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Factors Influencing The Financial Composition Of Moroccan Companies Listed On The Stock Exchange In The Agri-Food, Real Estate, And Hotel Sectors

Les Facteurs De La Composition Financiere Des Entreprises Marocaines Cotee En Bourse : Secteurs Agroalimentaires, Immobilieres Et Hoteliers

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Abstract:

Our research primarily aims to explain the financial composition of companies through an empirical study that seeks to examine how publicly traded companies in the agri-food, real estate, and hospitality sectors in Morocco manage their debt levels between 2016-2019 by testing two theories: Pecking Order Theory (POT) and Trade Off Theory (TOT). The financial composition of a company refers to how it allocates the use of funds between debts contracted with financial institutions and equity. Analyzing this financial composition through the balance sheet allows for a better appreciation and understanding of how companies can finance their operations and the various approaches used for this purpose. In other words, it highlights the relationship between debts and equity. This composition is not static and can vary based on the financial constraints related to the company's activities and the investment decisions made by management. The sample for this study consists of 15 companies from the agri-food and real estate/hospitality sectors listed on the stock exchange. To better guide our work, we chose two models to address our main issue. The first model, through an estimation using panel data econometrics, we selected a dependent variable (_d) and two explanatory variables (D_Dt-1 and DEF). The findings from this work show that the financial structure behavior of these companies is mixed, meaning that Moroccan companies listed on the stock exchange aim to achieve an optimal debt ratio and prioritize their financing methods.

Keywords: Financial Structure, Pecking Order Theory, Trade-Off Theory, Debt.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

Résumé :

Notre recherche a pour objectif principal d'expliquer la composition financière des entreprises à travers une étude empirique qui vise à étudier la manière dont les entreprises cotées en Bourse appartenant aux secteurs agroalimentaires, immobilières et hôtelières au Maroc entre la période 2016-2019 gèrent leur niveau d'endettement par le test des deux théories : Pecking Order Theory (POT) et Trad Off Theory (TOT). La composition financière d'une entreprise se réfère à la manière dont elle répartit l'utilisation des fonds entre les dettes contractées auprès d'établissements financiers et les capitaux propres. L'analyse de cette composition financière à travers le bilan permet de mieux d'apprecier et de comprendre comment les entreprises peuvent financer ses opérations et les différentes approches utilisées à cette fin. En d'autres termes, elle met en évidence la relation entre les dettes et les capitaux propres. Cette composition n'est pas statique et peut varier en fonction des contraintes financières liées aux activités de l'entreprise ainsi que des décisions de placement prises par la direction. L'échantillon de cette étude est constitué de 15 entreprises des secteurs agroalimentaires et immobilières/hôtelières cotées à la Bourse. Pour cela et afin de mieux orienter notre travail nous avons choisi deux modèles pour répondre à notre problématique principale, le premier modèle à travers une estimation via l'économétrie des données de panel, nous avons sélectionné une variable dépendante (_d) et deux variables explicatives (D_Dt-1 et DEF). Les aboutissements issus de ce travail montrent que le comportement de la structure financières de ses entreprises est mixte c'est à dire que les entreprises marocaines cotée en Bourse cherchent à atteindre un ratio optimal d'endettement et hiérarchisé leur mode de financement.

Mots clés: Structure Financière, Pecking Order Theory, Trade-Off Theory, Endettement.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

Introduction:

The financial composition of a firm refers to the distribution between debt owed to financial institutions and equity used to support its operations. Analyzing the financial composition through the balance sheet helps to explain better how its activities are funded and in what ways. In other words, it highlights the relationship between debt and equity. This composition is variable and changes in accordance with the financial limitations or restrictions related to the company's activities and the investment choices made by management in terms of placements. Since the pioneering research of (Modigliani & Miller, 1958), several theoretical and empirical studies have focused on the issue of a company's financial composition, such as research conducted by (Harris & Raviv, 1991).

Academic analysis regarding the selection and factors influencing a company's financial structure has traditionally followed essential approaches, including the classical perspective focused on the consequences of using financial leverage, neoclassical approaches with Modigliani and Miller, and the construction of logic for a world with and without taxes, as well as the emergence of the Trade-Off Theory (TOT), followed by the development of modern approaches known today as signal theory, agency theory, and financing preferences theory, as well as market timing theory. Our research aims to provide evidence of the various factors affecting the financial composition of publicly traded companies in Morocco's Agro-food and Real Estate and Hospitality sectors within a time frame ranging from 2016 to 2019. This introduction sets the stage for the emergence of our research problem, which revolves around a central question presented as follows:

What debt behaviors do Moroccan publicly traded companies adopt? To answer our research problem, we have tested the following hypotheses:

- H1: Moroccan companies, by adopting a debt behavior, seek to achieve an optimal level characterized by debt.
- H2: Companies adhere to a debt behavior guided by financing hierarchy preferences).
- H3: Moroccan companies embrace a combination of both choices.

In order to enhance the depth and comprehensiveness of our research, it is imperative that we delve into the extensive body of literature that elucidates the factors influencing financial composition, preparing the groundwork for empirical examination. To accomplish this, we have

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

structured our work into two distinct segments. The initial segment is dedicated to a comprehensive review of theoretical literature, which offers invaluable perspectives on the diverse theories associated with the exploration of financial composition. Subsequently, the second segment entails the empirical testing of two prominent theories: The Pecking Order Theory and the Trade-Off Theory. Ultimately, we will culminate our research by presenting the outcomes and findings derived from this meticulous investigation.

