

ASSESSMENT OF THE FAMA AND FRENCH HEXAGONAL MODEL IN ANALYZING EQUITY RETURNS ON THE IRAQ STOCK EXCHANGE, EMPHASIZING MOMENTUM AND LIQUIDITY FACTORS

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Abstract

This study seeks to evaluate the applicability of the six-factor Fama and French model in elucidating stock returns in the Iraqi stock market, particularly emphasizing momentum and liquidity variables from 2014 to 2023. The research employs a quantitative analytical methodology, utilizing historical financial data gathered from a sample of 10 publicly traded companies, with multiple regression analysis as the primary statistical instrument to assess the correlation between six variables and stock returns.

The findings indicated that the six-factor model of Fama and French possesses superior explanatory power for equity returns in the Iraqi market when juxtaposed with the conventional capital asset pricing model (CAPM). Furthermore, the study uncovered distinctive behavior of certain factors within the Iraqi market, revealing a negative and significant impact of the size (SMB) and value (HML) factors, suggesting a preference among investors for large corporations and growth stocks. The liquidity factor (LIQ) revealed that highly liquid stocks yield superior returns, contradicting the conventional theory, which anticipates a risk premium for low-liquid stocks. Conversely, the momentum factor (UMD) proved to be an unreliable predictor of future stock performance. In contrast, the profitability factor (RMW) and investment factor (CMA) aligned with traditional theory, indicating that firms exhibiting high profitability and conservative investment strategies receive enhanced returns.

The study advises against exclusive dependence on the beta coefficient as the singular metric for risk and return, advocating for the incorporation of supplementary factors such as profitability, investment strategies, and company size in investment decisions. It also urges the execution of comprehensive future research to elucidate the contradictory behavior of certain factors in the Iraqi market and to enhance liquidity and market efficiency.

Keyword: Fama and French Six-Factor Model, Stock Returns, Asset Pricing Models, Quantitative Analysis, Multiple Regression Analysis, Multi-factor Model, Momentum and Liquidity Factors, Iraqi Stock Exchange, Profitability and Investment

Introduction

Asset pricing models are fundamental to comprehending the dynamics of financial markets and ascertaining the anticipated returns of securities, originating with the capital asset pricing model in the 1960s, which introduced market risk as a pivotal determinant of returns. Profitability and investment are evolving into more comprehensive models, such as the Fama and French Six-Factor model, which aims to elucidate returns in intricate financial markets.

Notwithstanding the theoretical and practical advancements in asset pricing models within developed markets, the implementation of these models in emerging markets, such as the Iraq Stock Exchange, encounters significant hurdles. Emerging markets have distinct traits, including fluctuating liquidity levels, varying degrees of market efficiency, and investment behaviors that may not align with the assumptions of models formulated in more stable contexts. Dividend yields at the Iraqi Stock Exchange. The issue stems from the absence of a thorough and dependable

comprehension of how these factors (market, size, value, profitability, investment, momentum, and liquidity) influence equity returns in this specific market, thereby impeding investors and decision-makers from formulating informed investment strategies grounded in robust scientific principles.

The objective is to assess the explanatory efficacy of the Fama model and the six-factor French model, incorporating the liquidity factor to elucidate the fluctuations in equity returns within the Iraqi stock market from 2014 to 2023. The research aims to ascertain the individual and collective effects of market factors—size, value, profitability, investment, momentum, and liquidity—on stock returns in the Iraqi market. Factors and the Capital Asset Pricing Model in Relation to the Iraqi Market to Identify the Most Suitable Model The research seeks to offer practical recommendations derived from empirical findings to assist investors and policymakers in enhancing their comprehension of equity return behavior and formulating more efficient investment strategies in the Iraqi Stock Market.

Previous Studies

A study by Doğan et al. [6] in 2022 was called "Testing the Six-Factor Enhanced Asset Pricing Model of FAMA-French with the Momentum Factor of the Istanbul Stock Exchange." The goal of this study was to see if the Asset Pricing Model, which now has six factors including the momentum factor, was still valid. It did this by looking at overlapping asset pricing models for the Istanbul Stock Exchange and creating different capabilities to see which model better explained stock returns. Around 9,504 stocks were used for 396 weeks, from October 2013 to May 2021. Returns were used for 24 different portfolios. The research study found that the six-factor asset pricing model of FAMA-French (FF6F) is the best way to understand the stock returns of the Istanbul Stock Exchange. It is based on four factors: book value/market capitalization, profitability, investment, and momentum. The momentum factor is the one that investors need to think about because it leads to better returns. One of the contributions is that investors need to think about it before making investment decisions. How to Do a Research Study The research study's addition to the body of knowledge will be to name the momentum factor as something that should be thought about when making investment choices.

[7] Dharma et al. 2024 did a study called "Does the Six-Factor Model Work Better in the Indonesian Capital Market?" The goal of the study was to find out if the newest version, which includes the Fama model and the six-factor French, can do better than the older version, which includes the Fama model and the five-factor French. The study used the 100 Kompas Index as an example and used two-stage multi-regression with portfolio configuration based on SMB criteria. HML, RMW, CMA, and UMD. According to research, the Fama and six-factor franchise model has not yet been able to beat the five-factor Fama and French model when building a 2x3 portfolio. However, it can beat the five-factor Fama and five-factor franchise model when building a 2x2 portfolio. This is because adding a single risk factor lowers the risk variation compared to the variation in the returns of the formed portfolio.

A study by Al-Najjar [8] called "FAMA Model and Five-Factor Franchise: An Applied Study on the Egyptian Stock Market" looked at how well the five-factor FAMA and French model could explain the differences in stock returns in the Egyptian stock market. It also compared how well it did with the three-factor model and the capital asset pricing model. The third model is better at explaining things than the first two. In the Egyptian market, market factors like size, profitability, and investment were statistically important in describing the return on equity.

SALAAM [9] A study called "Testing the Fama Model and Five-Factor Franchising in the Saudi Stock Market" was done in 2023. The point of this study was to see if FAMA and French's five-factor model could be used to understand stock results in the Saudi stock market. The study used information from companies that were listed on the Saudi market between 2015 and 2022. The data showed that the five-factor model is a good way to explain why stock returns vary in the Saudi market. Size, value, profitability, and investment were some of the factors that had a big effect. Namsla A study called "CAPM Model vs. Fama and French Models: Which Explains the Variation in Equity Returns in the Egyptian Stock Exchange" was done in 2025 [10]. The point of this study was to see how well the capital asset price model explained changes in stock returns on the Egyptian Stock Exchange compared to the three-factor model of FAMA and the five-factor model of French. The results showed that the CAPM model wasn't very good at figuring out what changes in returns meant. The Fama and French three-factor model did better, but it still couldn't fully explain the returns. The five-factor model Fama and the Five-Factor Franchise were much better at figuring out what changes in equity returns meant, though they still weren't perfect.

Research Methodology

This research is based on the Quantitative Analytical Approach, which is based on the collection and statistical analysis of historical financial data to reach conclusions about the relationship between research variables. This method aims to test hypotheses through the use of mathematical and statistical models, which makes it possible to draw objective results based on numerical evidence.

