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Book to Market and Size as Determinants of Stock Returns of Banks: An Empirical Investigation from MENA Countries

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Abstract *The aim of this study is to examine empirically the determinants of stock returns of banks in the MENA countries. Methodologically, we use the capital asset pricing model (CAPM) and the three-factor model of Fama and French (1993) for a sample of 30 banks during the period from March 31, 2004 to March 18, 2014. From the empirical findings, we can show that the firms with big size and with high book to market (BH) produce higher average stock returns than big firms during all periods of study (before the crisis, during the financial crisis of 2007 and after the financial crisis). In addition, we find that the size, the book to market and the market risk premium have very strong importance to explain the volatility of the expected returns. The results show, also, that the market risk (Mkt) has a positive impact on market profitability of banks except for the SM and BH portfolios in the case of the CAPM and Fama and French models. The risk associated with the size (SMB) has a positive impact on small banks and a negative impact on banks with big sizes. Finally, the risk related to the market value (HML) has a positive impact on small and large banks.*

Key words Conventional banks, CAPM, Fama and French model, stock returns

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1. Introduction

The concept of volatility is probably one of the subjects that arouse the most research in the field of mathematical finance. This interest volatility is motivated by two important reasons: the number of more and more companies using risk management tools and the large number of derivatives traded in the global financial markets. The fair price of a financial asset is determined by a number of factors including the volatility of the underlying asset. All these factors are directly observed in the market apart from the volatility. Similarly, when a company wants to study its exposure to financial risk, it must be able to assess the volatility of each property it owns.

There are different models developed to examine the nexus between risk and stock returns. Capital Asset Pricing Model (CAPM) of Sharpe (1964), Mossin (1966) (SLM) or Sharpe (1964), Lintner (1965) and Black (1972) (SLB) is the first model to examine the link between risk and returns. The developers of this model found that market beta is significantly and positively related to expect stock returns. Even though this finding is supported to previous researchers such as Lintner (1965), Black *et al.* (1972) and Fama and MacBeth (1973), the limitation of this model is that it is used market beta only as risk factor and not employ the macro and firm specific factors to explain the behavior of expected stock returns and also the most of recent researchers Stattman (1980), Reinganum (1981), Rosenberg *et al.* (1985), Lakonishok and Shapiro (1986), Chan *et al.* (1991), Fama and French (1992,1998), Daniel *et al.* (1997), Patel (1998),Chui and Wei (1998), Rouwenhorst (1998) and Claessens *et al.* (1998) show that market beta has little or no ability in explaining the behavior of expected stock returns and firm size and book-to-market equity play significant role in explaining the behavior of expected stock returns. Therefore later Fama and French (1992) developed FF three-factor pricing model (TFPM) in which they added two supplementary risk factors which are firm size and B-M equity to the CAPM. Fama and French model is tested successfully in many markets around the world.

With the appearance of the CAPM, the financial world has experienced great upheaval. This model has a simple relationship to explain the performance of the asset return by the market risk premium. This risk premium is the extra return that investors require to receive to buy shares. This risk is divided into systematic risk affecting more or less all the shares of a stock market and specific risk independent of phenomena affecting all assets.

In the 90s, another model has introduced by Fama and French which represents an extension of the CAPM. In this model, three factors are used to explain the equity returns as; the market portfolio, the risk related to the value (measured by the Book-to-Market ratio) and the size (measured by market capitalization). The effect issued by the size is a result of the problems related to the liquidity and the quality of information. The Book-to-Market ratio is related to the risk of default by some firms due to their particular vulnerability to adverse economic conditions and therefore reflects the risk premium required by investors. The three-factor model of Fama and French has become popular and is an extension of CAPM in many practical applications in finance.

All previous researches are elaborated mainly for the developed countries in the context of conventional banks only by using the CAPM and the Fama and French models. In this paper, we try to investigate empirically the application of the CAPM and the Fama and French models in the case of banks.

Then, in this paper, we try to study the determinants of stock returns of banks in the MENA countries. For the methodology, we use the model of asset pricing (CAPM) and the model of Fama and French. To do so, we employ a sample of 30 banks existing in the MENA countries during the period from March 31, 2004 to March 18, 2014. Then, we divide the period of study into three periods; before the financial crisis from March 31, 2004 to December 31, 2007 (947 days), The period of crisis from January 01, 2008 to December 31, 2010 (794 days), and after the period of crisis from January 02, 2011 to March 18, 2014 (826 days). For the econometric methodology, we utilize the Three Stages Least Square model (Three Stages Least Square) to estimate the CAPM model and Fama and French model.

The empirical findings show that the market risk (Mkt) has a positive impact on market profitability of banks except for SM and BH, for CAPM model and Fama and French. Additionally, the risk associated with the size (SMB) has a positive effect on smaller banks and a negative impact on banks with big size. Finally, the risk related to the value (HML) has a positive impact on small and large banks.

2. Literature review

One of the most important models in modern portfolio theory is the Capital Asset Pricing Model (CAPM). The CAPM is a model that describes the relationship between risk and expected return. Various studies have been conducted in various markets in the world that supports the validity of the CAPM.

Fama and French (1992) (FF) show that the market beta has little or no ability in explaining the variation in stock returns on U.S stock on selected non-financial firms and on the other hand, they report that the variation of cross-sectional stock returns can be obtained by two firm characteristics: firm size and book-to-market equity during the period of 1962 to 1989.

According to Fama and French (1992), the associated risk premium of the size and Book to Market variables is easily quantifiable, significantly negative and positive, respectively.

Andreas and Eleni (2004) empirically studied the Fama and French (1993) three factor model using Japanese data over the period of 1992 to 2001. Their empirical findings a significant relationship between the three factors and the expected stock returns in the Japanese market. Further, it clearly remarks that the market factor has the most explanatory power in explaining the variation of stock returns. The explanatory power of the size factor (SMB) dominates the explanatory power of the Book-to-Market equity factor (HML) when the testing portfolios consist of small stocks and the opposite occurs when the testing portfolios consist of big stocks. Bryant and Eleswarapu (1997) for the period from 1971 to 1993 and Pinfold et al. (2001) for the period from mid-1993 to March 2001 reported a Book to Market effect but a weak size effect in US stocks. On the other hand, Vos and Pepper (1997) documented strong size and Book to Market effects over the period 1991-1995, while Li and Pinfold (2000), replicating Vos and Pepper (1997) for the period starting at the end of 1995 to June 1999, did not find a book to market effect.

Chui and Wei (1998) and Daniel et al. (1997) conclude that book-to market equity plays a significant role in explaining the cross-sectional variation of stock returns in the Japanese market.

Jensen *et al.* (1972) use monthly data for all securities listed on the New York Stock Exchange in the period from January, 1926 to March, 1966 to validate the CAPM model. The results obtained show that the constant positive and was significantly different from zero when beta is less than 1 and it is negative when it is larger than 1, and that the beta coefficient was significantly lower than the average market risk premium. Douglas (1968) and Lintner (1965) test whether the systematic risk is the only factor that significantly influences the performance of the shares. For this, they have worked on quarterly performance data 616 firms for a period that goes from 1926 to 1960. Douglas (1968) concludes that the average yield for each security was more affected by the variance by the systematic risk.

Lintner (1965) analyzes the effect of the systematic risk and unsystematic risk effect on the average yield of each title, came to the conclusion that the yield on a positively depended on two types of risks (systematic and unsystematic). The results of these two authors are in contradiction with the results supported by the CAPM; their studies were among the first empirical studies that have rejected this model.

Various empirical tests of the CAPM have been made in European countries. One of the first tests is that introduced by Pogue and Solnik (1974). Their study focuses on daily data of 229 firms for a period from 1966 to 1971. They use a sample of seven countries (Germany, Belgium, France, Italy, Netherlands, UK and Switzerland). Their empirical findings show a positive correlation between the average risk of the shares and their yields, and betas are highly statistically significant in all countries and they explain to a horizon of one month between 30% and 60% of the risk premium observed in European countries (Pogue and Solnik, 1974). Banz (1981) is the first that demonstrates a relationship between performance and size. Banz (1981) use a sample of all firms listed on the New York Stock Exchange to investigate empirically the CAPM model. Their empirical results show that the market risk represented in the CAPM is not the only factor explaining stock returns. Rosenberg *et al.* (1985) found a positive relationship between the profitability of securities and the Book Value/Market Value ratio.