1. Literature Review :

The financial composition of a firm relates to the distribution between debts owed to financial institutions and equity it utilizes to finance its business activities, notably intending to maximize the company's value. Analyzing the financial composition of firms is a central topic that has captured the attention of numerous researchers in finance. Several studies have been conducted to shed light on and explain the various factors that impact the financial composition of companies.

1.1. The financial structure according to classical theorists:

The classic method of studying financial composition is based on the assumption that financial decision choices are made to maximize shareholder wealth. This approach also relies on examining the methods typically employed regarding debt, striving to identify the most efficient mix of equity and debt capital that reduces the weighted average cost of capital to a minimum. Since the impact of financing composition on the cost of capital is fundamental to the company's value, we will now explore the workings of financial leverage and the concept of cost of capital in this section.

1.1.1 Financial leverage effect :

(Barander & Lewis, 1986) theorists start from the assumption that increasing financial leverage encourages shareholders to engage in risk-taking projects. According to their perspective, each company must determine its financial composition by assessing its influence on the product market equilibrium. This implies a moral hazard because financial decisions precede production decision choices chronologically. Due to this moral hazard, debt financing provides a means for the company to adopt a bolder approach in production, which constitutes a strategic advantage for businesses.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

-Financial Leverage and Customer-Supplier Relationships:

According to (Titman, 1984), offering warranty contracts to customers increases their sensitivity to the company's risk of bankruptcy. The demand for products from this company depends on its financial composition: the more debt it has, the lower the demand for its products will be. This customer reaction is particularly pronounced for dominant firms producing durable goods.

On the other hand, (Sarig, 1988) argues that debt strengthens the company's ability to negotiate with its suppliers. The company is exposed to the risk of failure, but it is the bondholders who protect it against this risk because they bear the impacts of this risk. The higher the level of debt, the more significant this protection becomes, thereby increasing the company's negotiating power with its suppliers.

1.1.2 The Cost of Capital :

For a company, every means of financing incurs a cost, which is determined based on the rate of return demanded by capital providers. This rate translates into the return on equity for shareholders and the cost borne by creditors due to debt. The cost of capital, therefore, corresponds to the cost of the resources that the company mobilizes to conduct its activities. This is what is referred to as the Weighted Average Cost of Capital (WACC).

-The Impact of Financial Composition on the Cost of Capital:

According to traditional approaches, there is a link between the capital structure and the debt ratio, which means that the cost of capital is not detached from the capital structure. To maximize the firm's value, it is necessary to reduce the weighted average cost of capital. According to (Durand, 1952), the ideal debt percentage is reached when debt is maximized. In his study, Durand anticipated two companies with the same operating ratio. The first company is heavily indebted, while the second is entirely financed by equity. Profits distributed to shareholders by the indebted firm are meager, and the value of its shares is reduced. However, the total value of the indebted company is higher compared to the non-indebted company. In this way, the firm's value is positively correlated with its debt ratio and negatively correlated with its weighted average cost of capital.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

1.2 Contribution of Modigliani and Miller:

1.2.1 Propositions of Modigliani and Miller:

(Modigliani & Miller, 1958) put forth two fundamental propositions:

• *Proposition 1:* Two companies with the same level of economic risk should have the same market value, even if they have different financial structures. This model suggests that investors have no preference for valuing these two firms because they both provide identical income. Investors will sell shares of the non-indebted company to invest in the indebted one until the values of these two companies are equal. According to Modigliani and Miller, this arbitrage process ensures stability in the market, so the total value of a firm depends solely on investors' estimates of the risk and expected income from that company, regardless of its financial composition.

• *Proposition 2:* Investment decisions are separate from financing decisions. This Modigliani and Miller thesis has faced several criticisms:

- In the case of personal debt, the risk incurred is higher because personal liability is unlimited, whereas in the case of corporate debt, investors are only responsible in proportion to their equity stake in the company. Therefore, personal debt cannot be considered a complete alternative to corporate debt.
- A company with a strong financial base can generally obtain credit on more favorable terms than an individual. Thus, an indebted company may achieve a higher overall market value compared to a non-indebted one. In their paper, (Modigliani & Miller, 1958) demonstrated that even with extreme levels of debt, the cost of debt (Ki) remains constant. However, several authors have questioned this proposition, arguing that if Ki increases, the cost of equity (Ke) will increase at a decreasing rate and could eventually decrease. This hypothesis has been rejected by some researchers.

1.2.2 The impact of taxation:

This pertains to assessing the influence of taxation on a company's financing decision. A leveraged company has a higher value compared to an unleveraged one, and this difference corresponds to the financial cost savings achieved through the company's borrowing rather than through shareholders. By introducing the concept of corporate taxation, (Modigliani & Miller,

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

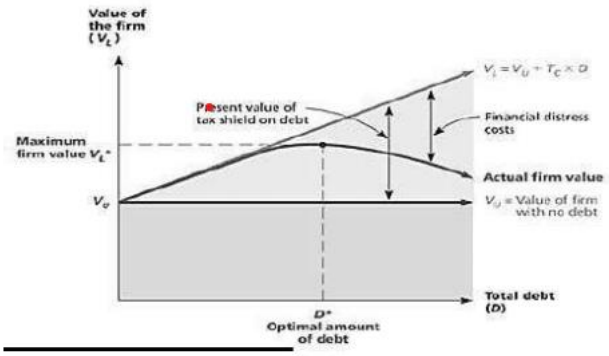
1963) proposed that a company's value is proportionate to its debt. Thus, the more a company borrows, the higher its value becomes. However, this proposition leads to a paradoxical conclusion: an optimal composition would be one where a company takes on all possible debt, which is clearly unrealistic.

