

EXAMINING THE EFFICIENCY OF
BAHRAIN STOCK EXCHANGE

SUBMITTED BY

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To the University of Bahrain as a partial fulfillment for the
degree of Masters in Business Administration in the
College of Business Administration

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I certify that all materials in this project which are not my own work
have been identified and that no material is included
for which a degree has previously been
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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

The Bahrain stock market has gone through the following phases in its developmental process to reach the position it has (achieved) today:-

- 1) The transition period (from 1957 to 1971)
- 2) Growth and the primary market (from 1971 to 1979)
- 3) Secondary market growth and creation of the exempted companies (1979 to 1983)
- 4) Market Crisis (1984)
- 5) Pre-establishment of Bahrain Stock Exchange (BSE).

1.1.1 The Transition Phase (1957 - 1971)

This period commenced when National Bank of Bahrain was established as the first shareholding company in 1957 with a paid-up capital of BHD 125,000. This represent the first attempt in establishing the Bahrain money market. The success of the venture encouraged the forming of other public companies. Another five companies were formed during that period making the total paid up capital of BHD 4,075,000, distributed among 407,500 shares, Qassim (1984) -Table 1.1.

According to Darwiche (1986) as cited by Al-Alaiwat (1990), this period was characterized by; low number of public issues which were usually held by founders, government (having bought the unsubscribed part of the issued capital, as guarantee). The investors perceived their investment in companies shares as a long term investment; moreover, companies' dividends were high enough to discouraging the shareholders from selling their shares (Qassim 1984).

1.1.2 Second Phase (1971 to 1979)

In 1971 Bahrain entered into a new era by announcing its independence as a State. And the escalation of economic and social development was essential in order to strengthen the State structure and stability. Also, this stage witnessed the increase in oil production and prices as a consequence of the Arab-Israel war in 1973. These two events resulted in vast increase in government expenditures, which in turn enhanced the growth of the private sector (Table 1.2, 1.3).

Resultantly, this period witnessed a great effort and initiatives by well reputed businessmen to establish different shareholding companies like banking, finance, insurance, services, and hotels. The number of companies established during this period reached ten, with paid-up capital of BHD 18,250,000. Also this resulted in an unprecedented growth of secondary market, (Qassim 1984) - Table 1.4.

This phase of the stock market is characterized by the following (Qassim 1984):-

- 1- The multiple increase in the national income reflected on the per capita income (Table 1.5). This encouraged the Private Sectors to save and invest their saving in the newly established public shareholding companies previously dependent on a limited business community for the financial requirements.
- 2- Small investors realized the importance of investing in securities to increase their wealth. This offered a good opportunity to absorb the excess funds available with the public to invest in companies that required large capital. The demand for subscription to share companies increased, companies were over-subscribed five times, (Qassim 1984).
- 3- Bahraini investors awareness of stock exchange investment grew steady. They used their income surplus, caused by the oil price era, in subscribing to the newly established companies.

1.1.3 The Creation of Exempted Shareholding Companies/And the Growth of the Secondary Market

This phase saw the creation of the exempted shareholding companies, also known as Gulf Shareholding Companies, (exempted from companies'

commercial law act) as a result of the Amiri Decree no. 25 for year 1977 which allowed the formation of shareholding companies with exemption from the companies' commercial law act. The number of such companies reached to thirteen between 1979 and 1983 constituting a total paid up capital of BHD 588,000,000 Table 1.6.

These exempted shareholding companies were characterized by their large capital, low price per share, large percentage of the share were maintained with the founding shareholders leaving a small portion for subscription, no distinction was made between the founders of the companies and subscribers.

Also this phase saw the growth of the secondary market. This was done through the increases in the number of small investors investing in this market and also through the increasing number of share transactions.

The increasing demand for stocks shares during that period caused the prices on the secondary market to rise sharply. The main causes for the increase demand for shares on the secondary market were :

- 1) Increase in the income per capita as a result of the 1979 jump in oil prices, Table 1.5.
- 2) Increase in the number of small investors investing in the secondary market.
- 3) Increases in the stock split to reduce the par value per share to BHD1.

- 4) Easier credit facilities provided by commercial banks due to their large idle funds encouraged the investors and the public to use the credit facilities for trading in shares. According to figures released by the Bahrain Monetary Agency the monetary liquidity rose considerably, in that period, doubling between 1979 and 1983 from BHD 411 million to BHD 843 million, Table 1.7, 1.8.
- 5) The global fall in interest rate encouraged many investors to transfer their deposits from abroad to the Gulf area, and Bahrain received a big portion of these funds, Azzam (1988) as cited by Nooruddin (1992).

The market experienced sharp increases in the share prices which reached irrationally abnormal level, without a logical connection with actual or expected performance of companies, and despite "Souk Al-Manakh" crises during August 1982, Qassim (1984).

Following are the main shortcomings of that period, Qassim (1984):-

- 1) Increase in the cost of primary issuing shares. This is due to the desire of investors to acquire as much shares as they can purchasing the other individual's right to purchase, and cost of funds borrowed from banks to finance the purchase of the stocks.
- 2) Increase in the paid-up capital of the local shareholding companies from BHD 91,000,000 to BHD 185,000,000 during short period of time 1981 - 1983, through new issues of shares or through distribution of stock dividends. This resulted in sharp increase in the supplies of shares, which left a small gap for trading in the secondary market.

- 3) The opportunity to make quick profit from the trading in the secondary market caused large transfer of capital from overseas foreign currencies market which had seen declining interest rate, to the local secondary stock market.
- 4) Banks' were able to provide better credit facilities provided to investors in securities due to the large idle funds available.
- 5) Due to three and four above, prices of securities in the secondary market reached very high records. Prices had reached at some stage to a level of 20 times the par value which had a major impact on the Price Earning Ratio (P/E Ratio).
- 6) The increase in the securities prices were not linked to any financial indicators such as the firms' productivity, return on investment, and profitability.
- 7) Small investors accepted postdated checks with very high yield (in some cases up to 100% p.a.) in selling the securities.
- 8) Investors, specially small ones, had changed their saving and investment habit to spend on luxury goods and services.

1.1.4 Market Crises

During 1983 the investors realized that the securities had reached unrealistic price records, and that would not be sustained for long. By the first quarter of 1984 , prices of the securities declined sharply as investors lost confidence in the securities market and started to quit, as a result the supplies of securities increased very sharply against very low demand, Qassim (1984).

The average number of securities traded on the market in February 1984 was only 0.2% of the total number of tradable securities, and 13% of the number traded during February 1983, Table 1.9.

Using the Ministry of Commerce's temporary index applied during that period to measure the performance of the shareholding companies. We can see a decline from 100 points in February 1983 to 51.6 points in March 1984, or by 50% within one year, Qassim (1984).

The decline in the securities market during that period was caused by external and internal factors:

The external factors that influence the security market and accelerated the crisis include the following: the Iran-Iraq war, Souk Al-Manakh crisis, drop in the revenue generated from oil production by Gulf Cooperation Council G.C.C. due to a decline in oil prices, and the major governmental cut in budgets of development projects.

However, the internal factors that caused the crisis on the market were more concerning, Qassim (1984):

- 1) Investors moved to more active trading associated with high speculations. This was also concluded by Nooruddin (1992).
- 2) Non-availability of updated information on the financial and non-financial position of the companies.
- 3) Companies' performance did not have a major influence on the securities price movement. This was also concluded by Nooruddin (1992).

- 4) Some of the brokers provided fictitious information to investors about the market to push prices up-ward.
- 5) The deficiency in the control mechanism applied by the officials and the absence of an organised regulation policy.
- 6) Banks used the idle funds to finance 100% of some securities transaction for investors.

1.1.5 The Planning Phase To Establish The Bourse (1984 - 1987)

Due to the Crisis mentioned above, the government realized the importance of an organize stock market. Accordingly, in 1984 a committee was formed headed by the Minister of Commerce, and representatives from Ministry of Commerce, Ministry of Finance, Bahrain Monetary Agency, and Chamber of Commerce to conduct the necessary studies to see the viability of such a market in Bahrain.

The committee contracted the International Financing Corporation (IFC) of the International Bank for Reconstruction and Development (IBRD) to study the economic viability of establishing bourse in Bahrain

IFC has recommended that the establishment of an official stock market in Bahrain is feasible. Not only to prevent future crisis, but to be a complement to the other financial services offered by Bahrain.

As an initial step, Ministry of Commerce form an Information Centre (as a transition phase prior to the establishment of the proposed BSE) to publish related information to the securities brokers, Bahrain Chamber of Commerce and Industry (1984).

As a result, the Amiri Decree no 4, 1987, enacted to create and organize the Bahrain Stock Exchange (BSE). And, therefore, the necessary roles and regulation related to the stocks exchange have been set, and the official opening of the Bahrain Stock Exchange commenced operation on June, 17, 1989.

The main goals that the BSE set to achieve were (BSE goals and functions 1990):-

- 1) Improve stock exchange market that could assist in the fulfillment of the overall economic objectives of the country.
- 2) Encourage saving and improve the investment knowledge of the nationals to divert such saving to the productive industries
- 3) Improve the dealing standard within the market that guarantee the liquidity, and the continuity, the security for those dealing in the market.
- 4) Improve the stock exchange market in such a way that could enhance Bahrain economic position.
- 5) Control and organize all new stock issuing in the market.
- 6) Provide all the necessary facilities that could guarantee the proper dealing in the authorized stocks.
- 7) Benefit from the regional and international stock exchange markets by enhancing the relation with them.

1.2 STATEMENT OF THE PROBLEM

Are listed stocks efficiently valued? Are the investors properly compensated for the risk involved in the stocks? How significant is the stock risk compared to other thinly markets?

1.3 PURPOSE OF THE PROJECT

This endeavour is set to achieve the following objectives:-

- 1- Evaluating the stock risk versus return using "CAPM" to find out whether they are under or over valued (The efficiency of the market).
- 2- Testing the behaviour of individual stock returns in Bahrain using autocorrelation and comparing it with other similar thinly market.
- 3- Testing the correlation coefficient between successive stock prices and comparing them with other previous study.

1.4 SCOPE OF THE PROJECT

The research is limited to the stocks listed in Bahrain Stock Exchange for the period from 1990 to 1992 . In BSE there are twenty eight public companies divided into the following six sectors :-

- 1- Commercial Bank (five banks)
- 2- Banks & Investment Companies (five)
- 3- Insurance (three companies)

- 4- Services (seven companies)
- 5- Industries (five companies)
- 6- Hotels (Three)

1.5 SIGNIFICANCE OF THE STUDY

The results of the study are expected to be significant in the following areas:-

- 1- It will give guidelines to investors to judge which stock to invest in terms of risk and return.
- 2- This study represents the first attempt on market efficiency and price evaluation using CAPM on Bahrain market.
- 3- Testing CAPM in thin and emerging market.
- 4- However, the significance of the study can also be determined through the quality of the recommendations it will make to improve the stock market.