Fama and French (1996) construct a model in which they added two factors the size and the ratio Book Value/Market Value to the excess market return. They conduct their study in the case of the US market. Their empirical results affirm that these two added variables are capable of giving a performance much better explanation than the market portfolio. According to Fama and French, Book Value/Market Value ratio is statistically more significant than the Stock Market Capitalization. In addition, the Book Value/Market Value ratio has a more powerful effect, and dominant to the Fellow capitalization. According to Fama and French (1996), the firms with the most important Book Value/Market Value ratio should be associated with high rates of expected return. They also conclude that most market anomalies disappear once you take into account the risks associated with firm size and the Book Value/Market Value ratio.

Molay (2000) and Bellalah and Besbes (2006) apply the model of Fama and French in the case of the French market. These authors found that the market portfolio is more important in relation to the Stock Market Capitalization and Book Value/Market Value ratio.

Other researchers have applied this model on the case of the Canadian market (L'Her *et al*., 2002; Francoeur, 2006; Carmichaely *et al*., 2007). L'Her *et al*. (2002) verify the presence of the size and effect of VC/MV ratio. Moreover, Carmichael, *et al*. (2007) have added the momentum factor to the Fama and French model and they show that the momentum factor allows better explain the performance of Canadian equities. While Francoeur (2006) has only used the model of Fama and French in order to study the long-term abnormal returns. Rhaiem *et al.* (2007) estimate the CAPM model at different time scales of all securities listed in the stock market French. Their empirical results show that CAPM is more relevant on a medium-term horizon in a multi-scale framework.

Mobarek and Mullah (2005) study the factors that determine equity returns of all securities listed in the Dhaka Stock Exchange. Their empirical results found that the variables: size, book value/market value, the volume of shares traded the return on earnings and cash flow performance has a significant influence on stock returns. Rahman *et al*. (2006) examine the risk-return relationship in the context of CAPM and concluded that beta does not represent the only factor that determines the performance of stocks, but also other variables such as book value/market value, capitalization market and sales are significantly important in the Dhaka Stock Exchange market. In another study, Rahman *et al*. (2006) investigate whether the CAPM model and model of Fama and French (1992) are applicable on the stock market of Bangladesh. They use a sample of 26 banks over a period from 2002 to 2005 and examine four factors such as beta, book value/market value ratio, market capitalization and sales. Their empirical finding are strongly supported the

relationship between variables in determining stock returns. Michailidis *et al.* (2006) conduct an analysis on the Athens Stock Exchange for a period from 1998 to 2002. This study aims to test the validity of CAPM on the Greek market. These authors conclude that the results of the tests did not allow rejecting the validity of the CAPM.

Basu and Chawla (2010) test the validity of the CAPM model in case of the Indian market. They use data from weekly returns of shares of 50 banks over the period from January, 2003 to February, 2008. These authors conclude that the model is flawed in explaining the risk premium on the Indian market. According to them, this failure could be attributed to factors such as the imperfection of the stock index selected to approximate the market portfolio or tax effects. Hasan *et al.* (2011) examine the CAPM model. They use a sample of 80 non-financial corporations in Dhaka Stock Exchange (DSE) through the period from 2005 to 2009. Their empirical results prove the existence of a positive relationship between beta and return assumptions and reject the CAPM EHR market. Baek and Bilson (2014) used two models for measuring market returns of US banks, the CAPM and the Fama and French model over 1963-2012. Their results show that the model of Fama and French explain better the stock returns of banks and that the CAPM can be rejected in favor of the model of Fama and French. Fidanza and Morresi (2015) conducted the same study on European banks. They found that the risk of size and risk related to the value can explain stock returns and the banks of small sizes do not have any protection, while the high market value of banks are more profitable. In addition, few studies were interested in the applicability of these models to the developing markets; different studies have been conducted on the European country market. The purpose of this article is to examine the validity of CAPM and Fama and French in the context of the MENA countries and to identify the determinants of stock returns in this market.

3. Methodology of research

3.1. Econometric methodology

The main purpose of this study is to examine empirically the determinants of stock returns of banks in the case of MENA and GOLF countries during the period of study from March 31, 2004 to March 18, 2014. Then, we use two of model as the CAPM model and the Fama and French (1993) model. The CAPM model is presented as follow:

$$\boldsymbol{R_{it} - R_{ft} = \alpha_i + \beta_i Mkt_t + \varepsilon_{it}} \quad (1)$$

where, R_{it}-R_{ft} is the excess return of the bank i relative to the risk-free rate at time t, Mkt = R_{mt}-R_{ft} is the proxy for market risk at time t, β_i is the estimated coefficient at time t, α_i is the abnormal return of bank i at time t and ε_{it} is the residual term on the bank i at time t.

The Fama and French (1993) model is presented as follow:

$$\boldsymbol{R_{it} - R_{ft} = \alpha_i + \beta_i Mkt_t + \gamma_i SMB_t + \delta_i HML_t + \epsilon_{it}} \quad (2)$$

where, R_{it}-R_{ft} is the excess return of the bank i relative to the risk-free rate at time t, Mkt, SMB and HML are to related risk market, size and value at time t respectively, β_i, Υ_i and δ_i are the coefficients to be estimated in relation to Mkt, SMB and HML variables respectively at time t, α_i is the abnormal return of bank i at time t and ε_{it} is the residual term on the bank i at time t.

To estimate the two used models, we employ the 3SLS methodology. Three stage least squares is a combination of multivariate regression (SUR estimation) and two stage least squares. It obtains instrumental variable estimates, taking into account the covariances across equation disturbances as well. The objective function for three stage least squares is the sum of squared transformed fitted residuals.

Three stage least squares estimates are obtained by estimating a set of nonlinear (or linear) equations with cross-equation constraints imposed, but with a diagonal covariance matrix of the disturbances across equations. This is the constrained two stage least squares estimator. The parameter estimates thus obtained are used to form a consistent estimate of the covariance matrix of the disturbances, which is then used as a weighting matrix when the model is reestimated to obtain new values of the parameters.

3.2. Data

The objective of this study is to investigate empirically the determinants of stock returns of banks in the case of MENA countries during the period of study from March 31, 2004 to March 18, 2014. Our study covers a more recent period than those covered by the other studies as she was interested in the study of the determinants of stock returns of listed banks in the Gulf and the MENA countries. Then, we divide the period of study into three periods; before the financial crisis from March 31, 2004 to December 31, 2007 (947 days), The period of crisis from January 01, 2008 to December 31, 2010 (794 days), and after the period of crisis from January 02, 2011 to March 18, 2014 (826 days). The sample used in this paper is composed of 30 banks operating in different countries as follow; Saudi Arabia, Bahrain, Qatar, United Arab Emirates, Kuwait, Malaysia and Egypt. In Table 1, we presented the various banks included in this article and their codification. Let's start with the explanatory variables, which are arbitraging portfolios with zero investment formed to represent the common risk factors for all shares. First we will look at HML and SMB risk premiums. In fact, the sample shares are divided into two groups according to their market capitalization. The first group called "Small" (S) corresponds to the market capitalization shares below the median market capitalization of the S sample, while the second group called "Big" (B) contains stocks with a market capitalization in median market capitalization of the sample.

Regardless of classification, and for each fiscal year T-1, the sample shares are classified into three groups according to their book value/market value ratio. The first group, called "Low" (L), comprising 30% of the sample (corresponding to shares with the book value/market value ratio weakest), the second group named "Medium" (M) contains 40% the sample and the third group named "high" (H) includes 30% of the sample (corresponding to shares with the book value/market value ratio highest). Here, we would like to clarify one point. Is that the variable "Book Value", part of the book value/market value ratio, is generally available in December of each fiscal year. However, since the book value/market value ratio involved in the explanation of performance, it must be known before the variable return. In other words, the publication of this ratio must precede the construction of portfolios. This explains the use of the book value/market value ratio in year (t-1) for the explanation of returns for the period of study used in our paper. So, the portfolios constructed in our paper are; SL, SM, SH, BL, BM and BH. Additionally, unlike most previous research that has focused on banks in the developed countries (the French banks, American, Canadian, the United Kingdom), our study focuses on the existing banks in emerging countries. The financial and accounting databases used in this paper are extracted from financial publications and annual reports of selected banks.

