# Chapter 2

# LITERATURE REVIEW

This chapter reviews the literature related to market price effects of business contracting. Chapter contains six main sections. First, introduction to the literature review; second, market efficiency theory; third, event study and abnormal return measures; fourth, contract announcement studies ; fifth, contract announcement study in Thailand and sixth, a summary of the chapter.

## 2.1 Introduction to the Literature Review

It is well established in the literature that security markets adjust rapidly to the arrival of new information about a firm's prospects and no investor can earn abnormal returns from trading rules based on any new information (Fama, Fisher, Jensen, & Roll, 1969; Copeland, Weston, & Shastri, 2005). Several different types of new information should be tested because useful empirical results would help explain the process by which investor reaction is translated into security prices (Diltz, 1990). One event that may have interesting price dynamics is the contract announcement of the winning firms. Typically, it is common sense to believe that a contracting represents good news for a firm's prospects, thus a positive security price reaction should follow. However, from an empirical standpoint, the strength of the observed reaction should be a function of how rapidly the news of a business contracting is capitalized into the

firm's security price, i.e., rapid capitalization would imply little or no abnormal return (Diltz, 1990).

**2.2 Market Efficiency**

Investors determine security prices on the basis of the expected cash flow to be obtained from a security and the risk involved. Rational investors normally use all of the existing information they can reasonably obtain. This information set consists of both available information and predictions about the future (Jones, 2004). Available information includes past and current information as well as information about events that have been announced, such as dividend announcements and stock splits. An example of information that can reasonably be inferred would be, if investors believed that the Bank of Thailand (BOT) would be lowering interest rates at its meeting next week, prices would reflect this belief before the actual event occurs. As stated by Jones (2004, p.313), "*regardless of its form, information is the key to the determination of stock prices and therefore is the central issue of the efficient markets concept.*"

An efficient market is defined as one in which prices of all securities adjust rapidly to the arrival of new information and, therefore, the current security prices reflect all information about the security (Fama, 1970, 1991; Jones, 2004; Copeland, Weston, & Shastri, 2005; Reilly & Norton, 2006. The efficiency of capital markets has implications for investors to manage and analyse their investment in stock markets. In other words, a market is efficient relative to relevant information if investors cannot

earn abnormal returns by using that information in their investing decisions, i.e., when securities are traded, prices are accurate signals for capital allocation.

Fama (1970, 1976) has completed a great deal to operationalize the notion of capital market efficiency. The author defines three forms of efficiency market, each of which is based on a different notion of exactly what type of information is available to be relevant in the phase that *"all prices fully reflect all relevant information"* (Copeland, Weston, & Shastri 2005, p.354). The three forms of efficient market (Fama 1970, 1976; Copeland, Weston, & Shastri, 2005, Reilly & Norton, 2006) are as follows:

1. *Weak-form efficient market* assumes that current security prices fully reflect all security market information. No investor can earn abnormal returns by developing trading rules based on historical price or return information. In other words, the historical sequence of prices or returns is not useful or relevant in achieving abnormal returns
2. *Semistrong-form efficient market* assumes that current security prices fully reflect all publicly available information. The public information consists of information from security transactions and companies (such as earnings, dividends, stock split announcements, new product developments, IPOs, accounting changes, etc.), economic, and political news. No investor can earn abnormal returns from trading rules based on any publicly available information.
3. *Strong-form efficient market* assumes that current security prices fully reflect all information from both public and private sources No investor can earn abnormal returns using any information, whether publicly available or not.

In this study, abnormal returns of the stocks during contract announcements, which are public information (thus can be considered a semistrong-form efficient market), will be examined. The speed of price adjustments to contract announcements will be tested whether investors can use contract announcement information to earn abnormal returns after proper adjustments. It is also interesting to note that since the 1970s, many studies on semistrong-form market also involved event studies, i.e., a company's stock returns are tested to determine the impact of a particular event on the stock price (Byun & Rozeff, 2003; Diltz, 1990; Elayan, Pukthuanthong & Roll, 2006; Fama, 1970, 1991; Fama, Fisher, Jensen, & Roll 1969; Ibbotson, Sindelar, & Ritter, 1988; Pearce & Roley, 1985).