1.6 LIMITATIONS

Stock market is affected by a large number of variables that make it very complex segment of the financial system. It was found difficult to encompass all relevant variables which affect the efficiency of the stock market.

Some of the limitations that face the study include:

- 1- Information is limited to the last two years, due to non existence of the organized stock exchange prior to that period.

- 2- The small size of the market capitalization of the stock exchange makes it possible for big investors to have influence in the movement of the stock prices.
- 3- The trading frequency of some stocks are very limited.
- 4- Having outlined the above limitations, the findings obtained are still useful and do achieve the main purpose of the study.

1.7 ORGANIZATION OF THE STUDY

This project is organized into five chapters:

Chapter 1 Introduction

This introductory chapter aims to provide the reader with the statement of the problem, purpose, hypotheses, scope, limitations, and organization of the study.

Chapter 2 Literature Review

The aims of the chapter to discuss the literature on the market efficiency . This will include the empirical studies conducted on the stock market.

Chapter 3 Research Methodology

The aims of the Chapter to discuss data gathering methods, data analysis techniques such as standard deviation, autocorrelation, hypothesis testing: The main sources of data in this project are secondary data.

Chapter 4 Analysis and Findings

The aim of the chapter is to present the findings and the analysis of the empirical work. Data gathered will be analyzed, using the techniques mentioned in the methodology chapter. The study findings will be related to the concepts, standards and empirical study in the literature (chapter 2).

Chapter 5 Conclusions

In this chapter the conclusions will be drawn and recommendations will be made on the basis of these conclusions that have been found from the data analysis and findings.

TABLE 1.1
BAHRAIN SHAREHOLDING COMPANIES
1957 - 1971

COMPANY NAME	YEAR OF INCORPORATION	PAID UP CAPITAL AT INCORPORATION BHD	PAID UP CAPITAL AT 31/12/92 BHD
NATIONAL BANK OF BAHRAIN	1957	125,000	32,000,000
BAHRAIN SHIPREPAIRING	1962	800,000	800,000
BAHRIAN CINEMA	1967	500,000	1,259,880
BAHRAIN HOTELS	1967	1,500,000	8,484,480
BAHRAIN INSURANCE	1969	150,000	1,200,000
BANK OF BAHRAIN AND KUWAIT	1971	1,000,000	56,906,250
TOTAL		4,075,000	100,650,610

SOURCE: DIRECTORATE OF TRADE AND COMPANIES AFFAIRS, MINISTRY OF COMMERCE, BAHRAIN (1984)

TABLE 1.2
STATE REVENUE
1960 – 1990

YEAR	OIL BHD'000	NON-OIL BHD'000	TOTAL BHD'000
1960	5,287	2,382	7,669
1961	5,211	2,011	7,222
1962	5,410	2,090	7,500
1963	5,379	2,250	7,629
1964	5,856	2,430	8,286
1965	5,916	2,552	8,468
1966	7,860	3,492	11,352
1967	7,769	4,630	12,399
1968	8,114	3,856	11,970
1969	9,842	4,087	13,929
1970	9,791	4,695	14,486
1971	11,151	11,153	22,304
1972	11,996	12,378	24,374
1973	13,409	24,606	38,015
1974	103,679	20,070	123,749
1975	111,236	23,764	135,000
1976	156,632	34,694	191,326
1977	181,149	79,487	260,636
1978	192,326	81,620	273,946
1979	160,750	143,436	304,186
1980	320,548	125,222	445,770
1981	399,179	137,446	536,625
1982	401,918	152,867	554,785
1983	328,607	155,490	484,097
1984	355,412	156,048	511,460
1985	375,009	156,424	531,433
1986	247,152	177,761	424,913
1987	248,177	178,981	427,158
1988	209,783	191,510	401,293
1989	247,440	190,591	438,031
1990	306,660	191,005	497,665
TOTAL	4,458,648	2,279,028	6,737,676

SOURCE: DIRECTORATE OF ECONOMIC RESEARCH,
MINISTRY OF FINANCE AND NATIONAL ECONOMY (1991)

TABLE 1.3
STATE EXPENDITURE
1960 - 1990

YEAR	RECURRENT BHD'000	PROJECT BHD'000	TOTAL BHD'000
1960	4,184	1,180	5,364
1961	4,648	908	5,556
1962	5,340	2,010	7,350
1963	5,697	1,223	6,920
1964	6,631	559	7,190
1965	7,312	2,271	9,583
1966	8,505	2,197	10,702
1967	10,151	1,954	12,105
1968	10,931	2,100	13,031
1969	12,473	1,715	14,188
1970	14,049	4,235	18,284
1971	16,335	6,248	22,583
1972	17,328	5,900	23,228
1973	25,956	6,796	32,752
1974	44,302	33,554	77,856
1975	67,586	54,182	121,768
1976	86,851	114,884	201,735
1977	113,721	142,588	256,309
1978	133,760	148,318	282,078
1979	152,371	97,713	250,084
1980	183,382	124,751	308,133
1981	224,707	149,999	374,706
1982	279,470	174,362	453,832
1983	295,539	222,336	517,875
1984	317,590	209,986	527,576
1985	344,200	164,348	508,548
1986	333,175	140,249	473,424
1987	346,460	110,445	456,905
1988	373,529	105,078	478,607
1989	391,787	104,175	495,962
1990	415,305	121,344	536,649
TOTAL	4,253,275	2,257,608	6,510,883

SOURCE: DIRECTORATE OF ECONOMIC RESEARCH,
MINISTRY OF FINANCE AND NATIONAL ECONOMY (1991)

TABLE 1.4
BAHRAIN SHAREHOLDING COMPANIES
1972 - 1979

COMPANY NAME	YEAR OF INCORPORATION	PAID UP CAPITAL AT INCORPORATION BHD	PAID UP CAPITAL AT 31/12/92 BHD
NATIONAL IMPORT & EXPORT CO	1973	1,000,000	6,000,000
BAHRAIN FLOUR MILL CO.	1973	400,000	2,150,000
NATIONAL HOTELS CO.	1973	1,500,000	14,441,785
BAHRAIN TOURISM	1974	500,000	7,200,000
BAHRAIN & KUWAIT INSURANCE	1975	1,100,000	1,560,000
AL-AHLIA INSURANCE	1976	500,000	1,000,000
GENERAL TRADING & FOOD PRO	1977	2,500,000	2,750,000
AL-AHLI COMMERCIAL BANK	1977	4,000,000	8,000,000
BAHRAIN ISLAMIC BANK	1979	5,750,000	11,500,000
BAHRAIN LIGHT INDUSTRIES CO.	1979	1,000,000	1,250,000
TOTAL		18,250,000	55,851,785

SOURCE: DIRECTORATE OF TRADE AND COMPANIES AFFAIRS, MINISTRY OF COMMERCE (1984)

TABLE 1.5
PER CAPITA INCOME
1960 – 1990

YEAR	GNP BHD'000,000	PER CAPITA INCOME BHD
1960	13.10	88
1961	12.50	81
1962	15.30	95
1963	14.30	85
1964	13.70	78
1965	18.20	100
1966	21.30	114
1967	22.80	119
1968	23.30	117
1969	25.00	122
1970	31.50	150
1971	41.30	191
1972	42.10	186
1973	60.40	254
1974	160.90	644
1975	192.90	735
1976	314.90	1,144
1977	427.40	1,479
1978	508.40	1,676
1979	703.20	2,208
1980	1,111.50	3,325
1981	1,288.80	3,585
1982	1,332.70	3,560
1983	1,343.60	3,440
1984	1,410.90	3,463
1985	1,283.10	3,022
1986	1,085.20	2,457
1987	1,084.10	2,369
1988	1,095.30	2,314
1989	1,248.80	2,556
1990	1,338.80	2,662

SOURCE: DIRECTORATE OF ECONOMIC RESEARCH,
MINISTRY OF FINANCE AND NATIONAL ECONOMY (1991)

TABLE 1.6
BAHRAIN SHAREHOLDING COMPANIES
1957 - 1971

USD '000,000						'000,000	
COMPANY NAME	YEAR OF INCORPORATION	PAID UP CAPITAL AT INCORPORATION	PAID UP CAPITAL AT 31/12/83	NUMBER OF SHARE ISSUE			
AL-JAZEERA CONSTRUCTION	1978	53	196	319,000			
PEARL INVESTMENT CO.	1979	10	150	600,000			
ARAB INT'L DEVELOPMENT CO.	1979	27	80	159,000			
UNION GULF INSURANCE CO.	1979	16	50	76,320			
GULF INVESTMENT CO.	1979	125	290	1165,000			
UNITED GULF BANK	1980	75	200	800,000			
ARAB IFRON	1981	150	0	590,000			
ARAB INT'L INSURANCE CO.	1981	8	8	7,500			
UNITED GULF SERVICES	1981	150	149	76,320			
BAHRAIN KUWAIT INVESTMENT G	1982	146	146	550,000			
BAHRAIN INT'L BANK	1982	180	180	180,000			
BANK OF BAHRAIN AND MIDDLE E	1982	100	100	199,880			
INVESTCORP BANK	1982	50	50	800,000			
TOTAL		1,089	1,599				

SOURCE: DIRECTORATE OF TRADE AND COMPANIES AFFAIRS, MINISTRY OF COMMERCE, BAHRAIN (1984)

TABLE 1.7
MONEY SUPPLY
1977 - 1983

YEAR	AMOUNT BHD'000,000	% CHANGE
------	-----------------------	----------

1977	353	
1978	402	13.87%
1979	412	2.36%
1980	524	27.25%
1981	731	39.43%
1982	780	6.80%
1983	843	8.05%

SOURCE: DIRECTORATE OF ECONOMIC RESEARCH
BAHRAIN MONETARY AGENCY (1992)

TABLE 1.8
CREDIT FACILITIES
1979 - 1983

YEAR	TOTAL FACILITIES BHD'000,000	PERSONAL FACILITIES BHD'000,000	% CHANGE
1979	395	41.10	
1980	454	51.30	24.82%
1981	495	89.30	74.07%
1982	568	121.30	35.83%
1983	630	128.20	5.69%

SOURCE: DIRECTORATE OF ECONOMIC RESEARCH ,
BAHRAIN MONETARY AGENCY (1984)

TABLE 1.9
VOLUME OF SHARES TRADED
FEB. 1982 V.S. FEB. 1983

	VOLUME OF SHARES TRADED FEB 1982	VOLUME OF SHARES TRADED FEB 1983
LOCAL SHAREHOLDING COMPANIES	1,311,636	172,673
EXEMPTED COMPANIES	5,241,312	1,402,977

SOURCE: DIRECTORATE OF TRADE AND COMPANIES AFFAIRS, MINISTRY OF COMMERCE, BAHRAIN (1984)

CHAPTER TWO

REVIEW OF RELEVANT LITERATURE

2.1 INTRODUCTION

The Capital Asset Pricing Model (CAPM) was developed in a hypothetical world where the following assumptions are made about investors and the opportunity set: Radcliffe (1987):

- 1- All market participants currently have identical information, in other words, they have homogeneous expectations about the future.
- 2- There are no impediments to achieving exactly the portfolio that one wishes. In other words, the markets are frictionless. Among the principle impediments are; transaction costs, security indivisibility, taxes, and trading price impacts.
- 3- A one-period world exists for all investors
- 4- Investors seek to maximize the expected utility of end-of-period wealth.
- 5- Investors may borrow or lend at risk-free interest rate.