Table 1. List of banks

Country	Bank	Code
Bahrain	Arab Banking Corporation	1
Bahrain	Ahli United Bank Bahrain	2
Bahrain	National Bank Of Bahrain	3
Bahrain	United Gulf Bank	4
Egypt	Commercial International Bank Egypt	5
Egypt	Egyptian Gulf Bank	6
Egypt	Suez Canal Bank Egypt	7
Kuwait	Burgan Bank	8
Kuwait	Ahli Bank Of Kuwait	9
Kuwait	National Bank Of Kuwait	10
Kuwait	Commercial Bank Of Kuwait	11
Kuwait	Ahli United Bank	12
Malaysia	Affin Holdings Berhad	13
Malaysia	Alliance Financial Group	14
Malaysia	Malayan Banking May Bank	15
Malaysia	Cimb Group	16
Malaysia	Hong Leong Bank	17
Malaysia	Hong Leong Financial Group	18
Malaysia	Public Bank	19
Malaysia	Rhb Capital	20

Country	Bank	Code
Qatar	Ahli Bank Of Qatar	21
Qatar	Commercial Bank Of Qatar	22
Qatar	Doha Bank	23
Qatar	Qatar National Bank	24
Saudi Arabia	Bank Al Jazira	25
Saudi Arabia	Arab National Bank	26
UAE	Abu Dhabi Commercial Bank	27
UAE	Commercial Bank Of Dubai	28
UAE	National Bank Of Bu Dhabi	29
UAE	Bank Of Sharjah	30

Table 2 summarizes the descriptive statistics for each variable used in this paper (Rit, SMB, HML, Rf and Rmt). For the entire period, the variable Rit, which denotes the return of bank i at time t, can reach a maximum value of 14.85568. As its minimum value is -14.84051 that confirm the existence of the deficit return in all banks included in our research. His risk measured by the standard deviation is 0.1948743.

Note that small sized banks are characterized by a lack of information distribution. On the other hand, it is more difficult for smaller banks to benefit from the financial resources they need for their growth, because of the fact that they do not always have sufficient and adequate safeguards. It is observed that the BH banks offer the best performance (0.0675745), while HS offers the lowest average yield (-0.0649865). On the other hand, we note that the market value produced the best average return for the entire period (4.410001). The standard deviation measures the volatility shows that small banks with a high market value (SH = 0.6369) have a lower value than large banks with small market value (BL = 0.1213745).

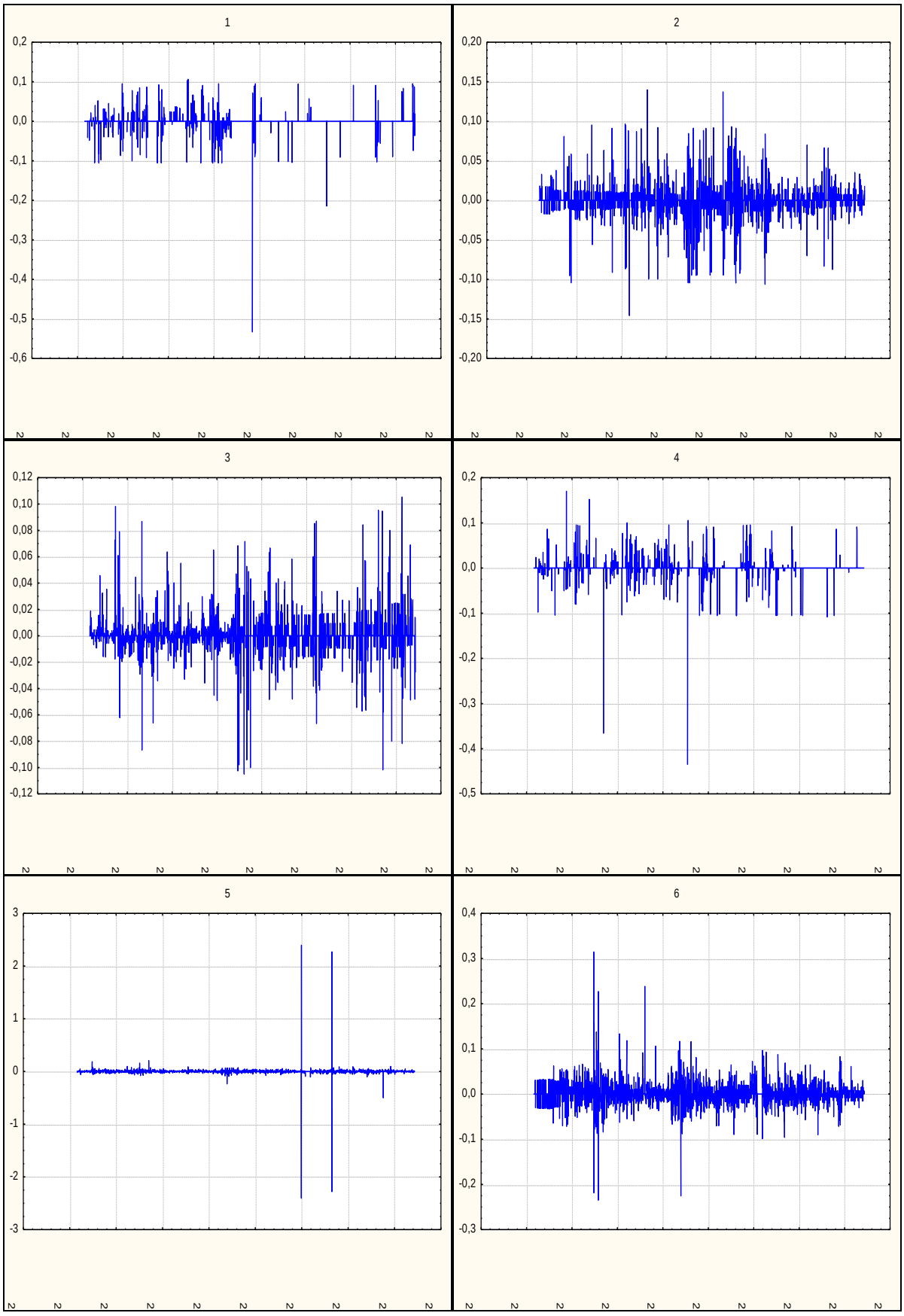
The Rmt variable may reach a maximum value of 21.41042. As its minimum value is (-14.45751) that verifies the existence of unprofitable returns in all banks included in our research. His risk is measured by the standard deviation which attaints 3.545171. The SMB variable can reach a maximum value of 0. As long as the minimum value is -5.008822 for all banks included in our paper. His risk is for 0.3277306. The HML variable can reach a maximum value of 7.407932. As its minimum value is -7.409725 that tests for the deficit return in all banks included in our research. His risk is for 0.4585895. The period of study into three periods; before the financial crisis from March 31, 2004 to December 31, 2007 (947 days), The period of crisis from January 01, 2008 to December 31, 2010 (794 days), and after the period of crisis from January 02, 2011 to March 18, 2014 (826 days). Based on the results shown in Table 2, we can find that the banks with large sizes dominate the banks with small sizes while banks with higher market value dominate the banks with low market value. According to descriptive statistics, we found that the large banks with high market value ratio provide superior average returns (0.0675745). These results differ from those found by Fama and French (1996) and argue that small-sized firms offer a higher return than firms with large sizes. Thus, the portfolios with the highest returns are more volatile (the difference types of BH = 0.6373366). This result is consistent with the results of L'Her *et al*. (2002) in the case of the Canadian market.

For all period used in this paper, we can show that all variables have a high kurtosis and much higher than 3. This ratio varies from a minimum of 3.09502 and a maximum for 2360,239. He tells us about the high probability of extreme values and we can reject the hypothesis for the normal distribution of all-time series used in our study. Additionally, the coefficient of asymmetry (Skeweness) is varies between 47.8346 for the BM and (-47.86714) for the SMB variable. We can conclude that the distribution of returns is not normally distributed. Based on the two statistics of Kurtosis and Skeweness, we can reject the hypothesis of normality of all variables used in this study.