In his paper, (Miller, 1977) highlighted the influence of personal taxation and corporate taxation on a company's value. He concluded that the positive aspect of debt resulting from the deductibility of financial expenses is questioned when considering individual taxation. His model suggests the presence of an optimal level of debt for companies when viewed as a whole, where tax benefits and tax costs are balanced.

1.3 The Trade-Off Theory (TOT):

In this theory, companies should evaluate the impact of both equity and debt on their financial structure, as well as on cost and benefit management. Debt financing is much cheaper than equity due to tax savings, and for this reason, the company should aim to have more debt in its capital structure. However, when the company increases its debt, the probability of bankruptcy also increases. Therefore, we can conclude that increasing debt provides tax benefits, but their marginal increase will start to decrease as bankruptcy costs also begin to rise.

Figure 1: The relationship between firm value and leverage.



Source : https://html2-f.scribdassets.com/2xhxqzpsg049rkay/images/1-3c0a709f46.jpg.

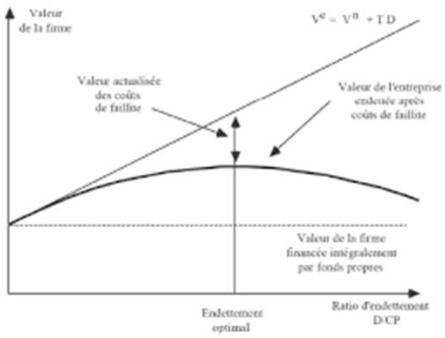
Therefore, managers should study the optimal corporate structure between debt and equity, which increases profits and makes compromises up to the optimal point, as presented in the figure above. On the graph mentioned in the figure, you can also verify the mathematical formula (highlighted in red) that helps you obtain the best mix between debt and equity.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

1.3.1 Bankruptcy Costs and Financial Composition:

Modern financial theory has paid significant attention to various costs that are considered limits to debt. Among these costs are bankruptcy costs, which are associated with the threat of being unable to meet financial obligations. In other words, the more a company borrows, the more it increases the risk of facing financial difficulties, jeopardizing its survival. These difficulties come with significant financial costs, and their mere existence reduces the company's value. In general, bankruptcy is perceived as a legal process involving the transfer of a company's assets to its creditors. Therefore, in the absence of bankruptcy-related expenses, the value of a debt-free company would be equivalent to the value of an indebted company, along with the present value of the tax savings on that debt. However, according to (Bernnan & Schwartz, 1978), the inclusion of bankruptcy costs results in a reduction in the value of the company because the risks associated with bankruptcy diminish the overall value of the company.

Figure 2: Company Value with and without Bankruptcy Costs.



Source : https://www..cairn.info/finance-d-entreprise/-page-111.html/.

1.4 Contributions of Modern Firm Theories:

It emerged in the 1970s due to the challenge of economic and financial models as fundamental as the idea that all actors have access to pure and perfect information.

1.4.1. Contribution of Signaling Theory to the Study of Financial Composition:

It is essential to begin by explaining signaling theory and then, subsequently, to examine how this theory contributes to the discussion regarding the financial composition of companies.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

- **Signaling Theory:**

The level of indebtedness is seen as an indication that the company's management provides regarding the health of the company and the value of its future investments (Ross, 1977). This theory also explains why some companies have a high level of debt in their liabilities. It is based on the concept that internal actors within the company, who have better knowledge of it than external actors (primarily banks), have an interest in disclosing some of this information to external actors in the form of a signal to secure debt financing.

In (Ross, 1977) proposed a signaling mechanism based on the company's debt: a heavily indebted company is assumed to be of high quality and undertaking profitable investment projects. On the other hand, in, (Lelet & Pyle, 1977) put forth a signaling strategy that directly involved the manager in financing the projects to be invested in. This involvement demonstrates that the manager is a competent leader, which leads creditors to have confidence in the profitability of projects managed by this type of executive.

- **Signaling Theory and Financial Composition:**

The initial application of signaling theory to analyze the financial composition of firms was formulated by (Ross, 1977), who was able to develop a model based on the following assumptions:

- Are capital markets efficient ?
- Are agency costs zero, but there is information asymmetry in the market?
- Are investors risk-neutral ?

Based on these assumptions, Ross concluded that highly-quality companies have higher levels of debt compared to lower-quality companies. Therefore, the firm's value is positively correlated with the level of indebtedness. In other words, a high-performing company is more inclined to use higher debt as a signal of its quality, which can lead to a more accurate assessment of its value by investors.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

1.4.2 Contribution of Agency Theory to the Study of Financial Composition:

- **Agency Theory:**

In, (Jensen & Meckling, 1976) introduced into academic research on the theory of the firm the concept of considering the diversity of objectives and potentially conflicting expectations of different parties within the company. According to Jensen and Meckling, the firm is seen as a group of agents with varying and sometimes conflicting goals, as well as differing levels of information. They provided a definition of the "agency" relationship as an agreement by which one or more individuals delegate the execution of a task to another person on their behalf. This perspective opened the door to a deeper analysis of conflicts of interest and governance mechanisms within companies.

- **Agency Theory and Financial Composition:**

Agency theory posits that the balance between agency costs related to shareholders and agency costs related to creditors defines the optimal debt composition of a company. Therefore, the disagreement between shareholders and managers can find a solution by issuing debt, which helps to reduce agency costs associated with shareholders. This is because the increase in debt in the company's liabilities enhances the control exerted by creditors over the quality of managerial decisions. Additionally, the timely payment of debt interest reduces the likelihood that managers make suboptimal investment decisions, as it reduces the cash flows available for other investments. However, increasing debt also raises the risk of bankruptcy and, consequently, the risk of job loss for managers. This threat incentivizes managers to exert the necessary efforts to increase the company's value, ultimately benefiting shareholders by increasing the company's wealth.

