, this study's findings are different from those of other studies done in other emerging markets, like (Assenga et al., 2018) and India (Mishra & Kapil, 2017) which found a negative link between debt moderates' variables and firms' performance. Most likely, scalars to explain this difference could be the prevailing vigorous economic and industry factors inherent in the energy sector of Saudi Arabia. Unlike in the manufacturing or service sectors, which are leaned on in other emerging economies, the energy industry is very capital-oriented with huge capitals that can attract more debt finance because of consistent revenue streams and government backing. In this way, it means that the sectoral context can greatly change the relationship between debt and performance. This adds to existing theories by giving them an industry perspective.

On the other hand, whereas Dalci (2018) revealed that emerging market companies with high debt are not very operative, our case study results conclude that energy companies in Saudi Arabia have been optimizing the level of debt to maximize performance. This may be due to the fact that the country is actively participating in the field and the economy is in excellent shape, enabling them to acquire more readily available loans, although they do not engage in a high level of financial risks that are normally associated with high loan uptake in such environments. The importance of our work in illustrating how debt and company performance are correlated is that it provides a composite measure of debt policy. Our work captures the various dimensions of debt, a crucial aspect in capital-intensive industries. In the past, researchers have mostly used one ratio, like the debt-to-equity ratio (Abor, 2005; Ghosh, 2007) which tends to give companies' debt structures too much complexity. With the help of a composite debt score, we can attempt to determine how certain parameters of debt, specifically short-term and long-term debt, interact and determine performance.

Furthermore, it is important to note that this particular study adds to the literature on energy economics by even more taking into account the Saudi Arabian sector, which has been overlooked before despite being of economic relevance. As far as the existing literature is concerned, many studies have attempted to evaluate how the incurring of debt affects the firm's performance in emerging economies, yet none have focused on the peculiarities of the energy sector. To close this gap, we not only present new empirical findings from a region that hasn't been studied much, but we also show from the economy team's point of view why these kinds of studies are needed in a certain area.

5. CONCLUDING REMARKS

5.1. Conclusion

This study investigates the relationship between debt and the performance of energy companies in Saudi Arabia from 2021 to 2023. The investigation utilized a manual data collection method from the Saudi Stock Exchange, resulting in a final sample size of 18 observations. The findings reveal a statistically significant positive correlation between debt and performance, indicating that higher debt levels correspond to better performance outcomes for Saudi energy firms. Also, these results are consistent with the predictions of adequacy cost theory and trade-off theory. Based on trade-off theory, companies weigh the pros and cons of debt financing. The pros include tax breaks

and more equity. The cons include the risk of bankruptcy and the costs of being in financial distress. There is a positive relationship between debt and performance, indicating that the energy companies in Saudi Arabia purposely move towards debt financing for the intention of enhancing their performance. The agency cost theory assumes that debt can resolve agency problems by inducing discipline as well as motivation between managers and stockholders. In addition, the analysis shows that debt is positively related to performance, suggesting that credit plays the role of 'watchdog,' controlling the actions of managers and thus enhancing the results obtained from their managerial efforts.

The result of this study is in agreement with the findings of other related studies that have adapted similar theories to estimate the relationship between debt and performance. Earlier studies have shown a beneficial link between corporate borrowing and its performance in different settings. For example, Tailab (2014); Azhagaiah and Gavoury (2011); Rajan and Zingales (1995) and Kumar and Singh (2013) revealed this relationship. Furthermore, the findings of this study align with those of Salim and Yadav (2012); Assenga et al. (2018) and Bagais and Aljaaidi (2020) who stress the advantages of debt for company performance in more specific industries and in developing economies.

5.2. Implications

Theoretically, our study adds to the use of agency cost and trade-off theories in new areas, such as the energy sector of Saudi Arabia. There is evidence that borrowed funds have a positive effect on the productivity of companies in industries that require a lot of capital. Other studies, such as Assenga et al. (2018) and Zeitun and Tian (2014) have attempted to study these trends in emerging markets, yielding mixed results. However, our findings suggest that the energy sector stands out due to its stable income streams and unique financing requirements. In terms of what this means in real life, the study's results show that Saudi energy sector corporate managers can use leverage to help the company do better. With the help of debt financing, energy companies are able to keep out a number of huge investment projects that would not have been realized through equity financing alone, which spurs growth and profitability levels. There is a need for managers to maintain their moderate debt levels so as to enhance their capital structure recovery without making the firms prone to substantial financial risks. This is because high debt levels would lead to high financial risk. Investors, on the other hand, will be in a position of applying the results of this study in making better judgments regarding the viability of energy firms. Their investment returns may be lower risk and more stable than firms with a volatile and poorly managed debt structure. The relationship between debt and performance above is positive, which means there is a need to consider both short-term and long-term debts.