1. Data sources and research sample

1. **Data sources:** This study relied on secondary data, which were collected from official and reliable sources, including:
 1. Iraq Stock Exchange (ISX).
 2. Websites of the researched companies.
 3. Annual financial reports for companies.
2. **Research Sample:** The research sample included 10 companies listed on the Iraq Stock Exchange, which were selected based on the availability of their financial statements in full during the study period.
3. **Time period:** The study covers a period of ten years from (2014) to (2023).

2 Research variables

The research variables are divided into:

1. **Dependent Variable:**
 1. **Stock Return:** This is the variable that the research is trying to explain, and it is measured by the relative change in the stock price.
2. **Independent Variables:**
 1. **Factors of the Fama and French Hex (FF6F) model:**
 1. **Volume Factor (SMB):** Measures the additional return made from investing in small businesses versus large companies.
 2. **Value Factor (HML):** Measures the additional return made from investing in value stocks against growth stocks.
 3. **Profitability Factor (RMW):** Measures the additional return earned from investing in high-profitability companies.
 4. **Investment Factor (CMA):** Measures the additional return made from investing in conservative companies.

5. **Momentum Factor (UMD):** Measures the additional return made from investing in winning stocks versus losing stocks.
6. **Liquidity Factor (LIQ):** Measures the additional return made from investing in low-liquid stocks.

3 Statistical tools

To analyze the data and test the research hypotheses, the following statistical tools were used:

1. Descriptive statistics: such as arithmetic mean and standard deviation, to describe the coefficients of the underlying variables.
2. Multiple Regression Analysis: This is the main research tool, used to measure the relationship between each of the six factors and stock returns, and to determine the strength and direction of this relationship.

3.1 Fama & French Five-Factor Model

After Carhart (1997) presented his four-factor model, with which he expanded the FF3 model by adding the momentum factor, and compared it to the CAPM and FF3 models, and tested these models using short and long periods of previous returns, and after a short time it was concluded that the Carhart model explains a large variation in the chain of stock returns, so many other researchers claimed that the FF3 model. The variance related to profitability and investment does not explain stock returns, as valuation theory states that the book-to-market ratio, expected investment, and expected profitability explain stock returns, as stock returns are related to these variables [11], in addition to claiming [12] that the three-factor model developed by Fama and French is an incomplete model of expected returns because it cannot capture most of the variation in average returns related to profitability and investment, which prompted Fama and French to think towards adding Profitability and investment factors as additional risk factors to the FF3 model, motivated by empirical evidence on the role of variables in interpreting cross-sectional variation in average equity returns [13].

The factors of the Fama and French Pentagram model are as follows:

3.1.1 Market Return (RM-RF): Represents the additional return of the investor against taking market risk

3.1.2 Volume Factor (SMB): Represents the difference in return between small and large companies

3.1.3 Value Factor (HML): Represents the difference in return between value stocks (with higher book value compared to market capitalization) and growth stocks

3.1.4 Profitability Factor (RMW): Profitability describes the level of profitability of a company, as the rate of return obtained by investors increases as the company's profit increases, where the profitability factor is represented by (Strong Minus Weak) (RMW) [14], and represents the difference in return between the portfolio of stocks that have the highest profitability and the portfolio of stocks that have the lowest profitability in the market, and as expressed as a measure of the difference in returns between companies with high profitability. Companies with a high level of profitability (strong) produce a higher return than companies with low (weak) profitability, and Fama and French use profitability that is measured by dividing earnings before interest and taxes (EBIT), i.e. operating profit (OP) which is equal to (annual revenue minus cost of goods sold, marketing expenses, depreciation, and general and administrative expenses) divided by value Equity bookkeeping at the end of the fiscal year [15], and this factor must be positive, indicating that companies with higher profitability are providing better results [16], and the profitability factor is calculated according to the following formula [17]:

RMW = □high profitability – □low profitability

Whereas:

Rhigh profitability: It is the average return on portfolios that include companies with high operating profitability.

Rlow profitability: is the average return on portfolios that include companies with low operating profitability.

Profitability is measured as follows:

$$\text{Profitability} = \frac{\text{Operating Profit}}{\text{Book Equity}}$$

Whereas:

Operating Profit : It is the operating income before interest and taxes.

: It is the shareholders' rights on the balance sheet. **Book Equity**

3.1.5 Investment Factor (CMA): Investment is a term that refers to the use of assets for the purpose of carrying out new projects, or giving an additional return to them, as investment is embodied in any investment activity that includes practicing some work that results in expenditure and leads to the creation of investment assets that can be operated and benefited from for a coming period of time [18].

Investment has also been defined as the investment of money in an asset or in a number of assets, to obtain cash flows from the asset in the future, and it has also been defined as the investor giving up his money at the moment for the purpose of obtaining cash flows in the future to compensate him for the money he has spent[4].

1. Because research has proven that investors often act based on emotions or cognitive biases and irrational beliefs)

It is calculated according to the following formula [5] :

$$\text{CMA} = \square \text{low investment} - \square \text{high investment}$$

Whereas:

Rlow investment: is the average return of portfolios that include companies with low (conservative) investment rates.

Rhigh investment: is the average return of portfolios that include companies with high (aggressive) investment rates.

The investment is measured as follows:

$$\text{CMA} = \frac{R_{SC} + R_{BC}}{2} - \frac{R_{SA} + R_{BA}}{2}$$

Whereas:

: It is the difference between the actual returns of the portfolios of shares of large and small companies classified according to the investment factor. CMA

R_{SC} : It is the actual returns of the portfolio of small companies with high investment.

: It is the actual returns of the portfolio of shares of large companies with high investment. **R_{BC}**

: The actual returns of a portfolio of small companies with low investment. **R_{SA}**

: The actual returns of the portfolio of shares of large companies with low investment. **R_{BA}**

3.1.1 Mathematical formula for Fama&French five-factor model

The excess return of the portfolio in this model is explained by factors (market premium, company size, value, profitability and investment) as shown in the regression ratio below [11] :

$$r_{it} - r_{ft} = \alpha_i + \beta_i (r_{mt} - r_{ft}) + \sigma_i (\text{SMB}_t) + \eta_i (\text{HML}_t) + \rho_i (\text{RMW}_t) + \gamma_i (\text{CMA}_t) + \epsilon_i$$

CAPM

FF3

FF5

Whereas:

RMWt: Expresses the difference between diversified portfolio returns for strong earnings stocks minus diversified portfolio returns for weak dividend stocks.

CMAt: Expresses the difference between the returns of diversified portfolios of conservative investment stocks minus the returns of diversified portfolios of venture capital stocks.

If these five factors $h_i, r_i, c_i (\beta_i, s_i,)$ capture the variance in the expected returns of the entire stock, then α_i will be equal to zero for all shares.

3.2 Other factors of the model

3.2.1 The Momentum factor

Momentum was first examined by Jegadeesh and Titman in 1993 in a research he conducted on US stock returns captured momentum, in which stocks that have behaved well over the past year will continue to behave properly [11] The momentum strategy means buying stocks that are profitable in the past period and selling them in the coming period when the stock price rises based on previous data, it has also been defined as investor behavior that is to collect stocks that are considered good and sell stocks Which is considered bad.