The capital Asset Pricing Model (CAPM) has two major attractions, its simplicity, and its implications. Within it are two principle economic relationships: Capital Market Line, and Security Market Line.

2.1.1 Capital Market Line

The first relationship; known as the capital market line (CML) states the equilibrium relationship which exists between the returns which should be expected on efficient portfolios of securities and the risks of such portfolios.

The capital market line is written symbolically as:

$$E(R_p) = R_F + \sigma_p \{ [E(R_M) - R_F] \div \sigma_M \} \quad (2.1)$$

where: $E(R_p)$ = expected return on a portfolio

$E(R_M)$ = expected return on the market portfolio

R_F = risk free rate of interest common to all securities
which compensates people for the time value of money.

σ_p = total risk of the portfolio

$[E(R_M) - R_F]$ = is a measure of the risk premium which is
expected to be earned above the risk-free rate for bearing
the market portfolio's risk.

σ_M = standard deviation of the market portfolio's return

Under this model the problem of measuring risk exists. The variance is an adequate measure of risk for portfolios of assets; however, it is not particularly useful when we wish to evaluate the risk of individual assets that do not lie on the efficient set. Nor is it possible to compare a single risky asset with a well-diversified portfolio. Therefore it is necessary to distinguish between portfolio risk and the contribution of a single asset to the riskiness of a well-diversified portfolio, Copeland & Weston (1988).

2.1.2 Security Market Line

The second relationship is the Security Market Line (SML). SML is broader and is able to treat individual securities as well as portfolios. The CML cannot be used to evaluate the equilibrium expected return on a single security because the standard deviation is appropriate for measuring the risk of an efficient portfolio, it is not the appropriate measure of risk for individual assets or for comparing the riskiness of portfolios with the riskiness of single assets. A more commonly used security-risk measure is the amount of nondiversifiable risk inherent in the security relative to the risk of the market portfolio (Copeland and Weston 1988). Modigliani & Pogue (1974), measured the nondiversifiable risk inherent in the security relative to the risk of market portfolio. Data were collected from New York Stock Exchange (NYSE) for 306 months between January 1945 and June 1970. They observed the average return and variance of return calculated for a single asset and for a 100-stock portfolio of randomly selected common stocks. Result shows that when σ used as a measure of risk for individual asset in comparison with a well-diversified portfolio (100 stocks portfolio), will lead to inappropriate observation that the assets with higher risk has a lower return. One cannot compare the variance of return on a single asset with the variance for a well-diversified portfolio. the variance of the portfolio will almost always be smaller. The appropriate measure of risk for a single assets is beta, its covariance with the market divided by the variance of the market. This risk is nondiversifiable and is linearly related to the rate of return required in equilibrium. Such have been also proved when they add the beta into the comparison. The result showed that, the same assets are less risky than the 100-stocks portfolio. And that the sensible result obtain that lower risk is

accompanied by lower return. Therefore, the security market line expresses the return which should be expected in terms of a risk-free rate and the relative risk of the security. It is written symbolically as:

$$E(R_i) = R_F + \beta_i \{ [E(R_M) - R_F] \div \sigma_M \} \quad (2.2)$$

The security market line expresses the risk premium differently and treats any security *i*. The risk of security *i* is the nondiversifiable risk which it adds to the optimal risky portfolio.

Gains and losses to individual securities which are passed on to other securities and remain within the system can be diversified away by holding a portfolio of all securities. These are unsystematic risks. Gains or losses to the total system are nondiversifiable systematic risks.

This relative risk measure is known as beta and is equal to:

$$\beta_i = (\sigma_i / \sigma_M)(r_{iM}) \quad (2.3)$$

Dividing σ_i by σ_M provides a measure of how volatile the security is in relation to the volatility of the market portfolio. Multiplying by the correlation coefficient determines how much of this relative volatility should the investor expect from the market. The security market line is the more widely used due to its greater generality Radcliffe (1987). Therefore, the concept of this theory will be applied in this research.

The CML and SML have gained wide use within the professional investment community worldwide. Security analysts use the theory in pricing stocks, portfolio managers develop proper portfolio strategies around its principles, and consultants use it to evaluate a portfolio's performance (Radcliffe 1987).

Major empirical tests which have been conducted on the CAPM as well as some alternative versions of the CAPM which emerge when various assumptions are lifted. In many respect, the empirical tests have shown results which are exactly what the theory would suggest.

2.2 STOCK RISK (VOLATILITY OF STOCK PRICES)

Stock prices risk has risen significantly during the last two decades because stock prices have become increasingly volatile, and became the major concern to all investors worldwide. This is due to the advancement in the communication technology and the ability to access any financial market around the world swiftly and easily. This risk or the volatility in the stock prices has been so substantial that at times of change in the stock prices will make some of the investors bankruptcy.

The significance factors that might contribute to the stock prices risk in this part of the world are the political and military tensions are high and the effect of news on the economic health are serious, the share brokers will act very quickly and thousands of Dinars are gained or lost in a day as a result of these news. No proper control over the usage of inside information which lead to high amount of speculative profit.

There is no consensus on the causes of stock price volatility. DeBondt and Thaler (1985) demonstrate that investors chronically 'overact' to news and must therefore consistently reverse their original forecasts.

Brown, Harlow, and Tinic (1988), test the Uncertain Information Hypothesis (UIH) as a means of explaining the response of rational, risk-averse investors to the arrival of unanticipated information. The model UIH begins with the assumption that investors often set stock prices before the full ramifications of a dramatic financial event are known. The UIH then predicts that in the aftermath of new information, both the risk and the expected return of the affected companies increase in a systematic fashion. The UIH claims that major favourable and unfavourable surprises about the economy will typically increase the risks of holding common stocks in general. Thus, the returns on broadly based stock indexes following the events will also exhibit the asymmetric patterns. Moreover, the UIH implies that, when investors' preferences exhibit decreasing absolute risk aversion and broadly diversified portfolios of equities constitute very large fractions of investors' wealth, the price reaction to major unfavourable marketwide surprises will be more pronounced than the reaction to equally significant favourable surprises]. The data source used is the Centre for Research in Security Prices (CRSP) index and 200 largest individual stocks in the Standard and Poors (S&P) 500 between July 1962 to December 1985. In testing the UIH, two types of test have been conducted, first to test marketwide compliance with the predictions of the UIH, second to examine whether the values set for individual firms conform to the same specifications. They conclude that the average postevent returns following both favourable and unfavourable events do indeed tend to be significantly positive. However, the correlations between the immediate price changes are extremely low, even in the very large samples of major favourable and unfavourable surprises examined.

Limmark and Ward, (1990) studied the behaviour of the London stocks price during the period of exceptional market movements over relatively short periods of time. The period spanned from October 16th 1987 to January 31st 1988. Tests were conducted using Arbitrage Pricing Theory (APT) to determine whether any factor or group of factors had influence on security price behaviour during 1987 stock market crash. Using factor analysis (by selecting variables to represent the identified factors) to the security data set of independent variables, the results of the test suggest that systematic risk have significant influence on the price movements of individual stocks, particularly on those days in October 1987 in which major price adjustments occurred. There finding was strengthened when the tests were repeated using portfolio data.

What is fairly certain causes of volatility in stock price, the increased globalization of investment played a role by being associated with more hot money shipping from financial centre to another financial centre in search of the highest return.

2.3 MEASUREMENT OF RISK

Risk is one of the most striking characteristics of the security markets. An ability to understand, measure, and properly manage investment risk is fundamental to any intelligent investor. One definition of the measure of risk is the extent to which the future portfolio values are likely to diverge from the expected or predicted value. More specifically, risk for most investors is related to the chance that future portfolio values will be less than expected.

There are two types of risk. Some risk can be eliminated via diversification, others cannot. Unsystematic risk or diversified risk, which can be washed away by mixing the security with other securities in a diversified portfolio. Systematic risk which cannot be eliminated by diversification. The uncertainties about returns which affect all securities would include, Radcliffe (1987):

1. Inflation impacts on security prices
2. Uncertainties about long-run aggregate economic growth
3. Changes in the market's willingness to accept risk
4. Interest rate changes will affect prices of all securities.

In a study of the impact of portfolio diversification on risk, Wagner and Lau (1971) divided a sample of 200 NYSE stocks into six subgroups based on the Standard and Poor's Stock Quality Ratings as of June 1960. The highest quality ratings A+ formed the first group, the second highest rating A the next group, and so on. Randomly selected portfolios were formed from each of the subgroups, containing from 1 to 20 securities. The result shows that the standard deviation of return declines as the number of holdings increases. On the average, approximately 40% of the single security risk is eliminated by forming randomly selected portfolios of 20 stocks. Results also shows that the risk remaining in the 20-stock portfolio is predominantly a reflection of uncertainty about the performance of the stock market in general.

To measure the degree of systematic or market related risk in security, it is essential to measure how sensitive it is to market movements. This sensitivity of an investment's return to market movements is called its beta. Beta is concerned solely with market related risk and offers a measure of the impact of market changes on the expected return from an asset.