In addition, Figure 1 reports the volatility of stock returns of all selected banks. From this figure, we can remark that all bank returns are volatile especially in the period of crisis of 2007 and after the period of crisis. Then, we can explain this excessive volatility by the impact of the financial crisis on the international financial market. This impact can be explained by the transmission of the risk from the developed markets to the emerging markets especially to the MENA countries. Assuming that the value of any financial asset varies, and that any rational investor seeks to identify these changes in order to make hedging against risk, arbitrage or speculation, it seems important to focus closer to the factors explaining the volatility of returns of banks in the MENA region and to better understand this variation.

Table 2. Descriptive statistics

The whole period							
Variable	**Average**	**Median**	**Max**	**Min**	**Std. Div**	**Skewness**	**Kurtosis**
Rit	0.0002871	0	14.85568	-14.84051	0.1948743	0.1165077	5087.807
Rf	4.412104	3.2	13.95	0332	3.538749	0.9459166	3.09502
Rmt	4.410001	3.2	21.41042	-14.45751	3.545171	0.9360439	3.142495
SL	-0.0288795	-0.016878	0	-5.105324	0.1233103	-32.4249	1216.229
SM	-0.025234	-0.0162633	0.0160526	-11.8747	0.238923	-47.86714	2360.239
SH	-0.0649865	-0.0262997	0	-14.84051	0.6369	-22.20066	500.7966
BL	0.0300394	0.0190761	5.071322	0	0.1213745	33.26343	1260.809
BM	0.0268287	0.0173837	11.8424	-0.0084014	0.2382762	47.8346	2358.655
BH	0.0675745	0.0295588	14.85568	-0.0165293	0.6373366	22.21868	501.4419
SMB	-0.0796863	-0.0507359	0	-5.008822	0.3277306	-13.81718	197866
HML	0.0007398	0.0001034	7.407932	-7.409725	0.4585895	0.0118924	235.8954
Before the financial crisis							
Variable	**Average**	**Median**	**Max**	**Min**	**Std. Div**	**Skewness**	**Kurtosis**
Rit	0.000863	0	14.85568	-14.84051	.2729055	0.040692	2643.682
Rf	5.240243	3.4	13.4	0383	3.647975	0.6818606	2.453873
Rmt	5.240545	3.454018	21.41042	-14.45751	3.658538	0.665014	2.548172
SL	-0.0290477	-0.0158419	0	-5.105324	0.167288	-29.5211	895.3935
SM	-0.0316855	-0.0147829	0.0090476	-11.8747	0.3925265	-29.2118	876305
SH	-0.1054286	-0.0307451	0	-14.84051	0.9585389	-14.96833	227.7085
BL	0.0346687	0.0239628	5.071322	0	0.1664743	29.25868	884.8475