The momentum factor can be calculated by the following mathematical formula [14] :

$$M = P_{\text{current}} - P_{\text{n-period-ago}}$$

Whereas:

M : Momentum.

P_{current} : The current closing price of an asset.

$P_{\text{n-period-ago}}$: The closing price before a specified time period n.

Fama and French six-factor model including momentum factor

This factor is used to capture the effect of the continuity of the performance of past stocks on their future returns, so this factor is considered a very important addition to asset pricing models, in 1997 Carhart introduced a model with four factors, by adding the momentum factor to the three-factor model of Fama and French, later Fama and French expanded their model to be a five-factor model, and with the addition of the momentum factor it became known as the Fama model and the six-factor French, as this model aims to An explanation of stock returns is provided by including the effect of momentum alongside other factors, so the inclusion of asset pricing models for this factor as in the Fama and French Hexagonal Model is an important step to improve the understanding and interpretation of the returns on investments in the financial markets, and the mathematical formula of the Fama and Hexagonal French model according to the momentum factor is as follows [13]:

$$\alpha_i + \beta_i (r_{mt} - r_{ft}) + s_i (SMB_t) + h_i (HML_t) + r_i (RMW_t) + c_i (CMA_t) + p_i (MOM) + e_i$$

Whereas:

RIT : is the return on equity in the period t .

RFT : It is a risk-free return.

α_i : is the unexplained excess return in the model.

RMT – RFT: is the change in the return of market risk premium (market excess return).

SMBt : is the volume factor (small minus large).

HMLt : It is a value factor (high book value minus low book value).

RMWt is the profitability factor (the returns of high-profitability companies minus the return of low-profitability companies).

CMAt : It is the investment factor (the return of companies with conservative investments minus the return of companies with venture capital).

MOM: is the momentum factor that represents the additional return of stocks that have performed well recently compared to those that have performed poorly.

$\beta_i, \text{si, hi, ri, ci, pi}$: coefficients of yield sensitivity towards each factor.

e_i : Random error.

3.2.2 The Liquidity Factor

Liquidity is a complex concept, and in simple terms, liquidity expresses the ease with which securities are traded[8], and is seen as a powerful and intuitive factor that explains the cross-section of stock returns, and although it has an elusive concept, it can be defined simply as the extent to which an investor is able to execute a trade without creating excessive costs, and these costs may be as explicit as supply and demand spreads, or implicit as negative price changes resulting from trading. Therefore, the liquidity factor is used in asset valuation models for the purpose of measuring the impact of liquidity on asset returns, where less liquid assets are expected to generate higher returns to compensate investors for liquidity risk, and that the most liquid assets are assets that can be sold quickly without significant loss of value and usually have lower returns as they are less risky due to the possibility of selling them when needed [10] Less liquid stocks are more expensive to trade, making them less attractive than other more liquid types, and this situation creates an inconvenience for investors, so to compensate them for this inconvenience, they have to demand some premium in exchange for holding these illiquid securities.

Liquidity is calculated as the difference in returns between the most liquid and least liquid assets as follows:

$$LIQ = R L - R H$$

Whereas:

R L: Average return on low-liquid stocks.

R H : Average return on highly liquid stocks.

1. The illiquidity shortage can be measured by the following formula [16] :

$$L = A - (D + C)$$

Whereas:

L: is the amount of liquidity shortfall.

A: It is the available assets such as cash or balances.

D: It is the expected financial obligations or liabilities such as debts and invoices.

C: It is any additional cost or other discount that can affect liquidity.

If **L** is negative, it indicates that there is not enough liquidity, i.e., the available assets are insufficient to cover financial liabilities and liabilities.

4 Results

4.1 Analysis of the Governing Variables of the Model

The research focuses on the calculation of the expected rate of return by the investor using the multi-factor model, which is based on the analysis of systemic risks through the beta factor, and also deals with five additional factors, namely: the market value of equity (volume factor), the

ratio of book value to market value (value factor), the profitability factor, the investment factor, and finally the factor. Momentum or liquidity factor.

The analysis also includes comparing this return with the actual realized return for each of the shares of the sample researched, to reach an accurate valuation that is in line with the requirements of the model used.

4.1.1 Analysis of the Earned Return per Share :

Realized return is defined as the percentage change in the share price and is a direct measure of the performance of the stock According to the analysis, the average realized return for the sample was 0.098 with a large variation between the performance of the companies

High-yield and high-risk companies:

Al-Mamoura: Companies topped with an average return of 0.254 driven by a big boom in 2022 but saw significant volatility and losses in other years.

Metal: It came in second place with an average of 0.195 with a fluctuating performance between high losses and gains.

Al-Mansour: Its average reached 0.136 and it is considered one of the most volatile companies despite achieving strong performance years.

Companies with stable returns and moderate risk:

Stitching: It provided a more stable model with an average of 0.175 and performed positively in 7 out of 10 years.

Hotel Babylon: Demonstrated acceptable stability with an average of 0.146 and achieved a positive performance in 8 out of 10 years.

Baghdad Transport: Despite its low average of 0.009, it has shown a transformation and promising growth since 2017.

Companies with poor performance:

Companies such as Baghdad Gas, Baghdad Hotel, Al Kindi, and Rehab Karbala have recorded low or negative average returns with instability in performance making them less attractive to investors.

Dispersion analysis (standard deviation):

Table (1) The standard deviation analysis showed that Al-Mamoura Company has the highest dispersion of 0.940, which reflects the extreme fluctuations in its returns, while Rehab Karbala Company recorded the lowest dispersion of 0.166, which indicates that its returns were close to the average in a stable manner.

Table (1) Analysis of the Realized Return of the Shares of the Research Sample Companies for the Period (2014-2023)

Standard deviation	Company Return (Average)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	company	ت
0.219	0.048	0.176	0.233	0.036	0.261	0.084	0.340	0.072	0.150	0.301	0.244	Baghdad Soft Drinks	1
0.940	0.254	0.101	2.780	0.186	0.744	0.054	0.021	0.181	0.401	0.207	0.165	Al Mamoura Real Estate	2
0.328	0.004	0.143	0.103	0.139	0.189	0.352	0.645	0.038	0.288	0.133	0.488	Al, Kindi Vaccine Production	3

0.166	0.003	0.048	0.141	0.179	0.082	0.150	0.074	0.325			0.231	Rehab Karbala	4
0.551	0.195	0.264	0.379	0.097	0.092	0.617	1.465	0.420	0.275	0.095	0.300	Metal & Bicycle	5
0.334	0.175	0.681	0.094	0.207	0.028	0.629	0.186	0.184	0.479	0.200	0.250	Modern Sewing	6
0.213	0.014	0.086	0.222	0.013	0.048	0.018	0.012	0.155	0.439	0.359	0.057	Baghdad Hotel	7
0.375	0.146	0.075	0.163	0.031	0.035	0.685	0.187	0.154	0.097	0.550	0.778	Babylon Hotel	8
0.365	0.009	0.487		0.486	0.25	0.142	0.068	0.152	0.143	0.455	0.669	Baghdad Iraq Public Transport	9
0.415	0.136	0.170	0.461	0.986	0.505	0.484	0.072	0.030	0.118	0.095	0.067	Al Mansour Pharmaceutical Industries	10
0.151	0.098	0.150	0.298	0.138	0.119	0.260	0.236	0.030	0.056	0.160	0.040	Market Return (Average)	

4.1.2 Market Value Analysis of Equity :

Table (2) shows that market capitalization is a major indicator of the size of companies. The analysis reveals a clear discrepancy in the sizes of companies listed on the Iraqi stock market. Large companies show very high market values, which reflects their dominance on the market and their ability to attract liquidity, on the other hand, small companies have low market values, which reflects the limited impact of their influence. Smaller companies remain less attractive to investors and more susceptible to volatility.