### 2.3 Event Study and Abnormal Return Measures

The events that have been researched in the finance literature include stock spilt (see Fama, Fisher, Jensen, and Roll 1969 for the classic event study), mergers and tender offer announcements (Brown and Warner 1985), initial public offerings (Miller and Reilly 1987; Ibbotson, Sindelar, and Ritter 1994), exchange listings announcements (McConnell and Sanger 1989), economic news announcements (Pearce and Roley 1985; Jain 1988; Pound and Zeckhauser 1990), and others.

In the year 1991, Fama published his famous article on reviewing the market efficiency literature. Fama concluded the results of the several event studies that, on average, stock prices adjust rapidly to information about investment decisions, dividend changes, change in capital structure, and corporate-control transactions. Prices adjust efficiently to firm specific information. The author also suggested that

"*More important, the research uncovers empirical regularities, many surprising, that enrich our understanding of investment, financing and corporate control event, and give rise to interesting theoretical work*" (Fama 1991, p. 1607). This implies that event studies should be examined further in several events that are expected to impact the stock prices.

In general, event studies have been used to examine two general questions: (1) what is the market impact of an event? (2) How fast does the market adjust the stock prices? Therefore, abnormal or abnormal return is computed using three widely used methodologies, Mean adjusted returns, Market adjusted returns, and OLS market model. These testing procedures are described by Brown and Warner (1985, pp. 6-7) as before calculating the abnormal return, the period of study is divided into two sub-periods. Define day $t = 0$ as the day of a hypothetical event for a given security. Days around the event day ($t = 0$) are designated as 'event period' (for example ± 5 days around the event day). Days before the event period (for example 239 days) are designated as 'estimation period'. The three abnormal return measures are explained as follows.

*1. Mean adjusted returns*

$$A_{it} = R_{it} - AR_i \qquad (1)$$

where, $A_{it}$ = abnormal return for security i in day t

$R_{it}$ = rate of return for security $i$ in day $t$, and

$AR_{it}$ = simple average of security i during estimate period.

*2. Market adjusted return*

$$A_{it} = R_{it} - R_{mt} \qquad (2)$$

where, $A_{it}$ = abnormal return for security i in day t

$R_{it}$ = rate of return for security *i* in day *t*, and

$R_{mt}$ = rate of return for the market in day *t*

*3. OLS market model*

$$A_{i,t} = R_{i,t} - \alpha_i - \beta_i R_{m,t} \qquad (3)$$

where, $A_{it}$ = abnormal return for security i in day t

$R_{it}$ = rate of return for security *i* in day *t*, and

$R_{mt}$ = rate of return for the market in day *t*

$\alpha_i$ *and* $\beta_i$ are OLS values from the estimation period

The first and second measures, means adjusted return and market adjusted return, are simple measures that do not consider the risk and risk-free rate. The appropriate measure used in this study will be explained in the methodology section.

**2.4 Contract Announcement Studies**

Although Elayan, Pukthauanthong and Li (2004) state that government contract awards to winning firms is a fairly new and unresearched topic, government contract awards can be traced back to the year 1990. Diltz (1990) studies the effects of announcements of large government procurement contract awards on the security returns of award winning firms using data obtained from the U.S. Department of Defense from 1981 - 1985. Data contains 54 large government contracts from 38 listed companies involved in the study. Hypotheses are developed and tested using an event study methodology. A significantly positive abnormal return of 0.42 percent is

documented for the day following the announcement of a fixed price contract award. Results also show a statistically significant positive cumulative abnormal return of 0.70 percent for the two days following the announcement award.