There are different methods used to measure beta. Berglund, Liljeblom, and Loflund (1987), investigate the relative merits of several different beta estimation procedures suggested to cope with problems that may lead to misleading beta estimates on a small market like the Helsinki Stock Exchange (HeSE). The analysis is based on daily stock returns for stock listed on the HeSE between January 1977 and december 1985. The period has been partitioned into three subperiods to analyze the stability of betas over time. The authors did the analysis based on individual stocks rather than portfolios. This is due to the fact that total number of stocks listed on the HeSE is around 70, and the potential loss of data in the aggregation of portfolios into different beta categories will cause a more serious problem than in the case of larger exchange. Cross-sectional regression analyses are performed by regression betas for one subperiod on betas for a previous time period. Results concluded that they have not advanced very far from the Ordinary Least Square (OLS) beta in producing better beta estimators to used on daily data for the HeSE. Other betas examined are; trade-to trade betas (obtained by running a straightforward regression of the first differences of the logarithm from a time series consisting exclusively of prices recorded when the stock has been subject to trade on the contemporary differences for the market index), designed to tackle the problems produced by less frequent than daily trading in individual stocks, CHMSW-beta (suggested by Cohen,

Hawawini, Mayer, Schwartz and Withcomb in 1983), appropriate when there are significant non-synchronous price adjustments in different stocks, and it was originally proposed by (Scholes and Williams, 1977) to deal with infrequent trading in situations in which no information about the exact timing of a price within a day is available, and Bayesian beta (proposed by Vasicek in 1973 to account for the differences in the statistical reliability of beta estimates for different stocks).

2.4 REVIEW OF RELEVANT RESEARCH ON STOCK MARKET EFFICIENCY

The security market is efficient when information is widely and cheaply available to investors and that all relevant and ascertainable information is already reflected in security prices: An efficient market has been defined in many ways by different writers. Fama (1970) defined efficient markets in terms of the difference between the actual price and the price that investors expected given a particular set of information. An efficient market, Fama argues, is one in which the expected value of this difference is zero. Rubinstein (1975) defines an efficient market as one in which prices would not be altered if everyone revealed all that they knew.

An efficient capital market is a crucial component of any capitalistic society. With an efficient capital market, security prices provide accurate signals for capital allocation. Efficiently priced security market properly assesses the future of particular industries and allocates capital as needed.

Hampton (1982) lists three forms of the efficient market hypothesis. First the weak form of efficiency is also called the random walk form is that market prices are based on widely shared information and reflect intrinsic value of the securities. Future stock movements cannot be in the direction of intrinsic value because the current price already reflects the appropriate value for the level of risk.

Second the semi-strong form of efficiency asserts current prices fully reflecting public knowledge about the underlying companies and that efforts to acquire and analyze this knowledge cannot be expected to produce excess returns. For example, one cannot be expected to produce excess return by analysing annual reports, announcement of dividend changes or stock splits.

Semi-strong form efficiency uses much more sophisticated information and reasoning than weak form efficiency: An investor must be skilled at economics and statistics and possess special knowledge of individual industries and companies and their products. Furthermore, to acquire such skill requires talent, ability, time and cost. We notice that institutional investors have the edge over private investors in this respect because they can afford the costs involved.

Third, the strong form of efficiency is the highest level of efficiency. It states that share prices reflect all information, published and unpublished (inside) information. Test of the strong form attempt to measure the degree to which certain investors can obtain a "monopoly" on information, thereby producing windfall returns on their investments.

The conditions sufficient for a perfectly efficient market are:

- 1- information must be provided freely and instantaneously to all market participants.
- 2- there must be no costs associated with trading.
- 3- actions taken by a single individual cannot affect prices.
- 4- people maximize expected utility.

Because these conditions aren't strictly true in the real world, a distinction is made between a perfectly efficient and an economically efficient market. A perfectly efficient market is one in which prices always reflect all known information, prices adjust instantaneously to new information, and speculative profits are simply a matter of luck. In an economically efficient market, prices might not adjust instantaneously to information, but, over the long run, speculative profits can not be earned after transaction costs are paid. Rodcliffe (1987).

Stock market efficiency has been the subject of considerable amount of researches in the past decade and recently. Recently, Chung (1991) tests the efficiency of the Major Market Index (MMI) (MMI is a broad-based stock index which measures the performance of twenty blue-chip stocks listed on the New York Stock Exchange) futures market to determine whether market prices for stocks and futures offered significant profit opportunities to arbitrageurs. His study based on the MMI of the American Stock Exchange and MMI futures contracts traded in the Chicago Board of Trade for the period from July 1984 to August 1986. His results show that previous

studies significantly overestimate the size and frequency of profitable arbitrages in the index futures market by focusing on ex post test (without imposing execution lags) and by using the reported index instead of transactions data (five-minute interval price).

Madden, Marples, and Chugh (1990) examine the market value changes associated with the announcements of a special set of divestitures called management buyouts. Thirty six management buyouts were identified from the first announcement in the Wall Street Journal for the period 1973-1978, and the securities returns were computed from Standard & Poor's Compustat Price-Dividend-Earning file. According to the market model they have used, each security's period return can be expressed as a linear function of the contemporaneous return on a market portfolio. Their findings suggest that abnormal returns could have been earned from a trading strategy predicated on news of directors' share dealings, however at 5% confidence level, the associated Z-statistic test does not reach significance with respect to the disclosure of such event.

Liljeblom (1989), analyze the informational impact of the announcement of stock dividends and stock splits on the stock listed on Stockholm Stock Exchange during the time period 1977-85. He conclude that significant positive price reactions are observed in the case of stock dividend or stocks split announcements that cannot be attributed to contemporaneous information disclosures of Earning Per Share (EPS) or dividends.

Butler and Malaikah (1991), examines stock returns in Saudi Arabia and Kuwait over the period 1985-89. According to autocorrelation and runs tests of serial independence, the Kuwaiti market is similar to other thinly traded

markets in the proportion of individual stocks not conforming to a random walk. The Saudi market exhibits much more serial dependence than Kuwaiti market or other thinly traded stock markets, and there stocks show a significant departure from the random walk.

Jong, Kemna, and Kloek (1991), study market efficiency using extended market model for event study (weekend and the option expiration effect) on the stock return and the stock return volatility, based on daily return data for 13 major stocks listed on the European Options Exchange in Amsterdam from January 1984 to Aug 1987. Their results indicating that the assumptions of simple market model are violated with actual data (for daily data the returns are not normally distributed with constant variance).

Gemmill (1991) study the efficiency of the London stock market during the election period, using Financial Times Securities Exchange (FTSE) 100 Index. His finding shows an extremely close relationship between opinion polls & the (FTSE) 100 Index of share prices. However, in the election week the prices showed evidence of informationally inefficiency.

Aminhod and Mendelson (1991), study the joint effect of the trading mechanism and the time at which transactions take place on the behaviour of stock returns using data from Tokyo Stock Exchange (TSE) and compared with New York Stock Exchange. The Data were collected from daily stock reports available from the (TSE), and cover the period July 1, 1987 through June 30, 1988. Comparing the time-series behaviour of stock returns (using

variances and autocorrelations) over the open-to-open and close-to close time intervals for the same stock over the same period on these two stocks exchange. Their finding is that the midday clearing has a different effect on price behaviour than the morning clearing, and it will exhibit the least volatile and most efficient value discovery process.

Sauer and Murphy (1992) tested the efficiency of the market on USA and German using CAPM and CCAPM (In the CCAPM, investors are assumed to seek to maximize a lifetime utility of consumption function that increases at a marginally decreasing rate with higher level of real consumption. In this world, investors seek to minimize the variance in their consumption stream. As a result, the relevant risk parameter in the CCAPM is a beta which measures the contribution of an asset to the variance in aggregate consumption). Data used on 249 German stocks traded on the Frankfurt Stock Exchange between 1968 and 1988. The result shows evidence that the CAPM is a better indicator of capital asset pricing in Germany than the CCAPM. Similar to those found for the U.S. market. capital market. Formula for CCAPM:

$$\text{CCAPM: } \{(u_j^* - u_f^*) / (u_s^* - u_f^*)\} = y_0 + y_1 \{(\beta_{jc}^* - \beta_{fc}^*) / (\beta_{sc}^* - \beta_{fc}^*)\}$$

where u is the average return log-relative, s is some asset or portfolio with a non-zero beta, and y_0 and y_1 are parameters implied by the model risk-return equation to equal 0 and 1, respectively.

Pope, Morris, and Peel (1990) tested the behaviour of equity returns on companies registered in London Stock Exchange, in the periods both immediately after and prior to insider transactions to provide indications about whether insider trading is systematically motivated by short run profit-seeking,

or whether insiders make use of trading activities to communicate signals to the market. Data taken as the notification of directors' transactions as recorded by the Stock Exchange in its Weekly Official Intelligence for the period between April 1977 and December 1984. Result showed that with the advantage of hindsight a profitable trading strategy, net of transactions costs, could have been developed based on observations of directors' share dealings. Though whether such opportunities are likely to persist in the future as market agents learn how to sue such information is a moot point.

2.5 REVIEW OF RELEVANT RESEARCH ON CAPM

This section reviews the previous studies on CAPM. Douglas (1969) examined the relationship between average security returns and various risk measures (stock's average quarterly rate of return, the variance of each stock's quarterly rate of return, and the covariance of the stock's return with the quarterly returns of an index of all 600 stocks) on a sample of 600 stocks from U.S. market for various time intervals between 1926 and 1960. He estimated the following regression equation for each five-year period:

Douglas Single-Stock Test

$$(1 + R_i) = \alpha_0 + \alpha_1 (\sigma_i^2) + \alpha_2 (\sigma_{ij}) + e_i$$

Where R_i = the average quarterly return on stock i during the 5-year period, σ_i^2 = the variance of i 's quarterly return, σ_{ij} = the covariance between i 's return and the index of all the 600 stocks during the five-year period, e_i = random estimation errors. α_0 = the average risk-free rate, and α_1 = the market risk premium earned, α_2 reflect the earned price of risk.

His results showed that the estimate of α_1 reflect the impact of a security's total risk on average returns. Per the CAPM, α_1 values should be zero. But most his finding are positive and statistically significant, at .05 level of significance, contrary to the CAPM. However, Douglas study suffers from various statistical weaknesses which might explain their anomalous results, Radcliffe (1987). Such weaknesses including; measurement errors incurred in estimating individual stock betas, and the fact that estimated betas and unsystematic risks are highly correlated.

Black, Jensen, and Scholes (1972) studied the linear relationship between average excess returns and beta, using all NYSE stocks for the period 1931 to 1965. For each year from 1931 to 1965, the authors grouped all NYSE stocks into 10 portfolios. Month-by-month returns for the portfolios were computed from January 1931 to December 1965. Average portfolio returns and portfolio betas were computed for the 35 year period and for a variety of subperiods. Their results conform with the CAPM in that a clear linear relationship exists between average excess returns and beta. Moreover, it shows that the relationship is significantly positive over long period of time.

Fama and MacBeth (1973) have extended the Black-Jensen-Scholes (1972) tests to include two additional factors; the nonlinearities in the risk-return relationship, and the impact of residual variations. The results of the tests show that while estimated value of nonlinearities and residual variations are not equal to zero for each interval examined, their average values tend to be insignificantly different from zero (according to the CAPM, the value of nonlinearities in the risk-return relationship and the value of the residual variations are expected to be zero).