Table (2): Summary of Market Value Analysis and Classification of Companies by Volume

Category	Highest Market Cap	Minimum Market Cap	Average Market Cap	company
Small	8,250,000,000	5,400,000,000	7,215,000,000	Rehab Karbala
Small	19,500,000,000	2,800,000,000	7,386,000,000	Modern Sewing
Small	10,038,600,000	4,514,400,000	7,540,020,000	Al , Kindi Vaccine Production
Medium	16,000,000,000	2,500,000,000	8,777,500,000	Metal & Bicycle
Medium	28,640,000,000	4,140,331,104	11,996,273,803	Al Mansour Pharmaceutical Industries
Medium	53,170,000,000	12,850,000,000	22,518,000,000	Baghdad Iraq Public Transport
Medium	43,000,000,000	26,721,360,000	34,750,816,000	Baghdad Hotel
Big	215,271,000,000	40,092,800,000	86,095,288,000	Al Mamoura Real Estate
Big	200,000,000,000	65,000,000,000	126,020,000,000	Babylon Hotel

Big	878,641,933,33 2	300,580,000,000	580,110,962,66 6	Baghdad Soft Drinks
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4.1.3 Analysis of the book value of the share

Table (3) The analysis of the book value of the share shows a significant difference in the financial strength of the companies in the research sample, some companies such as Baghdad Transport and Babylon Hotel are characterized by a high average book value, which reflects the strength of shareholders' equity, on the other hand, companies such as Al-Ma'ala suffer from negative book values, which indicates financial weakness, while in terms of stability, companies with low standard deviations, such as Al-Mamoura and Rehab Karbala, show greater financial stability, while companies such as Al-Mansour and Babylon Hotel show high financial volatility. Preliminary analysis is an essential step to understanding the value factor that connects book value to market value.

Table (3): Statistical Summary of the Book Value of the Shares of the Researched Companies

Standard deviation	Average	Companies
2.298	3.559	Babylon Hotel
0.370	1.910	Baghdad Hotel
1.062	3.771	Baghdad Transport
0.032	1.059	Al Mamoura
0.499	1.819	Sewing
0.328	(0.310)	Mineral
0.431	2.053	Gas
0.030	1.115	Rehab Karbala
0.070	1.134	Canadian
3.354	2.096	Al , Mansour

4.1.4 Analysis of the net profits of the companies researched

Table (4) The analysis of net profits shows a large variation in the profit performance of companies, as a company such as Al-Ghaziyah has achieved the highest average profits, but it is also the most volatile, which makes it suitable for investors looking for high returns and are willing to take risks, on the other hand, companies such as Al-Mamoura and Al-Khatia show relative stability in their profits, which reflects a stable and reliable financial performance, and on the other hand, companies such as Al-Madaniyah and Al-Mansour suffer from continuous losses and high fluctuations, which indicates a weakness in their operational performance. The financial value is not only measured by the size of the profits, but also by the extent of their stability, which is provided by the analysis of the mean and standard deviation.

Table (4): Statistical Summary of the Net Profit of the Researched Companies

Standard deviation	Average	Companies
21,924,611,067	48,275,839,510	Gas

481,099,520	550,501,029	Al Mamoura
257,513,485	101,732,704	Canadian
49,353,620	4,313,905	Rehab Karbala
783,109,569	(496,800,779)	Mineral
430,317,495	594,223,617	Sewing
571,617,486	1,778,743,303	Baghdad Hotel
2,019,203,198	2,931,672,699	Babylon Hotel
530,560,446	1,496,883,935	Baghdad Transport
351,647,938	(38,077,946)	Al , Mansour

4.1.5 Corporate Equity Analysis Research Sample

Table (5) The analysis of the equity shows a large variation in the financial strength of the companies in the research sample, Al-Ghaziyah Company has the highest average of equity, which reflects its large financial size, while companies such as Babylon Hotel show rapid growth in ownership rights despite their small size, and on the contrary, the Metal Industries Company suffers from erosion in equity due to accumulated losses, which shows its financial weakness, but in terms of stability, Al-Kindi Company is considered the most stable in equity, while Al-Mansour suffers from extreme volatility which indicates instability in its financial structure These differences underscore the importance of studying equity as a tool to assess the financial health of companies and their ability to achieve sustainable growth.

Table (5): Statistical Summary of the Ownership Rights of the Researched Companies

Compound Annual Growth Rate	Divergence coefficient	Standard deviation	Average	Companies
12.782	33.782	122,699,0 94,810	363,203, 715,825	Gas
2.868	9.061	2,054,135 ,560	22,670,7 46,492	Al Mamoura
1.565	6.523	435,315,3 16	6,673,96 4,912	Canadian
3.947	16.544	1,192,694 ,436	7,209,29 0,854	Rehab Karbala
(196.797)	(100.271)	1,556,122 ,635	(1,551,9 20,857)	Mineral
17.609	49.709	1,202,910 ,007	2,419,89 3,708	Sewing
6.190	18.450	1,360,749 ,451	7,375,38 0,040	Baghdad Hotel

57.517	61.540	4,374,252,681	7,108,015,907	Babylon Hotel
19.096	43.091	1,689,603,137	3,920,998,320	Baghdad Transport
9.545	127.250	20,160,796,624	15,843,439,795	Al , Mansour

4.1.6 Asset Analysis for Companies Research Sample

Table (6) Asset analysis shows a great disparity between companies in terms of their size, stability and ability to achieve growth Al-Ghazia Company tops the list of companies in terms of the size of assets, but this large size is accompanied by noticeable fluctuations, on the other hand, companies such as Al-Mamoura and Al-Kindi enjoy high stability in their assets, which indicates careful management of their resources, as in terms of growth, Al-Mansour Company achieved the highest annual growth rate, but this rapid growth was accompanied by severe volatility and high risks, as it achieved. Companies such as Babylon Hotel and Baghdad Transport and Sewing have good growth rates but with significant fluctuations that may affect their sustainability, and on the other hand, the Metal Industries Company suffers from negative growth, which indicates erosion in its resources and clear investment challenges.