BM	0.0353614	0.0162637	11.8424	0	0.3913753	29.19578	875.8834
BH	0.1107905	0.0372209	14.85568	0	0.9590743	14.98053	228.0044
SMB	-0.1155416	-0.0544622	0	-5.008822	0.4973088	-9.148658	86.89319
HML	-0.0000438	-0.0012933	7.407932	-7.409725	0.6900953	0.0038115	108639
During the financial crisis							
Variable	**Average**	**Median**	**Max**	**Min**	**Std. Div**	**Skewness**	**Kurtosis**
Rit	-0.0000495	0	14.68062	-14.62535	0.1289932	0.3840862	11034.29
Rf	3928	2.98	13.95	0332	3.380661	1.142066	3.736093
Rmt	3.924492	2.981214	16.21969	-14.24235	3.384101	1.135762	3.759344
SL	-0.0287811	-0.0172347	0	-2.404599	0.0879496	-22.84547	595.3251
SM	-0.0214627	-0.0176934	0.0160526	-0.1993698	0.018674	-1.977451	11.81087
SH	-0.0413454	-0.0238434	0	-12.93885	0.3227462	-39.4058	1574.299
BL	0.0273333	0.0176666	2.395506	0	0.084401	25.2335	690.2013
BM	0.0218407	0.0176996	0.1431008	-0.0084014	0.0189277	1.468039	6.187635
BH	0.0423119	0.0261133	12,949	-0.0165293	0.3228493	39.45272	1576.779
SMB	-0.0587265	-0.0482326	0	-4.36499	0.156313	-25.89956	708.6132
HML	0.0011978	0.0011091	6.454188	-6.430381	0.2342175	0.1295243	707.6488
After the financial crisis							
Variable	**Average**	**Median**	**Max**	**Min**	**Std. Div**	**Skewness**	**Kurtosis**
Rit	0.0002177	0	12,949	-12.93885	0.1192589	0.1082673	11211.94
Rf	4.045484	3036	13.95	0332	3.364322	1.480268	4.942858
Rmt	4.044745	3036	16.21969	-12.60685	3.366943	1.473365	4.957233
SL	-0.0242528	-0.0146941	0	-2.280154	0.0833883	-24.23057	649.8424
SM	-0.0181649	-0.0160003	0	-0.1679328	0.0148476	-2.068327	15.70513
SH	-0.0426298	-0.0192193	0	-12.93885	0.4498802	-28.52024	817.5552
BL	0.0240735	0.0153124	2.269686	0	0.0811928	25.63879	708.4979
BM	0.0180601	0.015507	0.1131949	0	0.0153727	1.647052	7443
BH	0.0444813	0.0230899	12,949	0	0.4500583	28.54127	818.3663
SMB	-0.0568376	-0.041283	0	-4.36499	0.2167343	-19.07649	376.6956
HML	0.0010068	0.0011321	6.454188	-6.430381	0.321638	0.1010608	389.9747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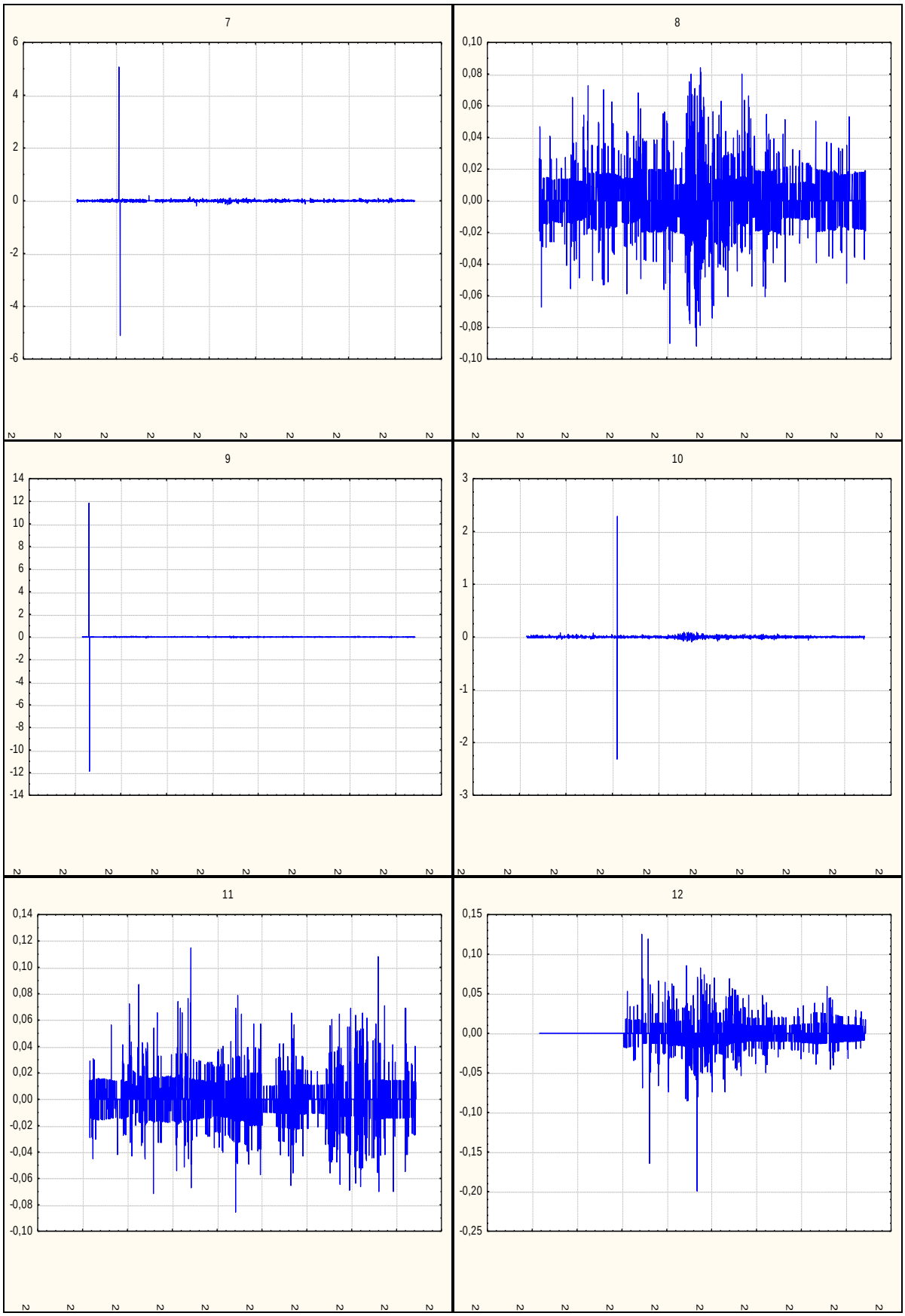
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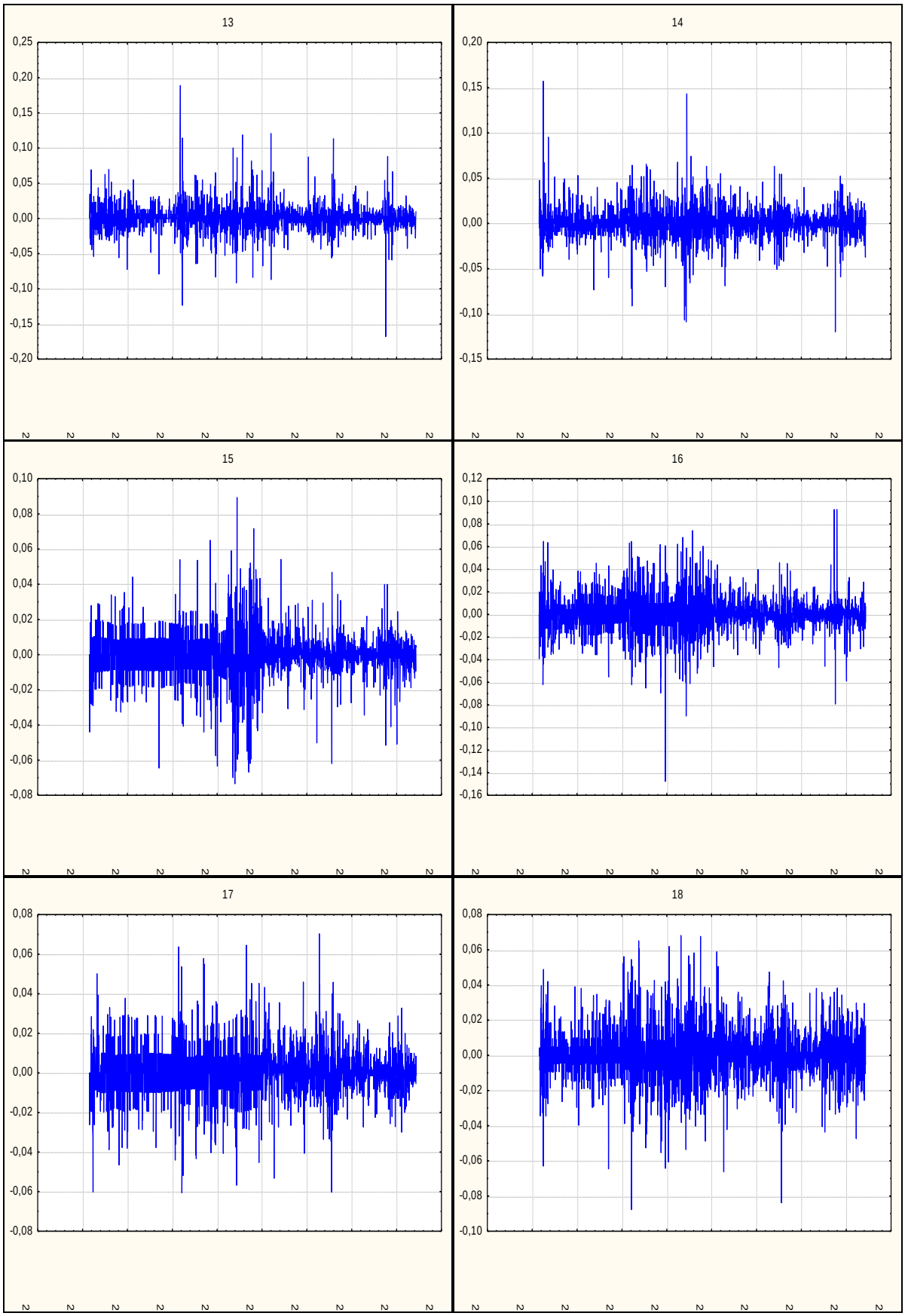
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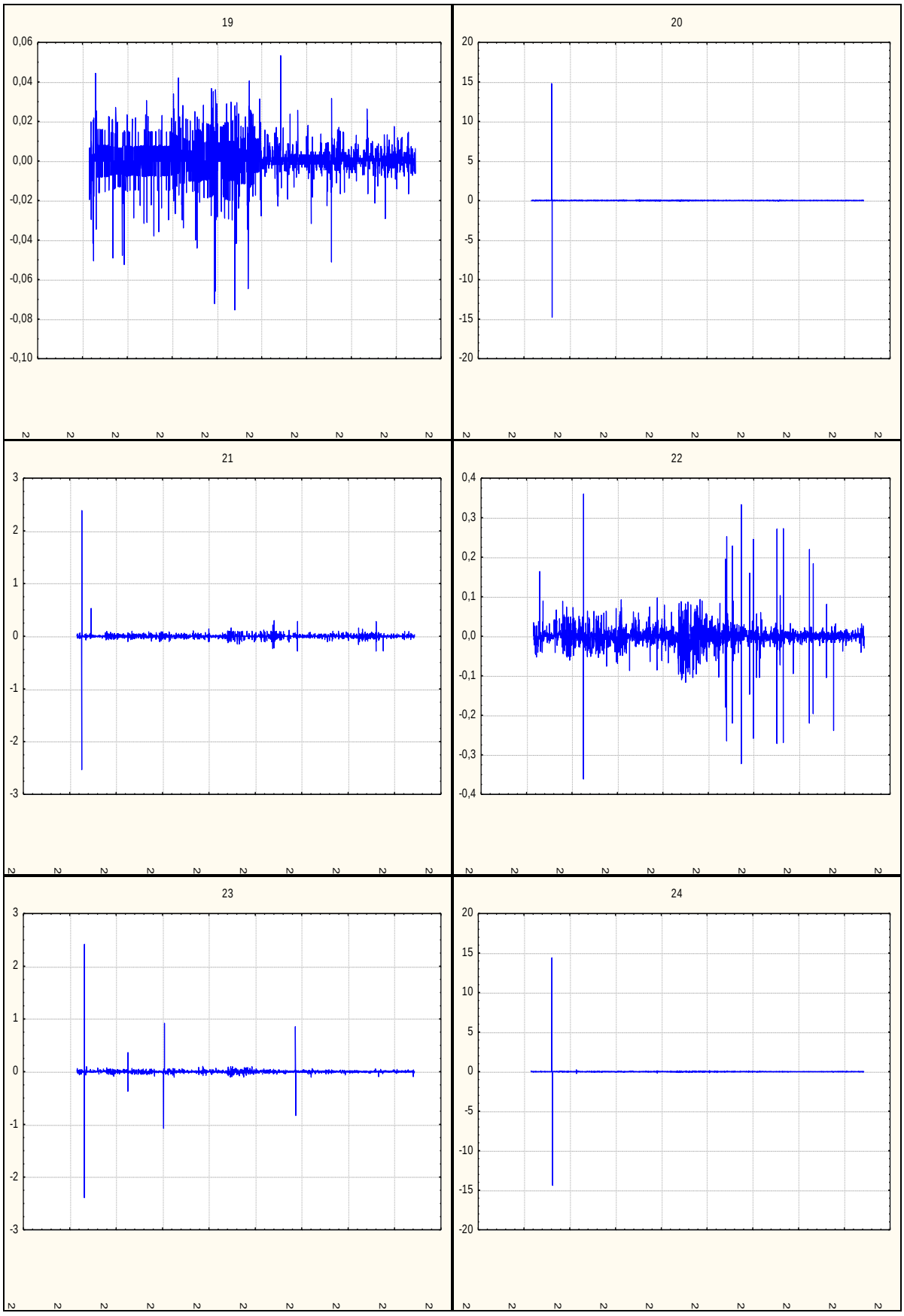
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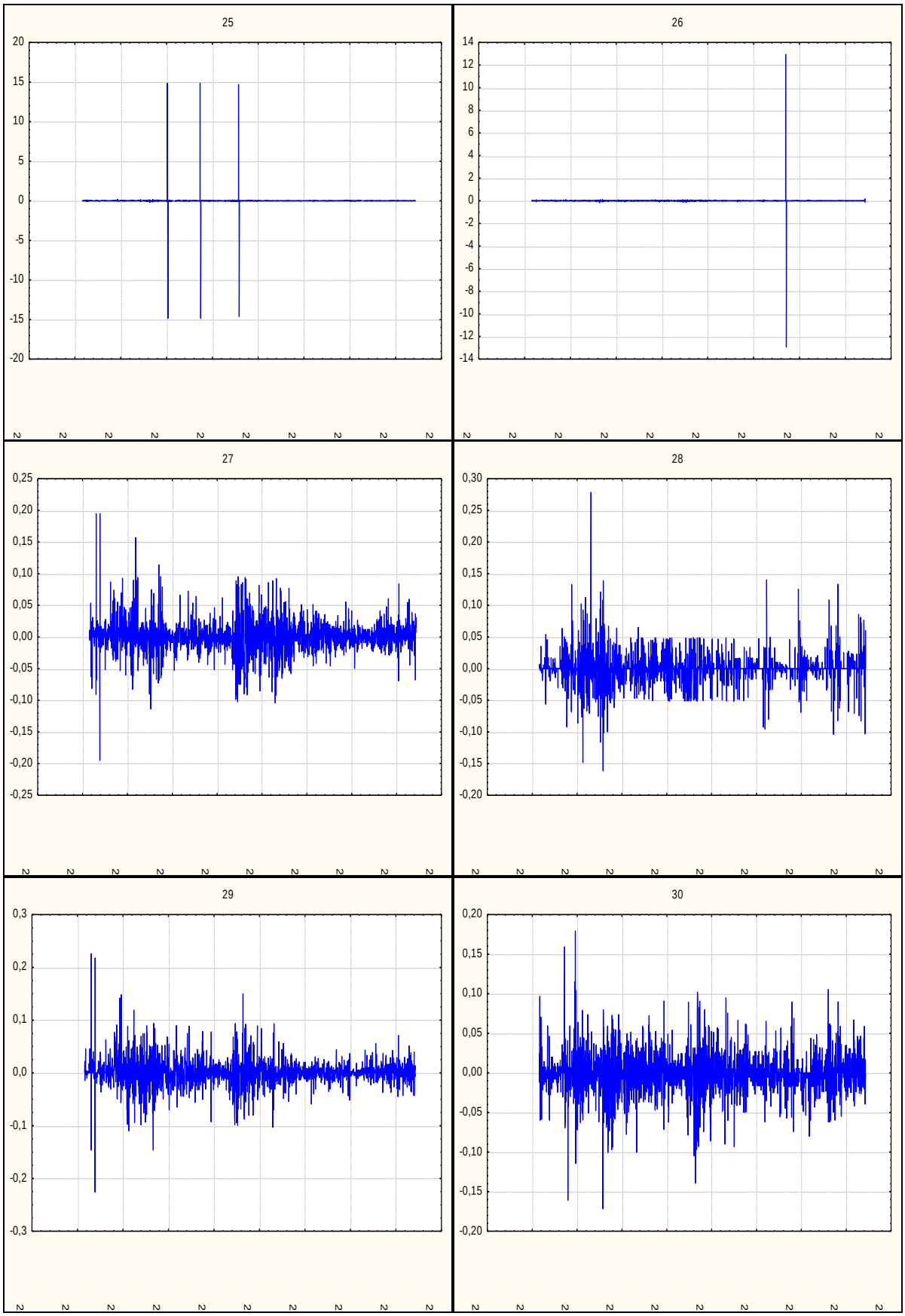