5.3. Policy Implications

This study offers a number of policy recommendations in the financial and energy sectors of the Kingdom of Saudi Arabia in an attempt to optimize the leverage potential of the firm. First, the study recommends enhancing the provision of low-cost debt finance by collaborating with financial institutions, thereby making borrowing more affordable for the energy sector. Second, debt management within the context of the sector in focus should be designed by the regulatory organs so as to ensure appropriate proportions of equity and debt. Third, the regulatory organs should adequately use tax policy to promote proper debt levels among firms. Fourth, it is necessary to implement computers and software programs that warn against imbalances that can lead to financial distress and take measures if this is the case. There are also suggestions that the government and private institutions should work together to help energy-generating companies get certain types of financing, like long-term loans and green bonds, which are needed for energy projects. In order to promote better debt management practices, focus should be directed to debt literacy training programs targeted at energy companies, more so the small ones. Finally, it is said that being clear about how much debt companies that want to get into the market have can boost investors' confidence. This lowers the risk of market volatility, which is important for making the energy financial market more personalized. The overall suggestions are targeted at creating less volatile financial conditions, less debt, and faster growth of the energy industry.

5.4. Limitations

This study is subject to several limitations. The sample size of 18 observations, while comprehensive for the scope of this research, may limit the generalizability of the findings to all companies in Saudi Arabia. Additionally, the manual data collection method, while thorough, might be susceptible to human error or omissions. The study period from 2021 to 2023 also represents a relatively short timeframe, which may not capture longer-term trends or the impact of economic cycles on the debt-performance relationship.

5.5. Future Research Suggestions

By examining how different types of debt, such as fixed-rate versus floating-rate debt, affect performance, further research could build on these findings. In addition, it would be possible to examine how the connection between the debt of the firms and their performance is affected by economic cycles and by oil peripheral price alterations in the energy sector. It would also be beneficial to study firms over a longer period of time to see how enduring these debt strategies are, considering the shifts in the environment. Researching the effect of industry variables, the state of the economy, or political constraints on the business debt-to-performance relationship may also be interesting. Cross-sectional studies are likely to be most useful by explaining the affected market condition changes at the time or the affected industrial development in the periods to come. Future research may also focus on the debt structure and specific measures of firm performance, potentially contributing to a more comprehensive understanding of the relationship. Increasing sample numbers and introducing additional datasets in future studies may also increase the strength and generality of the findings.

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REFERENCES

Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *The Journal of Risk Finance*, *6*(5), 438-445. https://doi.org/10.1108/15265940510633505

Abor, J. (2007). Debt policy and performance of SMEs: Evidence from Ghanaian and South African firms. *The Journal of Risk Finance*, *8*(4), 364-379. https://doi.org/10.1108/15265940710777315

Agrawal, A., & Knoeber, C. R. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. *Journal of Financial and Quantitative Analysis*, *31*(3), 377-397. https://doi.org/10.2307/2331397

Ahmed, I. E. S. (2021). The determinants of capital structure of the GCC oil and gas companies. *International Journal of Energy Economics and Policy*, *11*(6), 512-518.

Ahmed Sheikh, N., & Wang, Z. (2012). Effects of corporate governance on capital structure: Empirical evidence from Pakistan. *Corporate Governance: The International Journal of Business in Society*, *12*(5), 629-641. https://doi.org/10.1108/14720701211275569

Aljaaidi, K., & Bagais, O. (2020). Days inventory outstanding and firm performance: Empirical investigation from manufacturers. *Accounting*, *6*(6), 1111-1116.

Aljaaidi, K. S., & Bagais, O. A. (2020). Debt finance, inventory management and economic value of energy industry in Saudi Arabia: Empirical investigation. *International Journal of Energy Economics and Policy*, *10*(6), 347-353.

Aljaaidi, K. S., & Hassan, W. K. (2020). Energy industry performance in Saudi Arabia: Empirical evidence. *International Journal of Energy Economics and Policy*, *10*(4), 271-277.