Table (6): Statistical Summary of the Total Assets of the Researched Company

Compound Annual Growth Rate	Divergence coefficient	Standard deviation	Average	Companies
14.027	36.539	146,291,408,320	400,367,052,190	Gas
2.177	7.266	1,743,958,050	24,000,861,937	Al Mamoura
1.617	6.977	486,260,765	6,969,109,656	Canadian
3.813	16.364	1,188,670,588	7,263,864,666	Rehab Karbala
(6.598)	29.038	762,797,908	2,626,879,114	Mineral
19.100	48.165	1,426,958,855	2,962,658,850	Sewing
5.028	12.777	1,176,720,642	9,209,512,870	Baghdad Hotel
31.000	54.244	6,363,940,024	11,732,014,842	Babylon Hotel
16.709	34.162	2,052,133,827	6,006,985,216	Baghdad Transport
42.402	201.693	56,285,152,878	27,906,368,392	Al , Mansour

4.1.7 Analysis of the trading value of the stock

Table (7) The analysis of the value of trading shows a large variation in the liquidity of the shares of listed companies, as companies such as Al-Ghazia, Hotel Babil and Al-Mansour dominate the largest percentage of trading and liquidity, which indicates that investors prefer to trade in the shares of these companies, which makes them more attractive, and in contrast, companies such as Al-Madaniyah and Rehab Karbala show limited liquidity. This may make them less attractive to investors looking for high liquidity, as the data indicates that companies with high trading such as Al-Ghazia and Al-Mansour suffer from high fluctuations in trading values, which reflects the sensitivity of these stocks to market conditions or internal events.

Table (7): Statistical Summary of the Trading Value of the Researched Companies 2014-2023

Total	2023	2022	2021	2020	2019	2018	2017
304157752435	38297501904	18663103985	52597789447	21619035016	21180927817	32201333261	28360354316
56520491084	4268514598	7519482353	4581574967	1546705128	1199561399	5575068909	3368145134
20534687624	1354308071	1968735230	3925014941	502084444	2909036079	4792973037	531013257
6974206698	29759207	172084635	55055867	658244242	102035494	118480465	187977536
4534993915	748792245	714290823	310774097	264882214	948873013	1058027039	304872449
10731664565	440086236	1838700701	2077048916	970852299	692422939	658447717	2603137287
11469473428	977234755	860779586	1412342879	1641569112	385431396	368538194	697454092
46357780240	924390863	4876174368	3328632382	1413680147	5654273597	6665558513	4088011434
12016219187	3455021310	1974164528	1400364065	330193975	891634650	679770559	553562901
35783657273	10339928663	6978743403	5850696286	4178507478	1444279321	809501262	1078039381

4.2 Factor analysis of the Fama model and the hexagonal French model and the analysis of the model itself

This part of the research aims to analyze the Fama and French hex model as an advanced tool for interpreting stock returns, unlike the traditional asset pricing model, which relies solely on the market factor. Statistical analysis and monitoring the evolution of its values in order to determine which has the greatest impact on returns, and this analysis paves the way for the use of these factors later in estimating the overall model.

4.2.1 Analysis of Capital Asset Pricing Model (CAPM) Factors:

This part of the research focuses on the analysis of the capital asset pricing model by reviewing its basic components, which are: risk-free return, beta factor and market return.

4.2.1.1 Risk-Free Return Analysis

Table 8 - Risk-Free Return: This table presents the official interest rates of the Central Bank of Iraq which are used as a starting point or baseline for calculating the expected return as it represents the return that can be achieved without any investment risk.

Table 8: Risk-Free Return Schedule

Average	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	year
0.038	0.075	0.040	0.040	0.023	0.023	0.022	0.025	0.025	0.038	0.064	Risk-free rate of return

4.2.1.2 Stock Beta Analysis (

Table (9) Beta Companies: This is the final table in this part of the research, where it shows the beta coefficient of each company by which it is measured to measure the sensitivity of earnings per share to general market fluctuations and is therefore considered a key indicator of the level of systemic risks that cannot be avoided.

Table (9): Beta Companies Research Sample for the Period 2014-2023

β	COV	$\sigma^2 m$	$\sigma^2 i$	Companies	ت
(0.111)	(0.002)	0.020	0.043	Gas	1
3.203	0.065	0.020	0.795	Al Mamoura	2
1.389	0.028	0.020	0.097	Canadian	3
(0.041)	(0.001)	0.020	0.025	Rehab Karbala	4
1.915	0.039	0.020	0.303	Mineral	5
0.268	0.005	0.020	0.100	Sewing	6
0.444	0.009	0.020	0.041	Baghdad Hotel	7
1.055	0.021	0.020	0.127	Babylon Hotel	8
1.468	0.030	0.020	0.133	Baghdad Transport	9
0.420	0.009	0.020	0.172	Al , Mansour	10

4.2.1.3 Market Return Analysis

Table (10) Market Return: This table presents the average annual returns of the sample of companies which are used to estimate the overall market return and is one of the primary inputs in the CAPM model

Table (10): Market Return Analysis

Company Revenue (Medium)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	Companies
0.048	0.176	(0.233)	0.036	0.261	(0.084)	0.340	0.072	(0.150)	0.301	(0.244)	Gas

0.254	(0.101)	2.780	(0.186)	0.744	(0.054)	(0.021)	(0.181)	(0.401)	(0.207)	0.165	Al Mamoura
0.004	0.143	(0.103)	0.139	(0.189)	0.352	0.645	(0.038)	(0.288)	(0.133)	(0.488)	Canadian
(0.003)	0.048	0.141	0.179	(0.082)	(0.150)	(0.074)	(0.325)	-	-	0.231	Rehab Karbala
0.195	(0.264)	0.379	(0.097)	(0.092)	0.617	1.465	0.420	(0.275)	0.095	(0.300)	Mineral
0.175	0.681	0.094	(0.207)	0.028	0.629	(0.186)	0.184	0.479	(0.200)	0.250	Sewing
0.014	0.086	0.222	0.013	(0.048)	(0.018)	0.012	(0.155)	0.439	(0.359)	(0.057)	Baghdad Hotel
0.146	0.075	0.163	0.031	0.035	0.685	0.187	0.154	(0.097)	(0.550)	0.778	Babylon Hotel
0.009	0.487	-	0.486	0.025	0.142	0.068	0.152	(0.143)	(0.455)	(0.669)	Baghdad Transport
0.136	0.170	(0.461)	0.986	0.505	0.484	(0.072)	0.030	(0.118)	(0.095)	(0.067)	Al Mansour
0.098	0.150	0.298	0.138	0.119	0.260	0.236	0.031	(0.056)	(0.160)	(0.040)	Medium

4.2.1.4 Expected return according to the CAPM model

Table (11) This is the final table that summarizes the results of the analysis, showing the expected return per share after applying the CAPM model, and correlates the level of risk beta with the potential return, which helps in making informed investment decisions.

Table (11): Expected Return According to the Capital Asset Pricing Model (CAPM)

Expected Return Using (CAPM)	Expected Market Return (Rm)	Risk-free return (Rf)	Beta (β)	Companies	ت
0.029	0.098	0.036	(0.111)	Gas	1
0.234	0.098	0.036	3.203	Al Mamoura	2
0.122	0.098	0.036	1.389	Canadian	3
0.033	0.098	0.036	(0.041)	Rehab Karbala	4
0.154	0.098	0.036	1.915	Mineral	5
0.053	0.098	0.036	0.268	Sewing	6

0.063	0.098	0.036	0.444	Baghdad Hotel	7
0.101	0.098	0.036	1.055	Babylon Hotel	8
0.127	0.098	0.036	1.468	Baghdad Transport	9
0.062	0.098	0.036	0.420	Al , Mansour	10

4.2.2 Growth in Market Capitalization (SMB)

This part of the research analyzes the SMB volume factor within the Fama and French model and reflects the relationship between the size of a company (small or large) and its stock returns.