Figure 1. The evolution of banks' returns

The correlation matrix between all used variables is summarized in Table 3. From this Table, we can find that no coefficient exceeds the tolerance limit (0.7) unless the correlation coefficients between variables, which does not cause problems when estimating two models.

Table 3. The correlation matrix

	Rit	Rf	Rmt	SL	SM	SH	BL	BM	BH	SMB	HML
Rit	1.0000										
Rf	-0.0003 (0.9422)	1.0000									
Rmt	0.0547 (0.0000)*	0.9980 (0.0000)*	1.0000								
SL	0.0254 (0.0000)*	0.0040 (0.2670)	0.0055 (0.1241)	1.0000							
SM	0.0336 (0.0000)*	0.0029 (0.4250)	0.0047 (0.1936)	-0.0007 (0.8555)	1.0000						
SH	0.1102 (0.0000)*	-0.0058 (0.1090)	0.0003 (0.9434)	0.0078 (0.0312)**	-0.0032 (0.3740)	1.0000					
BL	0.0233 (0.0000)*	-0.0015 (0.6859)	-0.0003 (0.9313)	0.0154 (0.0000)*	0.0009 (0.8034)	0.0058 (0.1094)	1.0000				
BM	0.0412 (0.0000)*	-0.0026 (0.4704)	-0.0003 (0.9357)	0.0053 (0.1384)	0.0005 (0.8920)	0.0017 (0.6388)	-0.0003 (0.9424)	1.0000			
BH	0.1072 (0.0000)*	0.0045 (0.2088)	0.0105 (0.0037)*	0.0069 (0.0560)***	-0.0703 (0.0000)*	0.0041 (0.2545)	0.0074 (0.0394)**	-0.0035 (0.3296)	1.0000		
SMB	0.0003 (0.9324)	-0.0059 (0.1043)	-0.0060 (0.0965)***	0.1023 (0.0000)*	0.2866 (0.0000)*	0.6439 (0.0000)*	-0.1021 (0.0000)*	-0.2386 (0.0000)*	-0.6616 (0.0000)*	1.0000	
HML	0.1446 (0.0000)*	-0.0012 (0.7448)	0.0068 (0.0600)***	-0.1263 (0.0000)*	-0.0511 (0.0000)*	0.6955 (0.0000)*	-0.1252 (0.0000)*	-0.0020 (0.5861)	0.6958 (0.0000)*	-0.0128 (0.0004)*	1.0000

(*), (**), and (***) are significant values of threshold 1%, 5%, and 10%.

4. Empirical Results

The aim of this paper is to study the determinants of stock returns of banks in the case of MENA countries during the period of study from March 31, 2004 to March 18, 2014. Then, we utilize two of model as the CAPM model and the Fama and French (1993) model. Our study covers a more recent period than those covered by the other studies as she was interested in the study of the determinants of stock returns of listed banks in the MENA countries. Then, we divide the period of study into three periods; before the financial crisis from March 31, 2004 to December 31, 2007 (947 days), The period of crisis from January 01, 2008 to December 31, 2010 (794 days), and after the period of crisis from January 02, 2011 to March 18, 2014 (826 days).

In our paper, we estimate two models in which we adopted the variable R_{it}-R_{ft} as a dependent variable. The results of the estimate by 3SLS of the two models used are shown in Tables 4 and 5. Then, we conduct other tests to demonstrate the validity of our models and justify the significance of all estimations. We test the correlation between the explanatory variables and residue. This test is based on the value of (Prob> chi2). If the probability is less than 5%, so we accept H0 which verifies the absence of correlation between the residues and variables. If the probability is greater than 5%, in this case there is a problem of correlation between the residuals and the explanatory variables we should fix it. In all estimated models, the probability values (Prob> chi2) are all less than 5%. So we do not have the problems of correlation between the explanatory variables and residue. For model (1) (CAPM), the probability value (Prob> Chi2) is less than 5%. In this context, there is not a problem of correlation between the explanatory variables and residue. This value is shown in Table 4 that summarizes the estimation performed for four periods. Also, for the model (2) (Fama and French), the probability values (Prob> Chi2) are less than 5%. In this context, there is not a problem of correlation between the explanatory variables and residue. These values are presented in Table 5 which summarizes the estimation performed for the 4 selected periods.