Amzi, J., Ispriyahadi, H., & Kholil, K. (2024). The effect of corporate governance, company growth and debt policy on financial performance in technology sector companies listed on the Indonesian stock exchange for the period 2017-2021. *Jurnal Ekonomi*, *13*(01), 2612-2624.

Andira, N. A., Imronudin, I., & Achmad, N. (2024). The influence of debt policy, dividend policy and profitability on the value of manufacturing companies in Indonesia for the 2018-2022. *Jurnal Mantik*, *7*(4), 3442-3450.

Assenga, M. P., Aly, D., & Hussainey, K. (2018). The impact of board characteristics on the financial performance of Tanzanian firms. *Corporate Governance: The International Journal of Business in Society*, *18*(6), 1089-1106.

Azhagaiah, R., & Gavoury, C. (2011). The impact of capital structure on profitability with special reference to IT industry in India. *Managing Global Transitions*, *9*(4), 371-392.

Bagais, O., & Aljaaidi, K. (2020). Corporate governance attributes and firm performance in Saudi Arabia. *Accounting*, *6*(6), 923-930.

Bagais, O., Aljaaidi, K. S., & Alothman, A. (2021). An empirical investigation of the associations of short and long debt policies with economic values of energy sector. *International Journal of Energy Economics and Policy*, *11*(1), 249-254. https://doi.org/10.32479/ijeep.10498

Beneish, M. D. (1997). Detecting GAAP violation: Implications for assessing earnings management among firms with extreme financial performance. *Journal of Accounting and Public Policy*, *16*(3), 271-309. https://doi.org/10.1016/S0278-4254(97)00023-9

Berger, A. N., & Di Patti, E. B. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal of Banking & Finance*, *30*(4), 1065-1102. https://doi.org/10.1016/j.jbankfin.2005.05.015

Cai, J., & Zhang, Z. (2011). Leverage change, debt overhang, and stock prices. *Journal of Corporate Finance*, *17*(3), 391-402.

Dalci, I. (2018). Impact of financial leverage on profitability of listed manufacturing firms in China. *Pacific Accounting Review*, *30*(4), 410-432. https://doi.org/10.1108/PAR-01-2018-0008

Fernández-Temprano, M. A., & Tejerina-Gaite, F. (2020). Types of director, board diversity and firm performance. *Corporate Governance: The International Journal of Business in Society*, *20*(2), 324-342. https://doi.org/10.1108/cg-03-2019-0096

Gajdosikova, D., & Pavić Kramarić, T. (2023). Debt structure and its impact on financial performance: An empirical study on the enterprises operating in the Visegrad group countries. *Ekonomicko-Manazerske Spektrum*, *17*(2), 107-124.

Ghosh, S. (2007). Leverage, managerial monitoring and firm valuation: A simultaneous equation approach. *Research in Economics*, *61*(2), 84-98. https://doi.org/10.1016/j.rie.2007.03.001

Gleason, K. C., Mathur, L. K., & Mathur, I. (2000). The interrelationship between culture, capital structure, and performance: Evidence from European retailers. *Journal of Business Research*, *50*(2), 185-191. https://doi.org/10.1016/S0148-2963(99)00031-4

Goyal, A. (2013). Impact of capital structure on performance of listed public sector banks in India. *International Journal of Business and Management Invention*, *2*(10), 35-43.

Gul, S., & CHO, H.-R. (2019). Capital structure and default risk: Evidence from Korean stock market. *The Journal of Asian Finance, Economics and Business*, *6*(2), 15-24. https://doi.org/10.13106/jafeb.2019.vol6.no2.15

Hadlock, C. J., & James, C. M. (2002). Do banks provide financial slack? *The Journal of Finance*, *57*(3), 1383-1419.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). New York: Pearson.

Haniffa, R., & Hudaib, M. (2006). Corporate governance structure and performance of Malaysian listed companies. *Journal of Business Finance & Accounting*, *33*(7-8), 1034-1062. https://doi.org/10.1111/j.1468-5957.2006.00594.x

Hussein, A. (2020). The influence of capital structure on company performance: Evidence from Egypt. *Corporate Ownership & Control*, *18*(1), 8-21. https://doi.org/10.22495/cocv18i1art1

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), 122-130. https://doi.org/10.21511/imfi.17(3).2020.10

Jermias, J. (2007). The effects of corporate governance on the relationship between innovative efforts and performance. *European Accounting Review*, *16*(4), 827-854.