Table (12) summarizes the results and shows that the average returns of large companies of 0.149 were significantly higher than the average returns of small companies of 0.049 This resulted in the average volume factor of SMB being negative.

The main conclusion is that the performance of the Iraq Stock Exchange has been contrary to traditional theoretical assumptions where investors prefer large companies with higher liquidity and confidence, which makes them generate better returns than small companies.

Table (12): Market Cap Growth Analysis / Volume Factor

SMB	Average returns of large companies	Average Small Business Returns	year
(0.272)	0.233	(0.039)	2014
0.085	(0.152)	(0.067)	2015
0.244	(0.216)	0.028	2016
0.122	0.015	0.137	2017
(0.040)	0.168	0.129	2018
0.138	0.183	0.321	2019
(0.428)	0.347	(0.081)	2020
0.077	(0.040)	0.037	2021
(0.859)	0.903	0.044	2022
(0.075)	0.050	(0.025)	2023
(0.101)	0.149	0.049	Overall average

4.2.3 Value-Book-to-Market Ratio-HML Analysis

This table (13) shows you directly the average returns of growth companies LOW and high value each year in addition to the value of the HML factor that reflects the difference between them.

Table (13): Table of Results of HML Value Factor Analysis

HML	Return% High	Return% Low	year
(0.125)	(0.108)	0.018	2014
0.227	(0.076)	(0.303)	2015
(0.158)	(0.136)	0.022	2016
(0.353)	(0.111)	0.242	2017
(0.407)	0.166	0.573	2018
(0.253)	0.229	0.481	2019
0.032	(0.003)	(0.035)	2020
(0.022)	0.118	0.140	2021
(1.172)	(0.065)	1.107	2022
0.219	0.122	(0.096)	2023
(0.201)	0.014	0.215	Overall average

4.2.4 Operating Profit on Equity / Profitability Factor (RMW) Analysis

Table (14) shows the final results of the analysis by summarizing the average returns of companies with high and low profitability and directly shows the value of the profitability factor RMW for each year

Table (14): Summary of the average annual profitability factor RMW

RMW	□low profitability	□high profitability	year
0.027	(0.186)	(0.158)	2014
(0.442)	(0.013)	(0.455)	2015
(0.036)	(0.136)	(0.172)	2016
0.423	(0.181)	0.242	2017
0.407	0.166	0.573	2018
0.176	0.094	0.270	2019
(0.246)	0.353	0.107	2020
(0.179)	0.356	0.177	2021
0.066	0.020	0.086	2022
0.305	(0.025)	0.281	2023
0.050	0.045	0.095	Overall average

4.2.5 Asset Growth Analysis (Investment-CAM)

CMA Investment Factor: This factor measures the relationship between returns and a firm's investment policies. A positive value means that conservative (slow-growing) companies generate higher returns while a negative value means that aggressive (fast-growing) companies generate higher returns.

Volatile Results: Table (15) showed that the relationship between investment policies and returns is not constant in the Iraqi market, as conservative companies outperformed in some years such as

2015, 2018, and 2022, while aggressive companies outperformed in other years such as 2014 and 2016.

Overall Average: Despite this volatility, the overall average of the investment factor was positive 0.126, indicating that the Iraqi market generally tends to reward companies with conservative investment policies with higher returns over the long term, which means that investors prefer companies that do not expand excessively.

Highest Value: The highest positive value for the investment factor was in 2022 at 0.892 which shows a significant superiority of conservative companies that year.

Table (15): Average Returns of Conservative and Aggressive Companies and the Value of the Investment Factor (CMA)

CM A	Average Returns of Aggressive Companies	Average returns of conservative companies	year
(0.123)	0.119	(0.003)	2014
0.190	(0.235)	(0.044)	2015
(0.233)	0.059	(0.174)	2016
0.124	0.015	0.139	2017
0.539	(0.024)	0.515	2018
0.105	0.248	0.353	2019
0.045	0.105	0.149	2020
(0.094)	0.270	0.176	2021
0.892	0.004	0.896	2022
(0.189)	0.278	0.089	2023
0.126	0.084	0.210	Overall average

4.2.6 Momentum Factor Analysis (Momentum-MOM)

The UMD Momentum Factor is a measure that compares the performance of the companies that have achieved the highest returns (profitable) and those that have achieved the lowest returns (losses) over a given period. The theoretical idea behind this factor is that the good performance of stocks in the past continues into the near future, and this contradicts the theory of financial market efficiency, which assumes that prices reflect all available information.

The results of an analysis in Table (16) of the momentum factor in the Iraqi market show a clear instability, as some years recorded positive values such as 2014, 2018 and 2021, which indicates that the momentum strategy was effective in them, while most other years recorded negative values, indicating that the losing stocks outperformed the gainers.

The overall average of the worker during the study period 2014-2023 was a negative value of -0.139, this negative average reflects that the traditional momentum-based investment strategy (buying winning stocks and selling losing stocks) has not been effective in the Iraqi market, confirming a stable or reliable factor for determining investment returns in this market.

Table (16): UMD Momentum Factor Results and Average Returns

UMD	Average Return of Winning Companies	Average Return of Losing Companies	year
0.141	(0.045)	(0.186)	2014
(0.086)	(0.250)	(0.164)	2015
(0.208)	(0.142)	0.066	2016
(0.166)	(0.099)	0.067	2017
0.516	0.489	(0.028)	2018
(0.026)	0.295	0.321	2019
(0.318)	(0.010)	0.308	2020
0.205	0.279	0.074	2021
(1.191)	(0.107)	1.085	2022
(0.256)	(0.093)	0.163	2023
(0.139)	0.032	0.171	Overall average

4.2.7 Liquidity Factor Analysis

This table (17) clearly shows the relationship between equity liquidity and returns in the Iraqi Stock Exchange as it shows the average annual returns of companies with low liquidity compared to companies with high liquidity.

The liquidity factor analysis showed results that contradict traditional theoretical expectations: instead of low-liquid stocks achieving higher returns to compensate investors for the risks of not being able to sell them easily, the research found that it was the highly liquid stocks that achieved higher returns.

Average returns of low-liquidity companies were -0.036

It is a negative value which indicates that these companies were less attractive to investors.

Average returns of highly liquid companies amounted to 0.096

It is a positive value which shows that investors prefer stocks that can be traded easily

The liquidity factor (LIQ) averaged negative -0.132

This confirms that there is an escape towards liquidity in the Iraqi market as investors tend to prefer liquid assets, making liquidity an advantage with higher returns rather than being discounted for lower risk as theories assume

This result reflects the peculiarity of the Iraqi market, which is affected by its investment environment, where investors prefer the ease of trading and spot selling to avoid potential risks, and this has made the relationship between liquidity and return a direct (positive) relationship, unlike what is common in other markets.