The coefficient of determination R^2 is greater than 0.8 for all portfolios. Thus, it is clear that the market portfolio has an important role and explains a large part of the shares of banks performance.

Moreover, the results obtained are consistent with those of Black *et al.* (1972) as well as those of Fama and MacBeth (1973). A first point of the table 4 can be retained is that all the variables are significant, that is to say, they explain well the model. For the CAPM model, we noticed that the R^2 coefficient of determination is greater than 0.8 while for Fama and French, R^2 is greater than 0.9. That said, the CAPM and Fama and French models are characterized by a good linear fit. The results show that the three-factor model of Fama and French is preferred over the model of CAPM.

For the CAPM model, we notice that Mkt variable (the market risk premium) is statistically significant at the 1% level in four periods with the exception of the case of SM portfolio in the fourth period (after financial crisis). This tells us about the defensive nature (that is to say those banks have been protected against international competition during the study period) and concentration on traditional and non-risky activity for the majority of the stock market of the Gulf and MENA countries that tend to dampen fluctuations market. These results are identical to the results of Ben Naceur and Ghazouani (2007) and Ben Naceur and Chaibi (2009) that were performed on the Tunisian market and they interpreted the weakness of Beta (less than 1) the lack of liquidity. In this case, the level of market risk positively affects the performance of a portfolio for the sample cases chosen. These results show the importance of the explanatory power of the CAPM.

The constant has a negative and significant impact on a threshold of 1% over the first three portfolios (SL, SM and SH) and for different periods of our study. We can explain the negative values of this variable by the presence of uninformed investors on the market. These investors are willing to invest in stocks that generate returns underperformed the risk-free assets. Similarly, this variable has a positive and significant impact on a threshold of 1% over the last three portfolios (BL, BM and BH) and during different periods of our study. In that case the bank realizes a higher than expected performance. This says that the abnormal return has a significant impact on bank portfolios of yield.

According to the CAPM, only the market risk factor can explain the performance. Moreover many of the researchers found insufficient CAPM to explain the performance. During the 80s and 90s, many of the CAPM anomalies were discovered in this sense other factors have been proposed. In 1993, Fama and French provide a very effective model for the valuation of assets by adding factors related to size and other related value (SMB and HML). In table 5, we estimate the Fama and French model. From this Table, all values have a coefficient of determination R^2 greater than 0.8 for six portfolios and all periods. Thus, the various values of the probability of Fischer (Prob> F) is (0.0000, 0.0000, 0.0000, 0.0000, 0.0000, 0.0000) lower than 5%. Therefore, the different models are generally significant.

Panel A shows that some intersections have negative values SL, SM and BH for the coefficient α, while the coefficients related to market risk are positive. From the Fama and French model, we show that the constant has a negative and significant impact on a threshold of 1% over the three portfolios SL, SM and BH and a positive impact on the rest of the portfolios (SH, BL and BM) during different periods of our study. This means that the abnormal performance has a significant impact on bank portfolios of yield. Indeed, the constant terms of small banks are lower than those of large companies except for SH. The significance of this coefficient can be explained by the characteristics of the banks used in our paper. Then, we employ a sample of banks which exercise their activities in a specific context. These banks belong in Islamic countries conversely to the previous studies which employ the Fama and French model for the conventional context. These results can explain the difference between Islamic and Conventional financial context.

For the coefficients relative to SMB and HML factors showed in Table 5, we can find a highlights and a significant coefficient for both variable and we can observe a significant proportion of variability of stock returns unexplained by the CAPM. Indeed, the expected signs of these coefficients Υ_i and δ_i are checked. Small banks have a coefficient Υ_i positive indicating that their yields move in the same direction as the SMB factor. Nevertheless, large banks have a coefficient Υ_i negative indicating that yields change inversely to the SMB factor. The verification signs allow us to draw a conclusion on investor behavior. According to this theory, investors demand a risk premium to invest in small-cap shares that they are riskier. This is verified in our sample because SMB is significantly positive throughout the study period for banks with small sizes.

The negative and significant coefficient of HML is related to the high performance and solid growth prospects it is checked for SL, SM, BL and BM portfolios for the entire period, which means that this market does not continuously compensates actions having a high VC/VM ratio and supposed to be riskier. In period

of crisis SM and BM turned positive (HML is positive) it means that they are experiencing financial difficulties and implies that these types of banks value stocks that are underperformed during the study period. The coefficients value premium are also important factor for SH and BH portfolios where the relationship is positive. However, they are negative for portfolios SL, SM, BL and BM. Molay (2000) defines the book value/market value ratio as a measure of non-performance of firms. Thus, investors perceive the book value/market value ratio as low performance.

Studies made on the Tunisian market as there of Ben Naceur and Ghazouani (2007) and Ben Naceur and Chaibi (2009), which they found the existence of the effect of the size and the effect of the value on the Tunisian stock market. The factor in the risk premium related to the size has a very high significance to explain the variation in expected returns for portfolios SL (0.0379114), MS (0.2085223) and SH (1.268908). We note that the estimated coefficients of the factor in the risk premium are significant and positive at 1%. This factor has a positive impact for the different periods.

Also, the factor in the risk premium has a negative and significant impact on a threshold of 1% over the last three portfolios (BL, BM and BH) and during different periods of our study. The estimated coefficients have an important significance for portfolios with small businesses. However, the factor related to the size exceeds the premium factor associated to the value. Therefore, there is evidence that the risk premium related to the size was the dominant power on other factors in the model of Fama and French to explain the variation in expected returns.

Then, we divide the period of study into three periods; before the financial crisis from March 31, 2004 to December 31, 2007 (947 days), The period of crisis from January 01, 2008 to December 31, 2010 (794 days), and after the period of crisis from January 02, 2011 to March 18, 2014 (826 days). The results of estimation of all periods are presented in table 5. However, the signs of different factors remain the same, while for the crisis period some coefficients have decreased. For example, for the coefficient α for the portfolio SH decrease from 0.0381855 to 0.0178748 during the crisis. The β coefficient has a change between the period before the crisis and the crisis period. The SL portfolio presents a decrease in the coefficient which is increased from 0.0243439 to 0.0086296. Also, the BH portfolio decrease from 0.0228185 to -0.0696294.

Then, the Mkt variable is statistically significant at the 1% level in four periods with the exception of the case of BH portfolio during the third period (the period of crisis of 2007) and SM portfolio in the fourth period (after the financial crisis of 2007). For different banks, the Mkt variable has a positive impact on the six portfolio selected during four periods of study used in this paper. This impact is negative and significant for the case of BH portfolio during the third period and it is positive and not significant in the case of SM portfolio during the fourth period. In this case, the level of market risk has a positively impact on the performance of a portfolio for the case of the sample chosen in our study. For the period after the crisis (2011-2014), the risk premium related to size is important and significant in the HS portfolio to a 1% threshold. Briefly, all three factors; market premium, size premium and value premium are significant and they explain the variation in expected returns of banks. Thus, the risk premium related to the size is the only important factor for all portfolios. Our results disagree with the conclusions of previous studies; e.g. Mobarek and Mullah (2005), Sharmin and Chowdhury (2013) which found a negative relationship between stock returns and the risk of Dhaka Stock Exchange, but they all highlighted the existence of factors (market, size and value) in the Dhaka Stock Exchange.