1.5 Other Theoretical Contributions to Financial Structure:

It appears that you are referring to two new theories that have emerged in the field of finance to study the factors influencing a company's financial composition: The Pecking Order Theory and the Market Timing Theory. Here is a brief explanation of these two theories:

1.5.1 Pecking Order Theory:

This theory proposes that companies adhere to a hierarchy of preferences when choosing their sources of financing. According to this theory, companies prefer to first use internal sources of

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

financing, such as reinvested profits, before turning to external sources like borrowing or issuing shares. The underlying idea is that internal sources of financing are generally less costly and less risky than external sources, which encourages companies to prioritize them. This theory seeks to explain how companies decide to balance their financing sources to optimize their financial structure.

1.5.2 Market Timing Theory:

The Market Timing Theory focuses on the opportune timing for companies to issue shares in financial markets. According to this theory, companies seek to take advantage of fluctuations in the stock market by issuing shares when their prices are high (overvalued) and avoid issuing shares when their prices are low (undervalued). In other words, they try to "time" the market to maximize the net proceeds from selling shares. This theory highlights that financing choices depend not only on the financing needs of the company but also on the opportunities presented by market conditions.

Both of these theories contribute to understanding the financing decisions made by companies, considering different factors and motivations. It should be noted that a company's financial composition is complex and depends on several variables, including its financial situation, goals, market conditions, and other internal and external factors. Researchers in finance continue to explore these theories and their application in the context of firms' financing decisions.

2. Research Hypotheses and Problem Statement

Several explanatory theories of the factors influencing the financial composition of companies have been subject to empirical study in various countries, primarily in developed countries. Each study has shown different explanatory theories from one another. Indeed, some research in this direction has led to the observation of different levels of debt and a desire to identify a hierarchy of financing preferences. The aim of our work is to unravel the factors influencing the financial composition of Moroccan companies listed on the stock exchange, belonging to the two sectors of agri-food and real estate and hospitality. To achieve this, we empirically tested two theories, the Pecking Order Theory (POT) and the Trade-Off Theory (TOT), through which we will attempt to address our main research question as follows: **What debt behaviors do Moroccan stock exchange-listed companies adopt?**

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

To answer our research question, we tested the following hypotheses:

- H1: Moroccan companies adopt a debt behavior aimed at achieving an optimal level characterized by debts.
- H2: Moroccan companies adopt a debt behavior based on preferences for the pecking order.
- H3: Moroccan companies adopt a mixture of both choices.

The choice of a positivist stance in this research is driven by the very nature of the subject of study: the financial composition of companies. Positivism, with its pursuit of objectivity and its trust in empirical measurement, is especially suited to study quantifiable and measurable phenomena, such as financial ratios, debt levels, and capital structures. Furthermore, positivism allows for the isolation and specific testing of variables, thus providing clarity and precision in the analysis. By relying on concrete and observable data, this approach aims to eliminate subjective biases and produce reliable and reproducible knowledge.

The adoption of the hypothetico-deductive approach is also in line with this positivist stance. This approach begins with the formulation of hypotheses based on existing theories, which are then empirically tested. In the case of this research, the Pecking Order and Trade-Off theories serve as the foundation for formulating hypotheses about companies' debt behavior. The use of panel data econometrics then allows for testing these hypotheses in a rigorous framework. This process of validating or refuting hypotheses strengthens the robustness of the conclusions and deepens the understanding of the underlying mechanisms of companies' financial composition.

3. Population and Sample:

3.1 Target Population:

The agri-food and real estate/hospitality sectors are represented on the stock exchange by 15 companies, which are categorized by their size into large and medium-sized enterprises. The choice of these companies is primarily justified by the availability of financial and accounting information in the annual reports and results published on the stock exchange platforms and by the Moroccan Capital Market Authority. Additionally, the choice of the real estate and hospitality sectors is explained by the need to have a discussion and comparison between the two sectors, which are among the essential sectors of activity in Morocco. Furthermore, this

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

sector has opportunities to finance its activities through participatory products, especially in real estate Murabaha.

3.2 Sample Selection:

In the context of our selection of companies from the two sectors under study, we did not opt for a specific method due to the limited number of companies listed on the stock exchange in the real estate/hospitality and agri-food sectors. For reference, there are a total of 75 companies listed on the Casablanca Stock Exchange.

Table 1: Distribution of Studied Companies by Industry Sector.

Industry Sector	Effective
Agri-food Sector	**8**
Real Estate and Hospitality Sector	**7**
Total	**15**

Source : By authors

3.3 Presentation of the Studied Sectors:

Table 2: Presentation of the Agri-food Sectors.