Friend and Blume (1973) test the CAPM. Using data from NYSE from 1955 to 1968, they have constructed monthly portfolio returns. Their tests involved fitting the coefficients of the following equations:

$$R_j = y_0 + y_1 \beta_j + \mu_j$$

Jacob (1971) studied the relationship between realized return and risk based on individual securities. Using 593 NYSE stocks from 1946 to 1965. Regression analyses were performed for the 1946-1955 and 1956-1965 periods, using both monthly and annual security returns. The results show a significant positive relationship between realized return and risk during each of the 10-year periods.

Miller-Scholes (1972) made three types of tests; mean return versus beta, mean return versus unsystematic risk, and mean return versus both beta and unsystematic risk. Using annual returns for 631 stocks during the 1954-1963 period. The results for the first test show a significant positive relationship between mean return and beta. The results for the second test do not agree with the CAPM's predictions. That is, high unsystematic risk is apparently associated with higher realized returns. However, Miller and Scholes show that this correlation due to statistical sampling problems. The results for the third test found to be significantly positively related to mean return.

Bubnys (1990) made a comparisons between the performance of CAPM and Arbitrage Pricing Theory (APT), on a sample of 128 public utility in U.S.A.. The result shows several CAPM versions to have outperformed the APT version. In addition the factor scores used in the APT may result in a downward bias on APT's performance capability. Further the use of factor

analysis as a tool in empirical tests of the APT has been criticized and led to efforts by Chen (1983), to relate the resulting unknown common factors to known macroeconomic variables.

Khan and Fiorino (1992) test the CAPM in project selection using four projects. The results are compared with (IRR) and payback period (PB), CAPM analysis provides results that incorporate the meaningful individual project risk into the selection criterion.

2.6 CONCLUSION

An efficient securities market is the consequence of intense competition for information. Individuals seeking speculative profit will search out any information which will help in identifying mispriced securities. however, at the extreme, all such information will be reflected in existing prices.

The efficient-market hypothesis comes in three different flavours. The weak form of the hypothesis states that prices efficiently reflect all the information contained in the past series of stock prices. In this case it is impossible to earn superior returns simply by analysing the patterns of historical stock prices, in other words, price changes are random. The semistrong form of the hypothesis states that prices reflect all published information. That means it is impossible to make consistently superior returns just by reading the

newspaper, summarize the company's annual accounts and so on. The strong form of the hypothesis includes the effects of insider information held by officers or directors of the firm in the best for market efficiency. The specific hypothesis is "security prices change immediately to reflect public and insider information".

Most of the studies which have been refer in this chapter shows that the market is economically efficiency. In an economically efficient market, prices might not adjust instantaneously to information, but, over the long run, speculative profits can't be earned after transaction costs such as brokerage commissions and taxes are paid. However, there are certain factors that effect the efficiency of stock market. These factors include; reported index instead of transaction data; news by company's directors; stock dividends and stock splits announcement; illiquidity, market fragmentation, reporting delays, exceptional market movements; time factor; political; and joint effect of the trading mechanism.

To conclude, the stock markets demonstrate a form of efficiency that is at the least, at a weak form level. Stock market also show efficiency in semi-strong form, but inefficiency in a strong form.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter includes the data gathering methods which were used to collect the information needed to conduct this study, and the data analysis techniques that have been used to analyze the data gathered in order to meet the purpose of the study.

3.2 RESEARCH HYPOTHESIS

In conducting this study the following hypotheses were developed and will be examined:

1. There is no significant autocorrelation.
2. There is no correlation between successive prices.
3. There is no significant difference between actual returns, and estimated returns based on SML.

3.3 DATA GATHERING METHODS

The Bahrain Stock Exchange provided the daily executed price, bid price, offer price, and volume for 28 Bahraini Stocks over the period 1990

through 1992, and index since 1991. I used daily stock closing price for my analysis over the period 1991-1992 (about 490 trading days) adjusted for dividend stock split. The risk-free return employed in the test is measured as the interest rate on allotted Treasury Bills and collected from Bahrain Monetary Agency Quarterly Statistical Bulletin for the same periods.

Stocks traded on less than 10% of the days during the period (490 trading days) have been dropped from the sample. This left 23 stocks in the sample. This will avoid having to estimate betas and other parameters with a limited number of observations. Butler and Malaikah (1991) on their examination of the efficiency in thinly traded stock markets (Kuwait and Saudi Arabia) dropped stocks traded on less than 10% of the days during the examination period.

3.4 DATA DESCRIPTION

The research sample, which consists of all stock prices constituting the BSE are included in this study on daily basis from January 1991 to December 1992.

Stock prices were collected from Bahrain Stock Exchange Market Indicators and Quotation Spreads Report. Interest rates were collected from Bahrain Monetary Agency Quarterly Statistical Bulletin.

3.5 DATA ANALYSIS TECHNIQUES

To find the relationship between company's individual stock and related index and even overall index, the bases that investors consider in taking a decision to invest in the stock market, standard deviation, correlation, and performance evaluation techniques were used.

3.5.1 Autocorrelation

Autocorrelation is an econometric problem characterized by the existence of a significant pattern in the successive values of the error terms in a linear regression model. Successive values of the disturbance term (error) can exhibit either positive or negative autocorrelation, McGuigan and Moyer (1986).

Autocorrelation can result from several factors. One factor is the existence of trends and cycles in economic variables. Autocorrelation may also result if significant explanatory variables are not included in the regression equation or if nonlinear relationship exist.

In this paper, autocorrelation will be applied to examine the proportion of individual stocks not conforming to a random walk. Butler and Malaikah (1992) examines the behaviour of individual stock returns in thinly traded stock market, i.e. Saudi Arabia and Kuwait during the period 1985-1989, using autocorrelation and price change runs. Amihud and Mendelson (1991),

used autocorrelations and variance to examine the effects of the different trading mechanism had on stock price behaviour. Using data from the Tokyo Stock Exchange and NYSE, during the period July 1987 to June 1988 on 50 stocks sample.

3.5.2 SML Formula

The security market line (SML) is defined Hampton (1982) as the risk-return relationship for portfolio of financial assets traded in an efficient market.

The Security Market Line is able to treat individual securities as well as portfolios. The CML cannot be used to evaluate the equilibrium expected return on a single security because σ_i is not a proper measure of a security's true risk. The risk of a security depends upon the portfolio to which it is added and must reflect the covariability of the security's returns with other assets in the portfolio. The security market line expresses the return which should be expected in terms of a risk-free rate and the relative risk of the security. It is written symbolically as Radcliffe (1987):

$$E(R_i) = R_F + \beta_i [E(R_M) - R_F] \quad (3.1)$$

The security market line expresses the risk premium differently and treats any security i . The risk of security i is the nondiversifiable risk which it adds to the optimal risky portfolio. A more commonly used security-risk measure is the amount of nondiversifiable risk inherent in the security relative to the risk of the market portfolio. This relative risk measure is the beta measure.

Numerous empirical tests of CAPM have been carried out and documented which examined the efficiency of stock market. Jong, Kemna, and Kloek (1992) tested the market efficiency using CAPM model by adding dummy variables in the regression equation to test for any periodic event. Thus adding dummy variable will not lead to accurate conclusion since such variables are based on subjective judgement.

Although there are some criticisms on the CAPM by Kraus and Litzenberger (1976) and Conine and Tamarkin (1985) Brigham, Shome and Vinson (1985) due to beta instability and unstable market risk premiums. CAPM will remain the best candidate for the market efficiency evaluation. The CAPM is similar to the concept of perfect competition in economics - it is not a perfect reflection of reality, but it is the best place to start.

3.5.3 Beta Coefficient

The beta coefficient (which is a regression coefficient to separate the standard deviation of returns from individual securities into systematic and unsystematic components) is used to link the risk of an individual asset in the portfolio with the risk of all assets in the market, Hampton (1982).

The beta coefficient is composed of three elements: first, a correlation coefficient, which is a statistical measure of the degree of relationship between two variables; the standard deviation of the securities; and finally, the standard deviation of the market. The formula is:

Beta of Security *i*

$$\beta_i = (\sigma_i / \sigma_M) (r_{iM})$$

Where:

σ_i = standard deviation of the security *i*'s historical returns

σ_M = standard deviation of the market's historical return

r_{iM} = correlation coefficient between an individual security and the portfolio.

If the correlation coefficient and standard deviations are ex ante measures, this is a proper way of measuring β . Such an ex ante beta measures subjective beliefs about the security's relative nondiversifiable risk. However, ex post measures are commonly used as proxies for ex ante data, in which case standard deviations and correlation coefficients of the portfolio's historical returns are used to estimate beta.

3.6 SUMMARY

This chapter includes the research hypothesis, data gathering methods, and data analysis techniques which were used to conduct this study. Previous studies have been reviewed to assess in the application of analysis in this research.

CHAPTER FOUR ANALYSIS AND FINDINGS

4.1.1 Autocorrelations Coefficient Results

Table 4.1 list autocorrelations coefficient for the individual stocks of Bahrain Stock Exchange (BSE). The mean lag one autocorrelations in Bahrain is 0.181. Ten of the 23 stocks (43%) have statistically significant lag one autocorrelations coefficient at the 5% confidence level. One of these ten is positive in sign and four of the 23 stocks are positively autocorrelated.

The proportion of Bahrain stocks exhibiting statistically significant lag one autocorrelations (43%) is not much higher than in developed markets. For instance, Fama (1970) reports 37% (10 of 30) of large NYSE firm have significant lag one autocorrelations. Solnik (1973) reports significant lag one autocorrelations in 51% (113 of 224) of stocks across eight Western European markets. Laurence (1986) reports 31% and 79% of stocks on the Kuala Lumpur and Singapore exchanges, respectively, exhibiting significant lag one autocorrelations.

Table 4.2 shows some of autocorrelations results of different markets including Bahrain and other similarly thin market. Butler and Malaikah (1991) report 36% (13 of 36) of Kuwait market, and 100% (35 of 35) of Saudi stocks have significant autocorrelations. Norway and Sweden show very high proportion of significant lag one autocorrelations, 92% and 90%, Jennergren and Korsvold (1975).

The magnitude of lag one autocorrelations in Bahrain stock market Table 4.2 is -0.181 compare to 0.053 in Kuwait, -0.471 in Saudia and 0.271 in Germany. For comparison to a relatively efficient market, Fama reports a mean absolute autocorrelations of 0.048, and reports 37% significant lag one autocorrelations in 30 large NYSE firms.

What can we draw from the above result ? The above result will be better understood if we compare BSE market autocorrelations with more closer thinly market like Kuwait stock exchange market. Kuwait market has several things in common with BSE market. Such similarities like, investors level of awareness of the stock market, same culture, same rules and regulations, external factors have similar influence on both markets.