Table 4. Estimates of CAPM model

Panel A: The estimate for the entire period: 31/03/2004 to 03/18/2014						
	α_i	t (α_i)	β_i	t (β_i)	R^2	Prob> chi2
SL	-0.0288516	-64.95 *	0.0132262	6.74 *	0.8006	0.0000
SM	-0.0251709	-29.25 *	0.0300359	7.90 *	0.8808	0.0000
SH	-0.064428	-28.20 *	0.265632	26.30 *	0.8989	0.0000
BL	0.0300597	68.74 *	0.009621	4.98 *	0.9003	0.0000
BM	0.0269087	31.36 *	0.0380526	10.03 *	0.9013	0.0000
BH	0.0681255	29.79 *	0.2620485	25.92 *	0.9087	0.0000

Panel B: The estimate for the first time: Before the financial crisis 31/03/2004 to 31/12/2007						
	α_i	t (α_i)	β_i	t (β_i)	R^2	Prob> chi2
SL	-0.0290516	-29.28 *	0.0130271	3.67 *	0.9005	0.0000
SM	-0.0317015	-13.62 *	0.0530495	6.37 *	0.9014	0.0000
SH	-0.1055482	-18.69 *	0.395584	19.58 *	0.9133	0.0000
BL	0.0346649	35.11 *	0.0125312	3.55 *	0.9004	0.0000
BM	0.0353416	15.24 *	0.0657375	7.92 *	0.8022	0.0000
BH	0.1106741	19.57 *	0.385238	19.05 *	0.8126	0.0000
Panel C: The estimate for the second period: During the period of crisis 01/01/2008 to 30/12/2010						
	α_i	t (α_i)	β_i	t (β_i)	R^2	Prob> chi2
SL	-0.0287338	-72.04 *	0.0134957	6.37 *	0.8006	0.0000
SM	-0.02146	-253.31 *	0.0007545	1.68 ***	0.8008	0.0000
SH	-0.0409926	-28.04 *	0.1005541	12.95 *	0.8089	0.0000
BL	0.0273529	71.44 *	0.0055766	2.74 *	0.8003	0.0000
BM	0.021847	254.46 *	0.0018029	3.95 *	0.9013	0.0000
BH	0.0426643	29.18 *	0.1004318	12.93 *	0.9087	0.0000
Panel D: The estimate for the third period: After the crisis period 02/01/2011 to 03/18/2014						
	α_i	t (α_i)	β_i	t (β_i)	R^2	Prob> chi2
SL	-0.0242399	-45.78 *	0.0174583	4.44 *	0.9008	0.0000
SM	-0.0181653	-192.60 *	-0.0006358	-0.91	0.9000	0.0000
SH	-0.0423502	-14.91 *	0.3785913	17.94 *	0.9128	0.0000
BL	0.0240852	46.71 *	0.0158131	4.13 *	0.9007	0.0000
BM	0.0180612	184.96 *	0.0014878	2.05 **	0.9002	0.0000
BH	0.0447565	15.75 *	0.3727256	17.65 *	0.9124	0.0000

Significant value to a threshold: (*) 1%, (**) 5%, and (***) 10%. The Wall test is used to test the correlation between the explanatory variables and residue. Comparing the probability of (Prob> chi2) to a 5% threshold with H0: lack of correlation between variables.

5. Conclusions

The main objective of this study is to examine the determinants of stock returns in the countries of MENA. We use the model of asset pricing (CAPM) and the model of Fama and French. For this, we use a sample of 30 banks existing in the countries of MENA for a period of March 31, 2004 to March 18, 2014. Then, we divide the period of study into three periods; before the financial crisis from March 31, 2004 to December 31, 2007 (947 days), The period of crisis from January 01, 2008 to December 31, 2010 (794 days), and after the period of crisis from January 02, 2011 to March 18, 2014 (826 days).

For the econometric methodology, we use the 3SLS model (Three Stages Least Square) to estimate the CAPM model and Fama and French model. The empirical results show that the market risk (Mkt) has a positive impact on market profitability of banks except for SM and BH CAPM model and Fama and French. The risk associated with the size (SMB) has a positive effect on smaller banks and a negative impact on banks with big sizes. Finally, the risk related to the value (HML) has a positive impact on small and large banks.

Table 5. Estimating the Fama and French model

Panel A: The estimate for the entire period: 31/03/2004 to 03/18/2014										
	α_t	t (α_t)	β_t	t (β_t)	γ_1	t (γ_1)	δ_1	t (δ_1)	R^2	Prob> chi2
SL	-0.0257859	-57.18 *	0.022181	11.36 *	0.0379114	28.35 *	-0.0349633	-36.31 *	0.9277	0.0000
SM	-0.0085187	-10.05 *	0.0375544	10.24 *	0.2085223	83.00 *	-0.0270184	-14.93 *	0.9856	0.0000
SH	0.0354552	50.03 *	0.0234088	7.63 *	1.268908	603.92 *	0.9760901	644.99 *	0.9100	0.0000
BL	0.0270435	60.92 *	0.0182311	9.49 *	-0.0383995	-29.18 *	-0.0346074	-36.51 *	0.8276	0.0000
BM	0.0130882	15.26 *	0.0387339	10.43 *	-0.1735009	-68.24 *	-0.0049927	-2.73 *	0.8583	0.0000
BH	-0.0342526	-48.37 *	0.0168381	5.49 *	-1.269435	-604.61 *	0.9543492	631.08 *	0.9102	0.0000
Panel B: The estimate for the first time: Before the financial crisis 31/03/2004 to 31/12/2007										
	α_t	t (α_t)	β_t	t (β_t)	γ_1	t (γ_1)	δ_1	t (δ_1)	R^2	Prob> chi2
SL	-0.0251788	-25.03 *	0.0243439	6.86 *	0.0335598	17.03 *	-0.0299035	-20.81 *	0.8256	0.0000
SM	-0.0037143	-1.64	0.0656316	8.20 *	0.2422714	54.51 *	-0.0328439	-10.13 *	0.8994	0.0000
SH	0.0381855	21.17 *	0.0254527	4.00 *	1.242659	351.66 *	0.9826256	381.33 *	0.9045	0.0000
BL	0.0305609	30.55 *	0.0238907	6.77 *	-0.0354783	-18.10 *	-0.0301521	-21.10 *	0.8265	0.0000
BM	0.0120927	5.25 *	0.0683295	8.42 *	-0.2012066	-44.62 *	-0.0072597	-2.21 **	0.8676	0.0000
BH	-0.0329843	-18.36 *	0.0228185	3.60 *	-1.244658	-353.62 *	0.9573158	372.97 *	0.9054	0.0000
Panel C: The estimate for the second period: During the period of crisis 01/01/2008 to 30/12/2010										
	α_t	t (α_t)	β_t	t (β_t)	γ_1	t (γ_1)	δ_1	t (δ_1)	R^2	Prob> chi2
SL	-0.0197662	-125.89 *	0.0086296	8.79 *	0.0060578	8.77 *	-0.0133078	-16.78 *	0.8091	0.0000
SM	0.0107948	21.60 *	0.0961698	30.79 *	0.798985	363.50 *	0.6506963	257.77 *	0.8880	0.0000
SH	0.0178748	36.37 *	0.0944861	30.76 *	0.8327906	385.35 *	0.7045682	283.88 *	0.9015	0.0000
BL	0.0210337	89.36 *	0.0160988	10.94 *	-0.0052526	-5.07 *	-0.0249689	-21.00 *	0.8160	0.0000
BM	0.0045734	3.38 *	0.2511763	29.71 *	-0.524803	-88.21 *	0.1100929	16.11 *	0.8917	0.0000
BH	-0.0166154	-33.38 *	-0.0696294	-22.38 *	-0.8319956	-380.11 *	1.257132	500.10 *	0.9000	0.0000
Panel D: The estimate for the third period: After the crisis period 02/01/2011 to 03/18/2014										
	α_t	t (α_t)	β_t	t (β_t)	γ_1	t (γ_1)	δ_1	t (δ_1)	R^2	Prob> chi2
SL	-0.0208494	-38.78 *	0.0276945	7.09 *	0.0590141	24.59 *	-0.028487	-17.42 *	0.8362	0.0000
SM	-0.0179932	-185.13 *	0.0004955	0.70	0.0029577	6.82 *	-0.00315	-10.65 *	0.8065	0.0000
SH	0.0386426	72.35 *	0.029888	7.70 *	1.446736	606.88 *	0.9720941	598.28 *	0.9673	0.0000
BL	0.0212779	40.54 *	0.0260377	6.82 *	-0.050029	-21.35 *	-0.0285073	-17.85 *	0.8309	0.0000
BM	0.0179415	177.90 *	0.0020398	2.78 *	-0.0021409	-4.76 *	-0.0015389	-5.02 *	0.8021	0.0000
BH	-0.0381956	-69.84 *	0.0239515	6.02 *	-1.43773	-588.99	0.9709046	583.57 *	0.9658	0.0000

Significant value to a threshold: (*) 1%; (**) 5% and (***) 10%. The Wall test is used to test the correlation between the explanatory variables and residue. Comparing the

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