Denomination	IPO date	Compartment
UNIMER	29/03/2001	**primary market**
SOCIETE DES BOISSONS DU MAROC(SBM)	13/08/1943	**primary market**
OULMESS	13/08/1943	**primary market**
LESIEUR CRISTAL	07/12/1972	**primary market**
DARI COSPAT	11/07/2005	**primary market**
COSUMAR	03/06/1985	**primary market**
CENTRAL DANONE	07/10/1974	**growth market**
CARTIER SAADA	**21/06/2006**	**development market**

Source : By authors

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

Table 3: Presentation of the Real Estate and Hospitality Sectors

Denomination	IPO date	Compartment
ADOHA	06/07/2006	**Primary market**
ALLIANCES DEVLOPPEMENT IMMOBILIER (ADI)	17/07/2008	**Primary market**
BALIMA	05/07/1946	**Growth market**
COMPAGNIE GENERALE D'IMMOBILIER (CGI)	10/08/2007	**Bond market**
RISMA	15/05/2006	**Primary market**
RESIDENCES DAR SAADA (RDS)		**Primary market**
IMMORENTE INVEST	**11/05/2018**	**Primary market**

Source : By authors

4. Presentation of the Accounting and Financial Data of the Studied Sectors

The accounting and financial data were extracted from the balance sheets, income statements, financial tables, and statement of income published on the Moroccan capital markets authority (MCMA) platforms and official websites of the targeted companies.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

4.1 Average Accounting and Financial Data of the Agri-food Sector in Million DH

Table 4: Average Accounting and Financial Data of the Agri-food Sector in Million DH.

Années	CAP[1]	IMN	BFR	TOT	DET	D/C
2016	10016254049,83	10624240399,98	2149000258,61	221226798006,60	-1632995333,21	-1,04
2017	10682572218,55	11282715915,63	1423872126,08	224201587202,70	-1942171029,74	-0,75
2018	10529240045,88	11491563698,89	3503782777,62	222582351700,65	-5873742106,03	0,22
2019	10176675134,13	10702345269,88	3316377630,22	224185040305,69	-1065722724,90	-0,49
Moyenne	10351185362,10	11025216321,10	2598258198,13	223048944303,91	-1307065825,97	-0,51

Source : By authors

This table illustrates the financial situation of the publicly traded companies in the agri-food sector through their accounting data, which is derived from their balance sheets, primarily including equity, net fixed assets, financial debt, and total assets. It also includes the Working Capital Requirement (WCR) and the financial leverage ratio.

The average data evolution shows a significant increase in equity from 2016 to 2017, followed by a decrease from 2018 to 2019. Net fixed assets and total assets displayed an increase from 2016 to 2019, followed by a decrease in 2019.

[1] CAP, equity (or shareholders' equity); DET, financial debts; IMN, net fixed assets; BFR, working capital requirement; TOT, total assets; D/C, debt ratio.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

The positive Working Capital Requirement (WCR) throughout the period (2016-2019) indicates that operating costs exceed revenues of the same nature. As a result, companies in the agri-food sector need to finance their short-term needs either from available cash or through short-term borrowing.

The negative net financial debt, which represents the remaining debt after the settlement of all cash, is negative from 2016 to 2019, suggesting that companies in this sector have significant liquidity.

The negative financial leverage ratio from 2016 to 2019 means that the cash position of these companies exceeds their financial debt, reducing risk on their equity and assets, with the exception of the year 2018, when the financial leverage ratio is positive at a value of 0.22.

Table 5: Average Accounting and Financial Data for the Real Estate and Hospitality Sector in Million MAD.

Années	CAP	IMN	BFR	TOT	DET	D/C
2016	21998249423,55	8242541293,84	30486692016,09	5372374463,96	1487042917,28	7,49
2017	20339923426,00	7780863102,13	28636472167,95	49193925068,92	14904597660,23	8,48
2018	26009241140,43	6844209132,41	27358236139,64	49807724709,27	9160384236,44	1,54
2019	19939977921,25	7519406887,66	20159732534,45	36298676610,93	6871197007,59	1,48
Moyenne	22071847977,81	7596755104,01	26660283214,53	47256017613,27	11451652105,39	4,75

Source : By authors

This table provides an overview of the financial situation of the publicly traded companies in the Real Estate and Hospitality sector. It includes key financial metrics such as shareholders' equity, net assets, financial debt, total assets, working capital requirement, and the financial leverage ratio. The average data trends highlight several points:

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

Shareholders' equity: There is a decrease in shareholders' equity between 2016 and 2017, followed by an increase in 2018, and then another decrease in 2019. Net assets and total assets: Both net assets and total assets show a decrease from 2016 to 2018, followed by an increase in 2019.

Working capital requirement: The working capital requirement is positive throughout the period (2016-2019). This indicates that operating expenses exceed revenues of the same nature, requiring these companies in the Real Estate and Hospitality sector to cover their short-term needs either through working capital or by borrowing additional financial capital.

Net financial debt: Net financial debt is positive between 2016 and 2019. This suggests that companies in this sector have chosen to take on debt to improve their financial profitability.

Financial leverage ratio: The financial leverage ratio is positive between 2016 and 2019, indicating that the cash available to these companies is lower than their level of indebtedness. This implies that the source of funding for these companies is external, primarily through loans and financial debts.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

4.2 Average of variables studied in millions of DH

Table 6: Average of variables studied in the agri-food sector in million DH.

	DEF[2]	DIV	CAF	INV	ΔBFR	D*– Dt-1	Auto Fin
2016	9518339220,09	1127730797,00	2458417035,62	10511171680,82	337853777,89	-8823531274,55	1330686238,62
2017	8950211320,55	1287291738,00	2770206594,64	11158254309,72	-725128132,53	-8514355578,02	1482914856,64
2018	13173685718,51	1397674135,00	1738484462,81	11434585394,78	2079910651,54	-9869152391,73	340810327,81
2019	9923028295,35	1438018939,00	2064882850,33	10608885555,81	-58993349,13	-8083738056,89	626863911,33
Moyenne	10391316138,63	1312678902,25	2257997735,85	10928224235,28	408410736,94	-8822694325,30	945318833,60

Source : By authors

This table shows the average values of the studied variables for companies in the agro-alimentary sector over the period from 2016 to 2019.