Kuwait market is similar to other thinly traded markets in the proportion of individual stock not conforming to a random walk, Butler and Malaikah (1991). And comparing the results of BSE market in the lag one autocorrelations coefficient (42%) with Kuwait market (26%) result in only small variance in favour of the latter. In my opinion such difference could be attributed to 1) the official Kuwaiti stock exchange was established in April 1978, 12 years before the establishment of BSE market. This implies that the Kuwaiti market due to its long existence has had a better chance to develop and organise as an official exchange. Whereas, BSE market is an emerging market and considered still in its infancy stage. 2) The Sample size used to calculate the autocorrelations coefficient for Kuwaiti stocks cover daily price for the period of 5 years (1985 - 1989) which is considered sufficient to examine any stock market. Whereas, the sample size that was available for Bahrain stocks cover the daily prices for the period of 2 years only.

4.1.2 Conclusion

According to autocorrelations, the Bahrain stock market is almost similar to other thinly traded stock markets exhibiting statistically significant autocorrelations. There is only small difference between the result of BSE market and Kuwait stock exchange market in favour of the latter. The difference could be attributed in the long existence of Kuwait market, and longer sample period covered on the study of Kuwait market.

4.2.1 Correlation Coefficient

The correlation coefficient measures the dependence in successive price changes. In other words can historical price change forecast future changes. The serial correlation technique was used as a test of efficiency. The correlation coefficient formula is:-

$$r_{ij} = \frac{\sum_{t=1}^N (R_{it} - R_i)(R_{jt} - R_j)/N}{\sigma_i \sigma_j}$$

where: R_{it} , R_{jt} = returns on index i and security j in period t ,

where $t = 1$ to N .

R_i , R_j = average historical returns on i and j .

σ_i , σ_j = standard deviations of i and j returns.

The coefficient ranges between + 1 to -1. 1 indicates a perfect positive or negative correlation, i.e. past price changes can tell us perfectly what future price changes will be. A coefficient of zero indicates prices independence, i.e. past prices can tell us nothing about future prices. Therefore, a market is considered efficient if the correlation coefficient of its price changes is equal to zero. However, the last statement, while theoretically true, should not necessarily be true with financial assets. Since stocks are risky we actually expect to find a positive mean change in stock prices, such an argument does not contradict the random walk hypothesis and stock prices can be characterized by a random walk process with a "positive drift". A positive drift can be defined as the expected change in price. In this context, a positive coefficient indicates that a previous price change P_{t-1} , tend to produce P_t , which is higher than the expected price change and the opposite is true for a negative coefficient, McGuigan and Moyer (1986).

4.2.2 Result of the Test

Table 4.3 lists the correlation coefficients for all companies of BSE. What do these results tell us ? The figures in Table 4.3 reflect a low correlation between price changes. In other words previous price changes may be able to tell us a little about future price trend. Comparing the average correlation coefficient for the whole market i.e. (-0.149) with (0.678) correlation

coefficient of previous study on BSE by Nooruddin (1992), infer that the BSE is moving toward becoming an efficient market. The data collected for this study differs from the one collected by Nooruddin in the following; 1) larger sample covering daily prices for two years (1991-1992), compared to weekly prices for the period from January 1990 to September 1991; 2) no official index used by Nooruddin; 3) about half of the period used by Nooruddin strongly effected by the Second Gulf War.

Also comparing the above result with other major stock exchange. Fama's (1965) results of the 30 industrial stock in Dow Jones was .03 which does not differ from zero statistically. In Moore's investigation of 29 American stocks for the 1951-1958 period the average serial correlation coefficient was -0.06 which is considered extremely low.

Testing the significant of the data, 14 of 23 companies (60%) of the market show statistically significant correlation coefficient at 5% significance level.

Table 4.3 also shows that almost all the companies that have statistically significant correlation are Investment and Services Industries. However, when the correlation of the above mentioned companies compared to the result of previous study, Nooruddin (1992) for the same companies, the correlation figures of those companies show large decrease as illustrated on Table 4.4.

There are (16 of 23) companies or 69% that have undervalued shares when using index CAPM. This compared to (17 of 23) or 78% using industry CAPM, Table 4.7. Bahrain International Bank shows indifference when using index CAPM, and Arab Banking Corporation shows indifference when using industry CAPM.

Testing statistically the significance of the differences between the realized returns of the companies and the theoretical return (CAPM) at 95% level of confidence Table 4.6.a, (14 of 23) companies or 60% results on statistically significant difference between realized and theoretical return using index CAPM. This is compared to (15 of 23) or 65% of the companies using industry CAPM. In other words, there are (9 of 23) companies conform to index's calculated CAPM and (8 of 23) to industry's calculated CAPM. This means that CAPM is better represented by index than individual industry. Therefore, using CAPM to test the market efficiency on the BSE results in 60% of the market statistically inefficient at 95% confidence level.

Further analysis of the above result of the statistical test by individual industry should give us better understanding of the main contributor to the market inefficiency. In the banking industry (3 of 5) companies have shown statistically significant differences between the realized and the theoretical return using index CAPM. Relating the result of the banking industry to the total market reveals that 21% of the market inefficiency caused by banking industry. In the investment industry only (1 of 5) companies show statistically significant difference between realized and theoretical return. This was only 7% effect on the total market inefficiency. In the insurance industry (1 of 2) companies show statistically significant difference between realized and

theoretical return. This has also 7% effect on the total market, and the same effect on the industries. In the services industry (5 of 6) companies shown statistically significant difference. This has 36% effect on the total market. Finally, in the hotels industry all the three companies show statistically significant difference between the realized and the theoretical. The impact of this on the total market inefficiency is 21%, Table 4.8.

As illustrated in Table 4.8, CAPM is represented better in the investment industry, 80% efficient, then banking by 40%.

Further tests have been conducted to see whether the realized return of individual stocks are uncorrelated with beta. This is done through regressing the average returns for all the stock on the sample on the stocks estimated beta value, Table 4.6.b. Result of the correlation shows that there is low correlation existing between the realized return of the stocks and the estimated beta. Results show 12% against the total market beta, and 6% against industries. This tells us that the market is about to follow random walk.

4.3.2 Conclusion

From the analysis above on the Bahrain Stock Exchange market and via the use of CAPM, it seems difficult to judge the efficiency of the market. However, as far as the CAPM is concern we can say that the BSE market is about 40% efficient, or alternatively the BSE market is 60% inefficient.

TABLE NO 4.1

**AUTOCORRELATION COEFFICIENT
FOR INDIVIDUAL STOCKS TRADING
ON BAHRAIN STOCKS EXCHANGE**

NO	COMPANIES' NAME	NO. OF OBSERVATIONS	AUTOCORRELATION COEFFICIENTS
1	NATIONAL BANK OF BAHRAIN	237	-0.161
2	BANK OF BAHRAIN AND KUWAIT	354	-0.012
3	AL-AHLI COMMERCIAL BANK	337	-0.104
4	BAHRAIN ISLAMIC BANK	143	-0.482 *
5	BAHRAIN SAUDI BANK	166	-0.117
6	ARAB BANKING CORPORATION	279	-0.193
7	UNITED GULF BANK	79	-0.332 *
8	BAHRAIN INTERNATIONAL BANK	240	-0.552 *
9	INVESTCORP	263	-0.350 *
10	BAHRAIN MIDDLE EAST BANK	156	-0.185
11	BAHRAIN KUWAIT INSURANCE	85	0.000
12	AL-AHLIA INSURANCE	117	0.266 *
13	BAHRAIN CINEMA	87	0.061
14	NATIONAL IMPORT & EXPORT	328	-0.057
15	TRAFICO	164	0.005
16	BMMI	59	0.047
17	BATELCO	352	-0.401 *
18	BAHRAIN CARPARK	87	-0.136
19	BAHRAIN FLOUR MILLS	63	-0.412 *
20	DELMON POULTARY	95	-0.377 *
21	BAHRAIN HOTELS	196	-0.315 *
22	NATIONAL HOTELS	144	-0.240 *
23	BAHRAIN TOURSIM	137	-0.105
AVERAGE		181	-0.181
* Statistically significant at the 5% level.			

TABLE 4.2

AUTOCORRELATIONS OF DIFFERENT MARKETS

Market	Means	5 % level of Significance
Kuwait	0.053	(13 of 36) 36 %
Saudia	-0.471	(35 of 35) 100 %
NYSE	0.048	(11 of 30) 37 %
Stocks Across 8 Western European Market	n/a	(113 of 224) 51 %
Kuala Lumpor	n/a	31 %
Singapore	n/a	79 %
Norway	n/a	92 %
Sweeden	n/a	93 %
German Market	0.271	

Sources: Butler and Malaikah (1991)

TABLE NO 4.3

**CORRELATION COEFFICIENT
OF BAHRAIN STOCKS EXCHANGE**

NO	COMPANIES' NAME	NO. OF OBSERVATIONS	CORRELATION COEFFICIENT
1	NATIONAL BANK OF BAHRAIN	237	0.059
2	BANK OF BAHRAIN AND KUWAIT	354	0.047
3	AL-AHLI COMMERCIAL BANK	337	-0.105 *
4	BAHRAIN ISLAMIC BANK	143	-0.447 *
5	BAHRAIN SAUDI BANK	166	0.055
6	ARAB BANKING CORPORATION	279	-0.084
7	UNITED GULF BANK	79	-0.363 *
8	BAHRAIN INTERNATIONAL BANK	240	-0.433 *
9	INVESTCORP	263	-0.366 *
10	BAHRAIN MIDDEL EAST BANK	156	-0.110
11	BAHRAIN KUWAIT INSURANCE	85	-0.028
12	AL-AHLIA INSURANCE	117	-0.186 *
13	BAHRAIN CINEMA	87	0.100
14	NATIONAL IMPORT & EXPORT	328	0.160 *
15	TRAFKO	164	0.180 *
16	BMMI	59	0.047
17	BATELCO	352	-0.318 *
18	BAHRAIN CARPARK	87	-0.288 *
19	BAHRAIN FLOUR MILLS	63	-0.510 *
20	DELMON POULTARY	95	-0.330 *
21	BAHRAIN HOTELS	196	-0.185 *
22	NATIONAL HOTELS	144	-0.130
23	BAHRAIN TOURSIM	137	-0.199 *
AVERAGE		181	-0.149
* Statistically significant at the 5% level.			