Kennedy, P. (2008). *A guide to econometrics* (6th ed.). Hoboken, NJ: John Wiley & Sons.

Kumar, N., & Singh, J. P. (2013). Effect of board size and promoter ownership on firm value: Some empirical findings from India. *Corporate Governance: The International Journal of Business in Society*, *13*(1), 88-98. https://doi.org/10.1108/14720701311302431

McConnell, J. J., & Servaes, H. (1995). Equity ownership and the two faces of debt. *Journal of Financial Economics*, *39*(1), 131-157. https://doi.org/10.1016/0304-405X(95)00824-X

Mishra, R., & Kapil, S. (2017). Effect of ownership structure and board structure on firm value: Evidence from India. *Corporate Governance: The International Journal of Business in Society*, *17*(4), 700-726. https://doi.org/10.1108/cg-03-2016-0059

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, *48*(3), 261-297.

O'Sullivan, M., Percy, M., & Stewart, J. (2008). Australian evidence on corporate governance attributes and their association with forward-looking information in the annual report. *Journal of Management & Governance*, *12*, 5-35.

Onesti, G., Monaco, E., & Palumbo, R. (2022). Assessing the Italian innovative start-ups performance with a composite index. *Administrative Sciences*, *12*(4), 189.

Piotroski, J. D. (2000). Value investing: The use of historical financial statement information to separate winners from losers. *Journal of Accounting Research*, *38*(Supplement), 1-41.

Plalniappan, R. (2017). Capital structure and firm performance: Empirical evidence from India. *Asia Pacific Journal of Research in Business Management*, *8*(2), 35-50.

Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, *50*(5), 1421-1460.

Roden, D. M., & Lewellen, W. G. (1995). Corporate capital structure decisions: Evidence from leveraged buyouts. *Financial Management*, *24*(2), 76-87.

Salim, M., & Yadav, R. (2012). Capital structure and firm performance: Evidence from Malaysian listed companies. *Procedia-Social and Behavioral Sciences*, *65*, 156-166. https://doi.org/10.1016/j.sbspro.2012.11.105

Sareh, F. H., & Reja, T. K. (2020). The impact of the capital structure on the financial performance of Iraq private banks for the period 2011-2017. *AL-Anbar University Journal of Economic and Administration Sciences*, *12*(29), 1-15.

Shaik, A. R., Ali, A., & Alanazi, I. D. (2023). Working capital and financial performance in the energy sector of Saudi Arabia: Moderating role of leverage. *International Journal of Energy Economics and Policy*, *13*(3), 158-163.

Soliman, M. M., Ragab, A. A., & Eldin, M. B. (2014). Board composition, ownership structure and voluntary disclosure: An empirical study of the listed companies in Egypt. *Corporate Ownership & Control*, *11*(2-4), 415-426. https://doi.org/10.22495/cocv11i2c4p6

Taani, K. (2013). Capital structure effects on banking performance: A case study of Jordan. *International Journal of Economics, Finance and Management Sciences*, *1*(5), 227-233. https://doi.org/10.11648/j.ijefm.20130105.13

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). New York: Harper Collins.

Tailab, M. (2014). The effect of capital structure on profitability of energy American firms. *International Journal of Business and Management Invention*, *3*(12), 54-61.

Taub, A. J. (1975). Determinants of the firm's capital structure. *The Review of Economics and Statistics*, *57*(4), 410-416.

Twairesh, A. E. M. (2014). The impact of capital structure on firm's performance: Evidence from Saudi Arabia. *Journal of Applied Finance and Banking*, *4*(2), 183-191.

Vithessonthi, C., & Tongurai, J. (2015). The effect of firm size on the leverage–performance relationship during the financial crisis of 2007–2009. *Journal of Multinational Financial Management*, *29*, 1-29. https://doi.org/10.1016/j.mulfin.2014.11.001

Ward, A. J., Brown, J. A., & Rodriguez, D. (2009). Governance bundles, firm performance, and the substitutability and complementarity of governance mechanisms. *Corporate Governance: An International Review*, *17*(5), 646-660.

Yasser, Q. R., Mamun, A. A., & Aftab, M. (2017). Impact of board structure on firm performance: Evidence from an emerging economy. *Journal of Asia Business Studies, 11*(2), 210-228.

Zeitun, R., & Tian, G. G. (2014). Capital structure and corporate performance: Evidence from Jordan. *Australasian Accounting, Business and Finance Journal, 8*(1), 40-61.