- Self-financing has experienced significant growth during this period, but it remains lower than the level of investments made during the same period. The instability of the working capital requirement (besoin de fond de roulement) is negative from 2017 to 2019, indicating that companies in this sector are recovering working capital to finance their investments.
- The difference between (Dt-1) effective debt and its target value (D*) is negative throughout the period from 2016 to 2019, indicating the presence of significant liquidity for companies in this sector.

[2] DEF, financing deficit; DIV, dividends paid; CAF, self-financing capacity (or cash flow from operations); INV, net investment; DBFR, change in working capital requirement; D*, target debt level; D, financial debts; Auto Fin, self-financing.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

Tableau 7: Average of the variables studied in the Real Estate and Hotel sector in millions of Dirhams.

	DEF	DIV	CAF	INV	ΔBFR	D*– Dt-1	Auto Fin
2016	18757266321	908141376,5	1240163708	7979258772	11110029880	65291135220	332022331,5
2017	6832247911	860716276,6	-53470470,77	7768281012	-1850219848	65256967077	-914186747,4
2018	5173001272	533351102,8	769941907,6	6687828105	-1278236028	71001180501	236590804,8
2019	-504948311,3	168867944	544541531,1	7069228881	-7198503605	73290367730	375673587,1
Moyenne	7564391798	617769175	625294169	7376149193	195767599,7	68709912632	7524993,997

Source: By authors

The amount of self-financing is lower than that of investments during the period 2016-2019, this is explained by the fact that the internal resources of companies in the Real Estate and Hospitality sector are not sufficient to finance these investments in this fact the companies of sector by starting to recover working capital to meet needs and finance investments. Likewise, the gap between (Dt-1) actual debt and its target value (D*) is positive. This remark can be attributed to the desire to achieve a target debt level.

4.3 Descriptive statistics of the variables studied:

Figure 3: Descriptive statistics of the variables studied on Eviews.

	_D	D__DT_1	DEF
Mean	7.00E+08	3.99E+09	1.20E+09
Median	70067333	-3.06E+08	9.71E+08
Maximum	5.68E+09	1.15E+10	7.01E+09
Minimum	-1.49E+09	-2.02E+09	-6.76E+09
Std. Dev.	1.54E+09	5.63E+09	1.79E+09
Skewness	1.589340	0.240369	-0.339750
Kurtosis	4.731271	1.192681	10.17948
Jarque-Bera	31.66149	8.743779	130.0166
Probability	0.000000	0.012627	0.000000
Sum	4.06E+10	2.40E+11	7.18E+10
Sum Sq. Dev.	1.35E+20	1.87E+21	1.89E+20
Observations	58	60	60

Source: By authors

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

5. Methodology and presentation of results:

5.1 General research methodology:

The research methodology you describe appears to be inspired by the study conducted by (Molay, 2006) to test financing theories using data from French firms registering on the Paris stock market (EURONEXT) over a time interval ranging from 1996 to 2004.

The use of panel data estimations, which combine cross-sectional and time-series analyses, is a common approach in economics and finance research to examine longitudinal data.

This type of analysis is particularly interested in heterogeneity between individuals. It makes it possible to analyze disparities in interactions between people.

The presentation of the model is as follows:

$$\boldsymbol{y_{i,t}} = a_{\boldsymbol{i}} + Q'\boldsymbol{x_{i,t}} + s_{\boldsymbol{i,t}}$$

It appears that you are discussing different evaluation methods that can be employed in the context of statistical modeling, particularly when dealing with panel data (longitudinal data). Here is an explanation of these methods and the associated statistical tests:

- **Ordinary Least Squares (OLS) estimation:**

This method is used when the variable "ai" contains only a constant term (intercept) and is not correlated with the regressors. OLS estimates model coefficients by reducing the sum of squared errors between observed and predicted values through the model.

- **Estimation with Fixed Effects:**

This method is used when the variable "ai" is unobserved but correlated with the regressors. Fixed effects model constant individual differences (individual intercepts) for each panel unit. They allow specific individual variations to be taken into consideration.

- **Estimation with Random Effects:**

This method is used when unmeasured individual differences are not linked to the explanatory variables. Random effects model individual heterogeneity as a random variable, which allows

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

random individual variations to be taken into account. For statistical tests to choose between these different estimation methods, here is a brief explanation of each test mentioned:

- **F statistic:**

Used to compare the evaluation with fixed effects to the evaluation without fixed effects (classic regression model). Allows you to determine if fixed effects significantly improve the fit of the model.

- **Lagrange multiplier (LM):**

Proposed by (Breusch & Pagan,1980). Evaluates the validity of stochastic impacts versus fixed effects. The LM statistic conforms to a chi-square distribution with a single degree of freedom.

- **Hausman Specification Test:**

Proposed by (Hausman, 1978). Compares evaluation with stochastic effects to evaluation by ordinary least squares. Allows you to determine whether the inclusion of random effects is statistically justified. The H statistic obeys a chi-square distribution with degrees of freedom equal to K minus one, where K represents the count of regressors.

The choice between these estimation methods will depend on the characteristics of your panel data and the assumptions you want to make about individual heterogeneity and its correlation with the regressors. The mentioned statistical tests help evaluate the suitability of each approach in your model.

5.1.1 Model presentation:

Our empirical study is based on an analysis of the financial structure of 16 Moroccan companies listed on the stock exchange during the period 2016-2019, through a comparison of the two main theories explaining the financial structure Pecking Order Theory (POT) and Trade off Theory (EARLY).