Elayan, Pukthauanthong and Li (2004) attempted to further explore the impact of government contract award announcements on the market value of award-winning firms using a sample of 1,963 government contracting announcements during 1990 – 2000. Event study methodology is used in this research. Evidence presented in the report reveals a significantly positive impact on the market valuation of the winning firms. The authors also study whether the cumulative returns can be attributed to the types of contracts. Results show that the service contracts earn higher abnormal returns than non-service contracts after the announcement, and it is true for international contracts vs. domestic contracts and civil contracts vs. military contracts. In addition, the study finds that, in general, large firms are able to take on large sized contracts, but they do not gain higher returns. Large firms also invest heavily on R&D, which has a negative effect on the abnormal returns.

In the same year, Elayan and Pukthuanthong (2004) also examine the valuation effect and determinants of corporate contracting. Abnormal returns of the stocks around corporate contract announcements are examined between 1990 and 2000. Data consist of 7,137 contracts; 984 contract winning companies (contractee) and 575 contract giving companies (contractor). The Market Model was used to calculate abnormal returns for both the contractees and contractors. Results indicate cumulative average abnormal returns are statistically significant for contractees, but not for contractors.

The authors also analyze contractee abnormal returns across industries and between international and national contractors. Results indicate that the abnormal returns of national contracting are more affected than those of international contracting which is in contrast to the finding on government contracting of Elayan, Pukthauanthong and Li (2004) who found international contracts earn higher abnormal returns than domestic contracts.

Elayan, Pukthuanthong, and Roll (2006) continue their study on inter-corporate business contracting. The authors analyze the stock market reaction to 1,227 inter-corporate ordinary business contract announcements between 1990 and 2001. During these contract announcement dates, statistical results show significantly positive average abnormal returns and abnormal trading volume for contractors, but insignificant positive abnormal returns and negative abnormal volume for contractees. Contract announcement period returns are higher for contractors who are small, relative to the contract size.

**2.5 Contract Announcement Study in Thailand**

In Thailand, the study on impact of business contracting on market values of winning firms is relatively new and has therefore received little academic interest in testing. There is only one Independent Study Report (working paper) in Thailand focused on stock price variation of listed companies selected to operate government or private projects. Sawatpradit (2005) uses event study methodology and applies the market adjusted return measure used in Brown and Warner (1985) to estimate abnormal return of 161 contract announcements in Thailand during October 1994 – September 2004.

Results presented in the report reveal a significantly positive impact on the market valuation of the winning firms. A positive stock price change has been found before the announcement date, and evidenced significantly positive on the announcement date. After the event day, a negative stock price change has been found. According to contract types, although the author tests for significant abnormal return of each contract type (i.e. government, corporate, international, national, construction, non-construction contract types) and most of them show significant positive abnormal returns during event periods, the statistical significant difference between contract types has yet to be studied.

The study in Thailand is limited by the abnormal return measure - market adjusted return measure. This measure does not consider risk and risk-free assets, which are very important variables for calculating security return. In addition, as reviewed above, although the Thai study tested for abnormal return of each contract type, the statistically significant difference between contract types has not been studied and the study has remained an unpublished working paper. Therefore, we will study market price effects on business contracts in Thailand using the abnormal return measures that consider risk and risk-free rates, namely the OLS market model and the capital asset pricing model (CAPM), to analyze the stock market reaction to contract announcements in Thailand.



### *2.6 Summary*

This chapter has reviewed the literature that relates to market price effects of business contracting. It started with market efficiency definition and followed by an overall

summary discussion of event study related to abnormal return measures commencing with application of classical abnormal return performance model. Contract announcement studies in the US started in 1990 and a number of contracting announcement researches have been conducted further.

Only one study has been examined on impact of business contracting on market value of winning firms in Thailand and the summary discussion of this study highlighted the limitations in the analyses. This summary envisages the need for a study of market price effects of business contracting in Thailand to at least overcome the limitations.

The next chapter provides the research methodology employed in this study. Introduction of event study and two models in estimable form, the procedure adopted in estimation and data used are described. In addition, three null hypotheses realted to three research questions of the study are set and relevant statistical tests are discussed.