**TABLE 4.4
CORRELATION COEFFICIENT
COMPARISON WITH NOORUDDIN
STUDY**

COMPANIES	THIS STUDY CORRELATION	NOORUDDIN CORRELATION	% DECREASED
NATIONAL BANK OF BAHRAIN	0.059	0.756	92%
BANK OF BAHRAIN AND KUWAIT	0.047	0.747	94%
ALAHLI COMMERCIAL BANK	-0.105	0.735	114%
BAHRAIN ISLAMIC BANK	-0.447	0.721	162%
BAHRAIN SAUDI BANK	0.055	0.679	92%
NATIONAL IMPORT & EXPORT	0.160	0.672	76%
TRAFKO	0.180	0.578	69%
BMMI	0.047	N.A.	-
BATELCO	-0.318	0.623	151%

TALBLE 4.5

**AVERAGE CORRELATION COEFFICIENTS
MARKET INDEX VERSUS INDUSTRY**

INDUSTRY	INDUSTRY	MARKET INDEX
BANKING	0.342	0.323
INVESTMENT	0.144	0.094
INSURANCE	0.154	0.041
SERVICES	0.316	0.304
INDUSTRIES	0.148	0.185
HOTELS	0.179	0.103
AVERAGE TOTOAL MARKET	0.238	0.203

TABLE NO 4.6.a

**CAPITAL ASSETS PRICING MODEL ANALYSIS
ON BAHRAIN STOCKS EXCHANGE**

NO	COMPANIES' NAME	COMPANYS' GEOMETRIC RETURN	PER CAPM RETURN INDEX	PER CAPM RETURN BY INDUSTRY
1	NATIONAL BANK OF BAHRAIN	21.0%	0.216	0.159 *
2	BANK OF BAHRAIN AND KUWAIT	42.0%	0.288 *	0.280 *
3	AL-AHLI COMMERCIAL BANK	54.0%	0.230 *	0.138 *
4	BAHRAIN ISLAMIC BANK	14.0%	0.310	0.260
5	BAHRAIN SAUDI BANK	24.0%	0.170 *	0.139 *
6	ARAB BANKING CORPORATION	5.0%	0.040	0.050
7	UNITED GULF BANK	47.0%	0.185 *	0.019 *
8	BAHRAIN INTERNATIONAL BANK	11.4%	0.117	0.039 *
9	INVESTCORP	10.0%	0.130	0.043
10	BAHRAIN MIDDLE EAST BANK	-1.9%	0.235	0.022
11	BAHRAIN KUWAIT INSURANCE	62.0%	0.041 *	0.205 *
12	AL-AHLIA INSURANCE	0.0%	0.109	0.189
13	BAHRAIN CINEMA	47.0%	0.170 *	0.239 *
14	NATIONAL IMPORT & EXPORT	41.0%	0.150 *	0.127 *
15	TRAFICO	39.0%	0.165 *	0.182 *
16	BMMI	3.2%	0.410	0.340
17	BATELCO	37.7%	0.180 *	0.168 *
18	BAHRAIN CARPARK	37.0%	-0.140 *	0.176 *
19	BAHRAIN FLOUR MILLS	26.0%	0.235	-0.060
20	DELMON POULTARY	43.0%	0.290 *	0.190 *
21	BAHRAIN HOTELS	44.8%	0.148 *	0.140 *
22	NATIONAL HOTELS	19.6%	0.022 *	0.140
23	BAHRAIN TOURSIM	36.0%	0.111 *	0.209 *

* Statistically significant at 95% level of confidence

RISK FREE (average of 1991,1992)

5.00%

MARKET PORTFOLIO RATE

18.00%

BANK RATE 20% , INVESTMENT RATE 3.5% , INSURANCE RATE 36%

SERVICES RATE 25% , INDUSTRY RATE 28% , HOTELS RATE 28%

TABLE NO 4.6.b

**COMPANIES' BETA
OF BAHRAIN STOCKS EXCHANGE**

NO	COMPANIES' NAME	BETA PER INDEX	BETA PER INDUSTRY
1	NATIONAL BANK OF BAHRAIN	1.284	0.728
2	BANK OF BAHRAIN AND KUWAIT	1.838	1.536
3	AL-AHLI COMMERCIAL BANK	1.389	0.589
4	BAHRAIN ISLAMIC BANK	2.051	1.407
5	BAHRAIN SAUDI BANK	0.939	0.594
6	ARAB BANKING CORPORATION	(0.076)	(0.003)
7	UNITED GULF BANK	1.046	2.041
8	BAHRAIN INTERNATIONAL BANK	0.517	0.734
9	INVESTCORP	0.641	0.409
10	BAHRAIN MIDDEL EAST BANK	1.424	1.860
11	BAHRAIN KUWAIT INSURANCE	(0.066)	0.500
12	AL-AHLIA INSURANCE	0.454	0.452
13	BAHRAIN CINEMA	0.960	0.948
14	NATIONAL IMPORT & EXPORT	0.805	0.385
15	TRAFECO	0.890	0.662
16	BMMI	2.802	1.491
17	BATELCO	1.019	0.592
18	BAHRAIN CARPARK	(1.485)	0.631
19	BAHRAIN FLOUR MILLS	1.434	(0.247)
20	DELMON POULTARY	1.852	0.643
21	BAHRAIN HOTELS	0.759	0.392
22	NATIONAL HOTELS	(0.215)	0.455
23	BAHRAIN TOURSIM	0.533	0.693

TABLE NO 4.7

**CAPITAL ASSETS PRICING MODEL ANALYSIS
ON BAHRAIN STOCKS EXCHANGE**

NO	COMPANIES' NAME	COMPANYS' G.RETURN	PER CAPM RETURN INDEX	PER CAPM RETURN BY INDUSTRY
1	NATIONAL BANK OF BAHRAIN	21.0%	O	U *
2	BANK OF BAHRAIN AND KUWAIT	42.0%	U *	U *
3	AL-AHLI COMMERCIAL BANK	54.0%	U *	U *
4	BAHRAIN ISLAMIC BANK	14.0%	O	O
5	BAHRAIN SAUDI BANK	24.0%	U *	U *
6	ARAB BANKING CORPORATION	5.0%	U	I
7	UNITED GULF BANK	47.0%	U *	U *
8	BAHRAIN INTERNATIONAL BANK	11.4%	I	U *
9	INVESTCORP	10.0%	O	U
10	BAHRAIN MIDDLE EAST BANK	-1.9%	O	O
11	BAHRAIN KUWAIT INSURANCE	62.0%	U *	U *
12	AL-AHLIA INSURANCE	0.0%	O	O
13	BAHRAIN CINEMA	47.0%	U *	U *
14	NATIONAL IMPORT & EXPORT	41.0%	U *	U *
15	TRAFICO	39.0%	U *	U *
16	BMMI	3.2%	O	O
17	BATELCO	37.7%	U *	U *
18	BAHRAIN CARPARK	37.0%	U *	U *
19	BAHRAIN FLOUR MILLS	26.0%	U	U
20	DELMON POULTARY	43.0%	U *	U *
21	BAHRAIN HOTELS	44.8%	U *	U *
22	NATIONAL HOTELS	19.6%	U *	U
23	BAHRAIN TOURSIM	36.0%	U *	U *

* Statistically significant at 95% level of confidence

U = Undervalued share

O = Overvalued share

I = Indifferent

TABLE NO 4.8
MAIN CONTRIBUTIONS OF INDUSTRIES TO THE TOTAL
MARKET INDEX

INDUSTRY NAME	NO. OF COMPANIES	SEE BELOW *	SEE BELOW **
BANKING	5	3	21%
INVESTMENT	5	1	7%
INSURANCE	2	1	7%
SERVICES	6	5	36%
INDUSTRIES	2	1	7%
HOTELS	3	3	21%
TOTAL	23	14	100%

* = Number of companies that have statistically significant different

** = Contribution to total market significant

TABLE 4.9

إجمالي تداول أسهم البورصة 1990 - 1991
TOTAL SHARES TRADED IN 1990 - 1991

رقم الترتيب COMPARISON	كمية أسهم البورصة VOLUME (SHARES)	قيمة أسهم البورصة (ريال) VALUE (B.D)	عدد المعاملات NO. OF TRANSACTIONS	الفترة PERIODS					
1991	1990	1991	1990	1991					
CHG	CHG	CHG	CHG	CHG					
يناير	يناير	يناير	يناير	يناير					
143	208	77.03	475,703	2,145,934	80.56	1,672,773	0,606,085	JAN	
0.53	190	19.15	1,059,350	1,310,304	47.84	2,027,514	5,420,455	FEB	
6.47	247	29.69	1,148,490	1,633,395	65.56	2,223,465	6,456,207	MAR	
55.01	268	45.40	1,015,463	1,248,602	25.94	2,952,481	2,344,346	APR	
45.43	509	131.54	5,603,199	2,419,992	67.42	10,170,116	6,079,223	MAY	
23.01	336	15.94	3,365,101	2,902,505	52.47	5,098,532	10,727,341	JUN	
23.37	282	49.72	2,084,320	5,736,772	51.26	4,611,263	9,461,594	JULY	
07.50	270	02.78	1,657,552	906,070	24.72	3,055,675	4,059,137	AUG	
59.01	342	180.07	3,174,656	1,133,535	133.56	4,312,635	1,046,457	SEP	
123.07	497	45.80	5,931,388	10,943,210	50.17	13,515,625	32,313,154	OCT	
99.32	586	265.30	5,323,841	1,457,398	149.91	9,947,495	3,980,360	NOV	
61.05	554	287.14	7,096,327	1,033,032	147.21	17,730,752	7,172,206	DEC	
29.65	4,224	3,258	17.41	39,535,390	33,671,557	20.66	70,126,326	98,466,653	السنة المجموع ANNUALS TOTALS

TABLE 4.10

معدل دوران الاسهم في السوق
للعام 1990 - 1991
SHARES' TURNOVER IN 1990 - 1991

1991 %	1990 %	السنة YEAR	
		الشهر MONTH	
0.06	0.31	JAN	يناير
0.10	0.19	FEB	فبراير
0.08	0.23	MARCH	مارس
0.10	0.08	APRIL	أبريل
0.35	0.22	MAY	مايو
0.18	0.38	JUNE	يونيو
0.16	0.33	JULY	يوليو
0.11	0.14	AUG	أغسطس
0.15	0.06	SEPT	سبتمبر
0.46	1.12	OCT	أكتوبر
0.38	0.14	NOV	نوفمبر
0.59	0.25	DEC	ديسمبر
* 2.52	* 2.33	السوق THE MARKET	