Our model is presented as sequels;

A: TOT: $\Delta Dit = a + bTOT(D* - Dit - 1) + eit$

B: POT: $\Delta D_{it} = a + b_{POT} DEF_{it} + e_{it}$

With $DEFit = DIV_t + INVEST_t + \Delta BFR_t - CAF_t$

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

5.1.2 Interpretation of variables:

Table 8: Interpretations of the parameters of the variables studied.

Variables	Interpretation
ΔD_{it}	Variation in net debt in period t which is the total of fluctuations in bond loans, borrowings and debt contracted from credit institutions – cash.
DEF_{it}	Financing deficit of a company "i" at a period "t".
D^*_i	The estimated target debt for each company "i" is obtained by calculating the chronological average over a period of 4 years of debt.
DIV_t	Dividends paid in period "t".
$INVEST_t$	Net investment in period "t" which is the sum of intangible, tangible and financial investments – the prices of sales of investments in period "t".
ΔBFR_t	Variation between Working Capital in "t" and "t-1".
CAF_t	Self-financing capacity = net income + depreciation and provisions + book value of assets transferred - sales proceeds.

Source: By authors

5.1.3 Model estimation:

The tests are based on an evaluation of panel data which are characterized by: two effects, one is temporal "t" and the other individual "i".

-Ordinary least squares; when ai contains only one constant term;

-An estimate with fixed individual effects; when ai is unobserved but correlated with xi, t;

-An estimation with random effects when unobserved individual heterogeneity is assumed to be uncorrelated with the regressors.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

5.2 Presentation and interpretation of results:

Table 9: Presentation of TOT model results.

	Variable	Coefficient	R-squared	F-statistic	LM	H	F test
MCO	C	1.74E+08 (0.0000)	0.503514	56.79265(0.000000)			
	D*_Dt-1	0.118476 (0.0000)					
EF	C	4.63E+09 (0.0000)	1.000000	2.68E+30(0.000000)			(0.0000)
	D*_Dt-1	-1.000000 (0.0000)					
EA	C	4.63E+09 (0.0000)	1.000000	6.23E+29(0.0000)	(0.0000)	(0.0000)	
	D*_Dt-1	**-1.000000 (0.0000)**					

Source : By authors

Specification tests to be performed:

At this level we seek to choose the right, most representative model for our estimation; for this we rely on the following three tests:

Fixed effect model versus random effect model:

The (Hausman, 1978) specification test allows for a comparative analysis of estimation with random effects to that with fixed effects, where the H statistic follows a chi-square with K-1 degrees of freedom.

This test introduces two hypotheses in the form:

- H0: the model can be specified with random effects;

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

- H1: the model must be specified with fixed effects and the Within estimator must then be used (unbiased estimator).

If Chi2 > 0.05 we accept the H0 otherwise it is rejected.

According to the results of our case the p-value Chi2=0.000<0.05 therefore ~~the~~ hypothesis H0 is rejected and accepts the alternative hypothesis.

The appropriate model is the fixed effect model.

Ordinary Least Square (OLS) versus random effect model.

In presents the Lagrange multiplier test proposed by Breush (Breush & Pagan, 1980) which tests the relevance between random effect and OLS, the LM statistic follows a chi-square with one degree of freedom, this test introduces two hypotheses one is l the null hypothesis (H0) and the other is the alternative hypothesis (H1):

- H0: absence of individual effect;
- H1: presence of a random effect.

For our case the p-value =0.000< 0.05 therefore hypothesis H0 is rejected and accepts the alternative hypothesis H1. The appropriate model is the random effect model.

Ordinary Least Square (OLS) versus fixed effect model.

Likelihood ratio Test or F-test allows a comparative analysis by estimation with or without effect therefore to find the most suitable model we will carry out this Test which verifies the following hypotheses:

- H0: absence of a fixed effect;
- H1: presence of a fixed effect.

According to the results of our case the p-value=0.000 <0.05 therefore the hypothesis H0 is rejected and we accept the hypothesis H1. The appropriate model is the fixed effect model. Through these three tests the most suitable model is the fixed effect model so our model will be formulated as follows:

TOT: ΔDit = 4.63E09 + 0.0000($D*$ − Dit−1)

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

Table 10: Presentation of POT model results.

	Variable	Coefficient	R- squared	F-statistic	LM	H	F test
MCO	**C**	2.51E+08(0.0000)	0.021536	1.232583 (0.271650)			
	DEF	0.068203 (0.0000)					
EF	**C**	6.20E+08(0.0000)	0.904889	26.63930 (0.000000)			(0.0000)
	DEF	0.059031 (0.0283)					
EA	**C**	6.61E+08(0.1137)	0.015215	0.865217 (0.356276)	(0.0000)	(0.9002)	
	DEF	0.060305 (0.3577)					

Source : By authors

Specification tests to be performed:

At this level we seek to choose the right, most representative model for our estimation; for this we rely on the following three tests:

Fixed effect model versus random effect model:

The (Hausman, 1978) specification test allows a comparative analysis by estimation with random effects with that by the effect, the H statistic follows a chi-square with K-1 degrees of freedom.

This test introduces two hypotheses in the form:

- H0: the model can be specified with random effects;
- H1: the model must be specified with fixed effects and the Within estimator must then be used (unbiased estimator).

If Chi2 > 0.05 we accept the H0 otherwise it is rejected. The appropriate model is the random effect model.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

Ordinary Least Square (OLS) versus random effect model.