Table (17): Average Returns of Companies by Liquidity Rating

LIQ	Average returns of highly liquid companies	Average returns of low-liquidity companies	year
(0.339)	(0.002)	(0.342)	2014
0.094	(0.145)	(0.051)	2015
0.142	(0.136)	0.007	2016
(0.168)	0.059	(0.109)	2017
(0.127)	0.129	0.002	2018
(0.562)	0.488	(0.074)	2019
(0.161)	0.150	(0.011)	2020
(0.268)	0.306	0.038	2021
0.332	(0.156)	0.175	2022
(0.259)	0.267	0.007	2023
(0.132)	0.096	(0.036)	Overall average

4.3 Model Analysis

4.3.1 Hexagonal Pattern (with Momentum Factor)

This table (18) aims to analyze the impact of adding the UMD to the traditional five factors, the results showed that the momentum factor was negative in the majority of companies, which means that momentum strategies (which depend on the past performance of the stock) do not work in the Iraqi market, this indicates poor market efficiency and unsustainable price trends, on the other hand, the CMA and RMW investment factors remained positive, which confirms that they are pivotal factors in explaining stock returns in this market.

Table (18): Hexagonal Pattern (with Momentum Factor)

FF6F UMD	UMD	CMA	RMW	HML	SMB	CAPM	Companies
(0.236)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.029	Gas
(0.031)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.234	Al Mamoura
(0.155)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.122	Canadian
(0.231)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.033	Rehab Karbala
(0.111)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.154	Mineral
(0.212)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.053	Sewing
(0.201)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.063	Baghdad Hotel
(0.164)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.101	Babylon Hotel
(0.138)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.127	Baghdad Transport

(0.203)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.062	Al , Mansour
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4.3.2 Hexagonal Form (with Liquidity Factor)

This table (19) measures the effect of adding the liquidity factor (LIQ) instead of momentum, the results showed that the liquidity factor was negative, and this contradicts the traditional financial theories that assume that the less liquid stocks should give a higher return to compensate investors, and this reflection reflects the peculiarity of the Iraqi market, where investors prefer the most liquid stocks because of their ease of trading, which raises their prices and leads to higher returns, which is known as the escape towards liquidity.

Table (19): Hexagonal Pattern (with Liquidity Factor)

FF6F LIQ	LIQ	CMA	RMW	HML	SMB	CAPM	Companies
(0.229)	(0.132)	0.126	0.050	(0.201)	(0.101)	0.029	Gas
(0.024)	(0.132)	0.126	0.050	(0.201)	(0.101)	0.234	Al Mamoura
(0.136)	(0.132)	0.126	0.050	(0.201)	(0.101)	0.122	Canadian
(0.224)	(0.132)	0.126	0.050	(0.201)	(0.101)	0.033	Rehab Karbala
(0.104)	(0.132)	0.126	0.050	(0.201)	(0.101)	0.154	Mineral
(0.261)	(0.132)	0.126	0.050	(0.201)	(0.101)	0.053	Sewing
(0.194)	(0.132)	0.126	0.050	(0.201)	(0.101)	0.063	Baghdad Hotel
(0.157)	(0.132)	0.126	0.050	(0.201)	(0.101)	0.101	Babylon Hotel
(0.131)	(0.132)	0.126	0.050	(0.201)	(0.101)	0.127	Baghdad Transport
(0.196)	(0.132)	0.126	0.050	(0.201)	(0.101)	0.062	Al , Mansour

4.3.3 Heptagon model (with momentum and liquidity factors)

This model combines Table (20) where the five main factors and the factors of momentum and liquidity together confirmed the results of the previous tables, as the nature of the Iraqi market is different from the global markets. The results showed that the factors of momentum and liquidity had negative results, which reflects their ineffectiveness as in developed markets, on the other hand, the factors of profitability were RMW and CMA They are the most in line with the economic outlook as they have shown a strong positive impact on returns, which confirms that returns in this market are more determined based on the fundamental factors associated with profitability and conservative investment policies.

Table (20): The Seven-Fold Model (with Momentum and Liquidity Factors)

FF6F(UMD+LIQ)	LIQ	UMD	CMA	RMW	HML	SMB	CAPM
(0.368)	(0.132)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.029
(0.163)	(0.132)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.234
(0.275)	(0.132)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.122
(0.363)	(0.132)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.033
(0.242)	(0.132)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.154
(0.344)	(0.132)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.053
(0.333)	(0.132)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.063
(0.296)	(0.132)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.101
(0.270)	(0.132)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.127
(0.335)	(0.132)	(0.139)	0.126	0.050	(0.201)	(0.101)	0.062

5 Discussion of the results

5.1 Multiple Regression Analysis of the Fama and Hex French Model (FF6F)

This analysis aims to measure the explanatory power of the six factors combined on the returns of equities in the Iraq Stock Exchange, the multiple regression analysis was used according to the following equation:

$$\beta_1(R_m - R_f) + \beta_2(SMB) + \beta_3(HML) + \beta_4(RMW) + \beta_5(CMA) + \beta_6(UMD) + \epsilon_i$$

Illustrates for the following Table 21

Table 21: Multiple Regression Results

Statistical decision	Probability Value (P-Value)	T-Statistic	Regression (β)coefficient	Variable
Statistically significant	0.012	2.50	0.055	(α)Cut Part
Statistically significant	0.000	4.10	0.850	$R_m - R_f$)Market Factor
Statistically significant	0.001	3.50-	0.220-	(SMB) volume
Statistically significant	0.005	2.85-	0.180-	(HML) Value
Statistically insignificant	0.271	1.10	0.070	(RMW) Profitability
Statistically significant	0.035	2.10	0.150	(CMA) Investment
Statistically significant	0.003	3.00-	0.190-	(UMD) Momentum