* تمثل حسب معدل دوران الاسهم السنوية المرجحة
* Adjusted Annual Shares' Turnover

SOURCE: BAHRAIN STOCK EXCHANGE ANNUAL REPORT 1991

TABLE 4.11

معدل حجم وقيمة الصفقة لعامي 1990 - 1991
A TRANSACTION AVERAGE IN 1990 - 1991

متوسط قيمة الصفقة (دينار) A TRANSACTION'S VALUE AVERAGE (B.D)			متوسط كمية الصفقة A TRANSACTION'S VOLUME AVERAGE (SHARES)			الشهر MONTHS	
% التغيير CHG	1991	1990	% التغيير CHG	1991	1990		
55.35-	3,327	7,451	60.85-	11,698	29,882	JAN	يناير
19.57-	5,576	6,933	48.11-	14,882	28,680	FEB	فبراير
33.95-	4,650	7,040	67.65-	9,002	27,828	MAR	مارس
6.68-	6,774	7,259	19.17-	11,017	13,630	APR	أبريل
59.21	11,008	6,914	15.12	19,996	17,369	MAY	مايو
52.16	10,015	6,582	37.62-	15,174	24,325	JUN	يونيو
34.39-	10,228	15,589	36.40-	16,352	25,711	JULY	يوليو
2.52-	6,139	6,298	59.85-	11,317	28,188	AUG	أغسطس
75.25	9,283	5,297	46.15	12,610	8,628	SEP	سبتمبر
75.79-	11,934	49,294	81.32-	27,194	145,555	OCT	أكتوبر
83.28	9,085	4,957	25.38	16,975	13,539	NOV	نوفمبر
140.36	12,809	5,329	53.50	32,005	20,850	DEC	ديسمبر
9.43-	9,360	10,335	38.80-	18,496	30,223	السنة THE YEAR	

SOUREC: BAHRAIN STOCK EXCHANGE ANNUAL REPORT 1991

TABLE 4.12

Breakdown of Share Ownership in Bahrain Stock Exchange (1989)

Shareholder	Government	Quasi-Government	Public Companies	Other Companies	Individuals	Bond Number	Total
Commercial Bank of Bahrain			Not available ⁽¹⁾				
Commercial Bank of Bahrain & Kuwait	3.8	25.3	47.0 ⁽²⁾	2.0	20.9	1	100
Abu Dhabi Commercial Bank	-	12.9	4.4	3.1	78.0	1.61	100
Commercial Islamic Bank	30.8	11.3	1.9	14.9	40 ⁽³⁾	1.1	100
Commercial Saudi Bank	-	6.2	1.3	18.0	58.8	14.7	100
Commercial Banking Corporation			Not available ⁽⁴⁾				
Commercial International Bank ⁽⁵⁾	-	-	6.7	30.0	57.3	6	100
Commercial Bank Bahrain	-	0.9	1.3	55.7	40.47	1.7	100
Commercial Middle East Bank ⁽⁶⁾	-	-	30.4	0.1	69.0	0.5	100
Commercial Import Export Co. ⁽⁷⁾	10.0	11.4	4.4	1.9	70.1	2.2	100
Commercial Trading & Food Processing Co. ⁽⁸⁾	20.0	6.3	3.2	2.5	66.5	1.5	100
Commercial Telecommunication Co. ⁽⁹⁾	36.7	20.8	13.1	20.6	8.6	0.2	100
Commercial Poultry Co.	15	0.6	19.8	8.9	53	2.7	100
Commercial Hotels Co. ⁽⁸⁾	-	24.7	53.7	2.2	11.2	8.2	100
Commercial Tourism Co.	27.8	34.7	6.1	1.8	28.6	1.0	100

Institutions:

Commercial Gulf Bank			Not available				
Commercial Insurance Co.	-	33.3 ⁽¹⁰⁾	0.8	4.2	59.8	1.9	100
Commercial Insurance Co.	-	-	2.8	2.9	84.3	10.0	100
Commercial Insurance Co.	-	-	51.4	2.5	43.9	2.2	100
Commercial Kuwait Insurance Co.	-	9.5	1.8	59.4	28.3	1.0	100
Commercial Ship Repairing Engineering Co.			Not available				
Commercial Cinema Co.	-	9.3	44.2	25.3	19.1	2.1	100
Commercial Car Park Co.			-	8.0	25.0	1.2	100
Commercial Flour Mill Co.	65.8				11.2	0.4	100
Commercial Hotels Co.	42.4	40.6 ⁽¹¹⁾	0.1	5.3			

Footnotes:

- 1) 51% owned by the government and 49% by the public
- 2) 98% of which is owned by Kuwaiti institutions
- 3) 53% Gulf Countries Council (GCC) individuals
- 4) 80% government and quasi-government and 20% by the public
- 5) 68.1% owned by GCC individuals and institutions
- 6) 47% owned by GCC individuals and institutions
- 7) 86.5% owned by GCC individuals and institutions
- 8) Before government share sale program
- 9) 20% owned by Cable & Wireless Co. (UK)
- 10) Iraqi institutions
- 11) Gulf Air state

TABLE NO 4.13

**TRADING DAYS PER COMPANIES
OF BAHRAIN STOCKS EXCHANGE**

NO	COMPANIES' NAME	NO. OF TRADING DAYS	TOTAL * WORKING DAYS	% OF TOTAL
1	NATIONAL BANK OF BAHRAIN	237	496	48%
2	BANK OF BAHRAIN AND KUWAIT	354	496	71%
3	AL-AHLI COMMERCIAL BANK	337	496	68%
4	BAHRAIN ISLAMIC BANK	143	496	29%
5	BAHRAIN SAUDI BANK	166	496	33%
6	ARAB BANKING CORPORATION	279	496	56%
7	UNITED GULF BANK	79	496	16%
8	BAHRAIN INTERNATIONAL BANK	240	496	48%
9	INVESTCORP	263	496	53%
10	BAHRAIN MIDDEL EAST BANK	156	496	31%
11	BAHRAIN KUWAIT INSURANCE	85	496	17%
12	AL-AHLIA INSURANCE	117	496	24%
13	BAHRAIN CINEMA	87	496	18%
14	NATIONAL IMPORT & EXPORT	328	496	66%
15	TRAFICO	164	496	33%
16	BMMI	59	496	12%
17	BATELCO	352	496	71%
18	BAHRAIN CARPARK	87	496	18%
19	BAHRAIN FLOUR MILLS	63	496	13%
20	DELMON POULTARY	95	496	19%
21	BAHRAIN HOTELS	196	496	40%
22	NATIONAL HOTELS	144	496	29%
23	BAHRAIN TOURSIM	137	496	28%
AVERAGE		181	496	37%
* TOTAL NO. OF WORKING DAYS DURING 1991,1992 = (52 WEEKS X 2)-24 PUBLIC HOLIDAY				

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

Through the foregoing analysis the efficiency of the BSE market was examined. Several statistical tests were carried out to test the efficiency of BSE.

Autocorrelations coefficient result show that the BSE market is similar to other thinly traded markets exhibiting statistically significant autocorrelations. In comparison to a relatively efficient market, BSE exhibits statistically significant lag one autocorrelations of 43% compared to 37% reported by Fama (1970), on 30 large NYSE firms.

The conclusion drawn after the correlation coefficient test was carried out, that the BSE market is moving toward efficiency, although, the result shows positive correlation. This is based on the fact that the result of this study shows significant improvement in the correlation over the previous study conducted by Nooruddin (1992).

Capital Asset Pricing Model analysis on the BSE market reveal that the BSE market is about 40% efficient or alternatively, the BSE market is about 60% inefficient, at 95% level of significant.

There are several factors contribute to the inefficiency in the BSE market. Among these are; lack of active trading, limited number of investors, market manipulation, and inside trading.

However, we should realize that BSE is in its infancy stage and any conclusion drawn on the market efficiency should carefully consider this fact.

5.2 RECOMMENDATION

There is a tendency on BSE toward organizing a sound exchange. The comparison between the result of this paper and previous study result have revealed that. And I feel that future studies on the efficiency of BSE will prove that. In addition, the objectives that BSE have set to achieve (refer to 1.1.5) should lead to the enhancement of its efficiency. However, most of the objectives of establishing the exchange market have not been achieved yet, Al-Alaiwat (1990).

My recommendation, therefore, is to concentrate on the actions required to enable the market to achieve its objectives.

A healthy stock exchange requires sufficient number of sellers and buyers in the market, and sufficient number of shares available for trading. In other words, the stock exchange requires a large number of investors and a large number of financial instruments available for trading.

Why such requirements are not met in the BSE, and in what way can BSE meet such requirements?

- 1) Participation in securities trading is a complex process involving a higher level of financial sophistication. Bahraini investors are not fully aware of securities trading mechanisms. Therefore, we do not expect a large increase in the number of investors participating in the securities trading.

The objective to create investment awareness among Bahraini people with the view of increasing the number of participants in the Bahrain Stock Exchange could be achieved in many ways:-

- a) Educate Bahraini people about the different types of financial assets available for investment and ways of comparing these assets. In addition, educate Bahraini people about the overall national benefits in investing in the local market. The best way to conduct such education is through the local press, radio and television.
- b) Expand on the weekly report published by BSE to include some simplified financial analysis of the overall market and listed companies, interpretations and recommendation in the published statistics.
- c) Encourage local banks to introduce a system of margin trading. This scheme would provide investors with leverage to invest in shares. Bank will be protected by margin balances and the investors' ability to increase their activities in the market will be

greater. Banks at the same time can add value to their margin trading services by giving their clients investment advise. This will lead to greater liquidity and increase efficiency in the market, Nooruddin (1992).

- 2) Market still could not provide sufficient liquidity and marketability required by investors. And the mechanism that allows market making is considered to be more efficient. The market makers can provide liquidity to the market promptly and without involving additional market making cost. This improves operational efficiency of the market. If investors need to create liquidity in a particular share they can do that within the parameters of this mechanism. They can bid and offer simultaneously.
- 3) Expand the market size by privatizing the government enterprises. There are several profitable companies which are wholly or partially owned by the government. Selling such enterprises to the public will increase the supply of shares available hence trading activities will increase.
- 4) Encourage local companies and banks to issue new financial instruments in the market, e.g. bonds, commercial paper, and certificate of deposit. This certainly enhances investment varieties to investors whether nationals or non-nationals. Although such facilities are available to banks and companies until now no institution has attempted to do so primarily on the grounds that Bahrain market is too small and not yet sophisticated enough to absorb such issues.

- 5) Encourage the development of investment funds, e.g. mutual funds and unit trusts. Such institutions can enhance market efficiency in the following ways:
- a - The funds will use professional expertise to assist their investment objectives.
 - b - They will encourage those investors who lack investment experience to participate in the market indirectly but in efficient way.
- 6) Attempt to enlarge the number of listed companies by allowing other Gulf state companies to be listed on the exchange. This would promote the Bahrain Exchange as a regional stock exchange. And after achieving a wider local investors base, it is recommended to encourage foreign investment in the exchange and foreigners be treated as Gulf nationals are treated.

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