In presents the Lagrange multiplier test proposed by (Breush & Pagan, 1980) which tests the relevance between random effect and OLS, the LM statistic follows a chi-square with one degree of freedom, this test introduces two hypotheses one is l the null hypothesis (H0) and the other is the alternative hypothesis (H1):

- H0: absence of individual effect;
- H1: presence of a random effect.

For our case the p-value =0.000< 0.05 therefore the hypothesis H0 is rejected and accepts the alternative hypothesis H1. The appropriate model is the random effect model.

Ordinary Least Square (OLS) versus fixed effect model.

The Likelihood Ratio Test or F-test enables a comparative analysis by estimating models with and without certain effects. To determine the most suitable model, we will conduct this test to verify the following hypotheses:

- H0: absence of a fixed effect;
- H1: presence of a fixed effect.

According to the results of our case the p-value=0.000 <0.05 therefore hypothesis H0 is rejected and we accept hypothesis H1. The appropriate model is the fixed effect model. Through these three tests the most suitable model is the fixed effect model so our model will be formulated as follows:

$POT : \Delta Dit = 6.61E + 0.1137DEFit$

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

Table 11: Presentation of POT model results.

	Variable	Coefficient	R-squared	F-statistic	LM	H	F test
MCO	C	1.77E+08 (0.0000)	0.613007				
	D*_Dt-1	0.122142 (0.0000)					
	DEF	0.036605 (0.0011)					
EF	C	4.63E+09 (0.0000)	1.000000	2.45E+30 (0.000000)			(0.0000)
	D*_Dt-1	-1.000000 (0.0000)					
	DEF	0.000000 (1.0000)					
EA	C	4.63E+09 (0.0000)	1.000000	3.14E+29 (0.000000)	(0.0000)	0.0000	
	D*_Dt-1	-1.000000 (0.0000)					
	DEF	-8.14E-17 (0.7164)					

Source : By authors

Specification tests to be performed:

At this level we seek to choose the right, most representative model for our estimation; for this we rely on the following three tests:

Fixed effect model versus random effect model:

Through the Hausman test; The (Hausman, 1978) specification test makes it possible to compare the estimation with random effects with that by the effect, the H statistic follows a chi-square with K-1 degrees of freedom.

- H0: the model can be specified with random effects;
- H1: the model must be specified with fixed effects and the Within estimator must then be used (unbiased estimator).

If Chi2 > 0.05 we accept the H0 otherwise it is rejected. According to the results of our case the p-value Chi2=0.000<0.05 therefore the hypothesis H0 is rejected and we accept the alternative hypothesis. The appropriate model is the fixed effect model.

Ordinary Least Square (OLS) versus random effect model.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

In presents the Lagrange multiplier test proposed by (Breush & Pagan, 1980) which tests the relevance between random effect and OLS, the LM statistic follows a chi-square with one degree of freedom, this test introduces two hypotheses one is l the null hypothesis (H0) and the other is the alternative hypothesis (H1):

- H0: absence of individual effect;
- H1: presence of a random effect.

For our case the p-value =0.000< 0.05 therefore the hypothesis H0 is rejected and accepts the alternative hypothesis H1. The appropriate model is the random effect model.

Ordinary Least Square (OLS) versus fixed effect model.

Liklihood Ratio Test or F-test which allows you to compare an estimate with or without an effect so to find the most suitable model we will carry out this Test which verifies the following hypotheses:

- H0: absence of a fixed effect;
- H1: presence of a fixed effect.

According to the results of our case the p-value=0.000 <0.05 therefore ~~the~~ hypothesis H0 is rejected and we accept ~~the~~ hypothesis H1. The appropriate model is the fixed effect model. Through these three tests the most suitable model is the fixed effect model so our model will be formulated as follows:

$$(POT + TOT): \Delta D_{it} = 4.63E + 0.0000(DEF_{it} + (D^{*} - D_{it-1}))$$

For this, Moroccan companies listed on the Casablanca Stock Exchange in the two agro-food and real estate and hotel sectors adopted during the period 2016-2019 a mixed behavior between the desire to maintain a debt ratio and prioritized financing choices, and this is validated empirically because the two theories are validated and the fixed effects model is the most suitable estimator of our two models.

African Scientific Journal
ISSN : 2658-9311
Vol : 3, Numéro 20, Octobre 2023

CONCLUSION:

Our theme focuses on the factors of the financial composition of Moroccan companies listed on the stock exchange. The main objective of our research is to explain the financial composition of Moroccan companies through a theoretical and empirical study that serves to respond to our problem which concerns the debt practices of Moroccan companies listed on the stock exchange between 2016 and 2019 and to be able to formulate hypotheses within the framework of a positivist position involving a quantitative methodology and a hypothetico-deductive (HD) approach which consists of validating hypotheses through observation.

We first presented a literature review that focuses on the different theories and debates which are taken into account in the analysis and determination of the financial composition of companies then we presented the Moroccan financial and tax environment through the identification of the characteristics of these two systems which have an impact on the decisions of choice of financial behavior of companies.

In a second point, we conducted an empirical study that is based on testing two of the most commonly used theories: The Pecking Order Theory (POT) and the Trade-Off Theory (TOT). In this regard, we applied these theories to panel data from 15 Moroccan companies listed on the stock exchange, which belong to the agri-food, real estate, and hotel sectors. These estimates were generated using the fixed-effect model method for the period spanning from 2016 to 2019.

The empirical results showed that companies in both sectors sought to achieve a target debt ratio on the one hand and to prioritize financing means on the other hand. We advise ourselves to be rational in the choice of financial composition also for companies belonging to the real estate and hotel sectors, particularly as this sector has been damaged by the crisis, as well as to be more open to new crowdfunding products.

African Scientific Journal
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