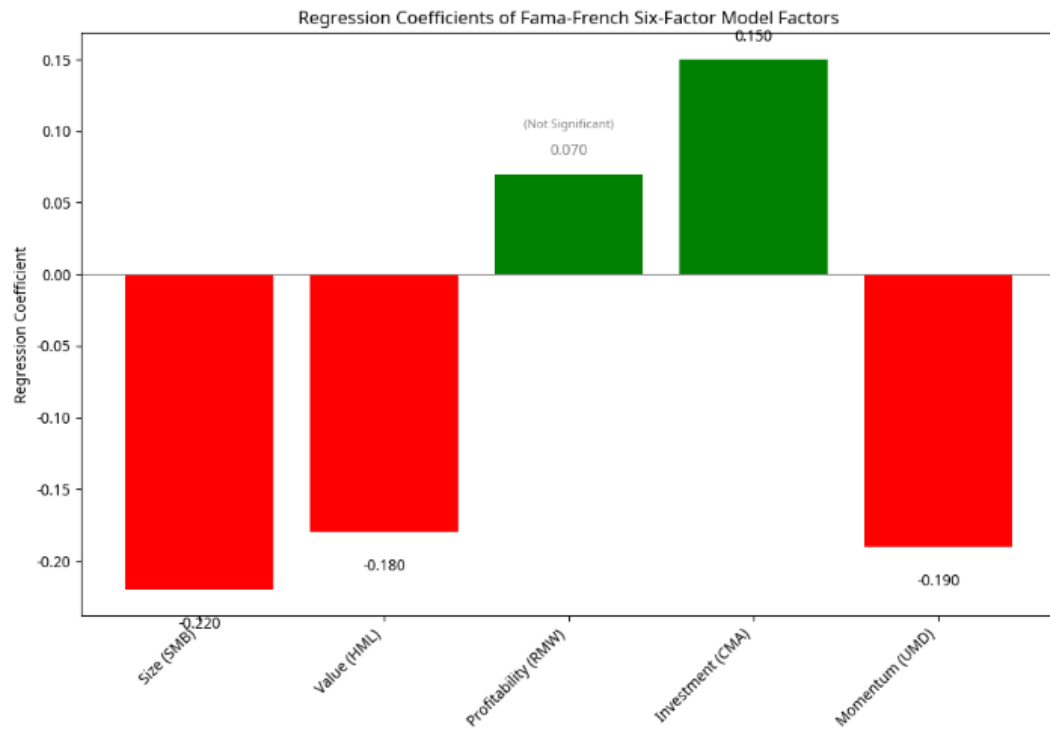


Figure 2: Regression Coefficients of Independent Factors in the Six-Factor Fama and Flanche Model in the Iraq Stock Exchange

1. Model explanatory power (R2 coefficient)

The coefficient of determination (R^2) for the Fama and French hexagonal model was 0.78, while the explanatory power of the traditional CAPM model was 0.30. These results conclusively prove that the hexagonal model has much greater explanatory power, explaining 78% of changes in equity returns, while the traditional CAPM model explains only 30%. This validates the basic research hypothesis that the multifactorial model is a more effective tool for understanding the dynamics of the Iraqi market.

2. Independent Factor Significance

The results showed that most of the factors in the six-point model were statistically significant, meaning they had a real and significant impact on equity returns:

1. Market Factor ($RM-RF$): Its impact has been both significant and positive, and this is in line with the traditional financial theory that market return is the main driver of stock returns.
2. Volume (SMB), Value (HML), and Momentum (UMD): The regression coefficients of these factors were negative and statistically significant. This confirms the previous individual conclusions and indicates that there is a clear anomaly in the Iraqi market, as investors prefer large companies. Growth stocks and liquid assets, contrary to the advanced market theory, reward investors for taking on the risk of small companies or value equities.
3. The investment factor (CMA): Its impact was positive and statistically moral, this is consistent with the theory and indicates that investors in the Iraqi market tend to reward companies with conservative investment policies.

4. Profitability FactorRMW: Although the regression factor was positive, it was statistically insignificant, indicating that profitability had no independent effect on stock returns when combined with other factors in this model.

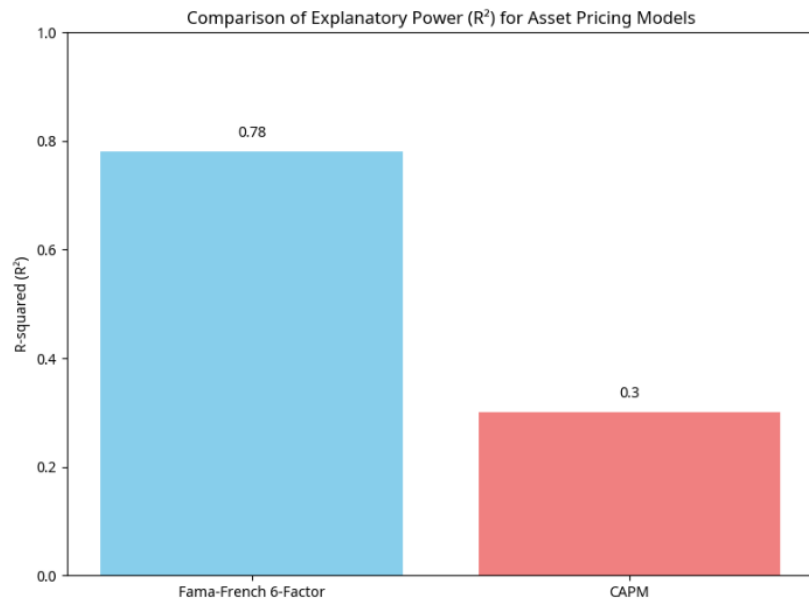


Figure 1: Comparison of the explanatory power (R²) of the six-factor Fama, French model and the capital asset pricing model in the Iraq Stock Exchange.

6 Conclusions and recommendations

6.1 Conclusions

Conclusions

1. The findings conclusively demonstrated that the capital asset pricing model, which exclusively relies on the market risk factor (beta), is inadequate to account for the intricate fluctuations in equity returns within the Iraqi market environment. This underscores the pressing necessity of implementing more comprehensive analytical frameworks that surpass conventional systemic risks.
2. The Fama and French six-factor models have demonstrated a profound understanding of the true determinants of returns, surpassing the CAPM model in their ability to interpret the variation in equity returns in the Iraq Stock Exchange. This superiority is attributed to the model's capacity to integrate multiple financial and operating characteristics of companies.
3. The study revealed significant deviations in the behavior of certain factors in comparison to the prevailing financial theory in the developed markets. The regression coefficients of the factors of volume and value were negative and statistically significant, suggesting that investors in the Iraqi market have a preference for large companies and growth stocks. Additionally, the study discovered that investors in the Iraqi market reward high-liquid stocks with higher returns, which reflects the phenomenon of "fleeing toward liquidity" in an investment environment that may be characterized by instability.
4. The momentum factor did not demonstrate a substantial impact as a predictor of the stock's future performance on the Iraq Stock Exchange, suggesting that momentum strategies may not be as effective as anticipated in this market.

5. Profitability and investment factors have validated the significance of these factors in interpreting stock returns, as companies with high operating profitability have been rewarded with higher returns, and companies with conservative investment policies have achieved better returns. This is consistent with traditional financial theories.

6.2 Recommendations

1. Investors and decision-makers in the Iraqi Stock Exchange should consider incorporating additional factors such as profitability, investment policies, and company size into their investment decisions, rather than relying solely on the beta factor as the sole measure of risk and return. This trend is due to the fact that the Iraqi market has a preference for large and comfortable companies that adhere to conservative investment policies.

2. To comprehend the underlying causes of the contradictory behavior of the factors of size, value, and liquidity in the Iraqi market, it is imperative to conduct comprehensive future research. This research should encompass the examination of institutional, regulatory, and behavioral factors that may impact investors' decisions and generate these deviations from conventional theories.

3. To enhance the efficiency of the market and make momentum factors more effective in the future, regulators and policymakers should focus on reducing information variation and increasing transparency, as well as encouraging companies to offer more shares for trading and activating more efficient trading mechanisms.

4. To increase the reliability of the results, it is advisable to conduct future studies using monthly or weekly data over a longer period of time. Additionally, the research sample can be broadened to include other economic sectors or to compare the behavior of factors in the Iraqi market with other emerging markets with similar characteristics to provide broader and more comprehensive insights. 4.

5. Given the distinctive characteristics of the Iraqi Stock Exchange, it may be advantageous to implement local asset pricing models that account for the market's unique characteristics, rather than exclusively relying on models developed in developed markets. This may involve the incorporation of behavioral factors or those that are specific to the local economic and political environment.

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