Response of the Thai Stock Market to the Global News During the Global Financial Crisis

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Abstract

Using the data set comprised of good and bad news, this author have examined behavioral and efficient market hypotheses on the Thai stock market responses to the global news during the global financial crisis. The results of this study are as the followings: First, the Thai stock market gave more weight to the bad news than to the good news during the crisis. Second, the Thai stock market responded considerably stronger to the bad news during negative momentum and the good news with positive momentum. Third, in the case of bad news, the Thai stock market gave more weight to the soft news than to the hard news during the crisis. Therefore, we can conclude that irrational behaviors and biases of stock investors definitely existed in the Thai stock market during the global financial crisis.

Keywords: The JEL Classifications: G1 4 : Information and Market Efficiency Event Studies Insider Trading. C2 2 : Time-Series Models, Dynamic Quantile Regressions, Dynamic Treatment Effect Models & bull Diffusion Processes

Introduction

There are several literatures that prove Thai stock market was efficient during the global financial crisis (Bariviera, 2011; Guidi & Gupta, 2013; Ouppathumchua, 2015; Sukpitak & Hengpunya, 2016). Passing standard tests for

market efficiency need not imply that interesting hypotheses from behavioral finance may not also hold. Drawing on the literature on human tendencies toward over optimism, hubris, and confirmation bias, this author tested several hypotheses during crises markets. The empirical results find both support for overall efficient market behavior and for some of these behavioral hypotheses, suggesting that there is no need to make a complete commitment to one approach or the other as has often been the tendency. In order to test the behavioral hypotheses in this study, a new data set was coded to classify news by case during the global financial crisis. This research found support for some but not all of the behavioral hypotheses tested.

Research Background

The stock market of Thailand is relatively small compared to other countries in the region As of June 2009, the value of stock market capitalization compared to GDP is only 51%, whereas the size of stock market compared to GDP for Hong Kong, Singapore, Malaysia, and South Korea are 845%, 202%, 104%, and 66% respectively.

Thailand's capital market in recent times have grown at a very slow pace. The SET (The Stock Exchange of Thailand) index The SET index hit its peak in 1994 and gradually fell until the crisis in 1997.* The bull market revisited again in 2002 and the SET index climbed Compared to the rest of the region, the growth rate of Thailand's stock market is quite low. If this trend continues, Thailand's capital market will stagnate and become increasingly marginalized. Various studies have shown that inadequate development of the capital markets will impact its ability to raise, channel, and monitor resources efficiently. In the end, this will lead to loss of growth opportunities.

Established in 1975, the authorities of the SET consistently released rules for improving and developing the stock market. In order to increase the competitiveness of SET, Thailand's government approved one of these important

rules in 1988 – which in turn was one of the causes of the economic crisis in 1997 – the liberalization of capital that of capital markets that allowed foreign ownership of up to 50% in listed companies. Trading of shares registered under foreign names has been carried out on a special foreign board to facilitate trading among foreign investors of shares that have reached their foreign ownership limit. This limit, however, has become immaterial after the introduction of non-voting depository receipts (NVDRs) in 2001 Through NVDRs, foreign investors are allowed to invest over the limit with full participation in dividends and other rights, except for voting rights.

Another development of interest is the introduction of the futures market (TFEX). TFEX was established on May 17, 2004 as a derivatives exchange. TFEX is under the supervision of the Securities and Exchange Commission (SEC). TFEX had been established to act as an exchange for the trading derivatives, offering products for effective hedging. The first product introduced was the SET 50 index futures, which launched in April 2006 and started trading in August 2006. In October 2007, SET 50 options were introduced. Recently, stock and gold futures were the latest products introduced to the capital markets of Thailand.

Literature Review

Baig and Goldfajn (1999) investigated the reactions of stock markets and exchange rates for five major crisis countries (Thailand, Korea, Malaysia, Indonesia, and the Philippines) from July 1997 to May 1998. They applied correlations and vector autoregressions (VARs) with a set of dummy variables using daily news to capture the impact of own-country and cross-border news on the markets. News in Thailand did not have a substantial impact on the rest of the countries. Especially, News in Korea had a substantial impact on the rest of the countries. However, Korea did not react to news from Thailand and other three countries.

Kaminsky and Schmukler (1999) examined "confirmation bias" during the Asian crises for the days that had the largest changes in dollar value for a set of

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nine Asian stock markets (Thailand, Korea, Hong Kong, Indonesia, Japan, Malaysia, Philippines, Singapore, and Taiwan) from January 1997 to May 1998. They ran regressions of price changes on the dummy variables representing each of the announcements (news). They found a sizably stronger reaction to bad news than good news during the Asian crisis (negative momentum) for the days of greatest changes in dollar value in the set of nine Asian stock markets.

Jo and Willett (2000) investigated the behavior on the foreign exchange market for five Asian countries (Thailand, Korea, Malaysia, Indonesia, and the Philippines) from July 1997 to April 1998. They ran OLS regressions on the impact of home news and cross-border news on the markets. They found little support for the hypothesis that the Asian currency crisis was dominated by panic in the markets by investors and speculators who reacted much more strongly to bad rather than good news. Also, investors in Thai stock market reacted strongest to home news, but there were many significant cross effects. Thailand and other three countries were affected strongly by the news in Korea, but Korea was affected little by news in the other four countries.

Dooley and Hutchison (2009) analyzed news transmission of the U.S. subprime crisis to emerging markets (Korea, Argentina, Brazil, Chile, Colombia, Mexico, China, Malaysia, Czech Republic, Poland, Hungary, Russia, South Africa, and Turkey) by focusing on 5-year Credit-default swap spreads on sovereign bonds from early 2007 to summer 2008. They applied a regression ''event study'' approach with 15 types of financial and real economic news. They found that the financial and economic news emanating from the U.S. had a significant statistical and economic impact on emerging markets.

Kim and Willett (2014) mentioned that investors in the Korean stock market did not selectively screen for information based on optimism and pessimism during the global financial crisis. The authors concluded that "confirmation bias" was not found in stock investor behavior in the Korean stock market during the global financial crisis.

The Data Set of News

Data were collected from August 1, 2007 through March 31, 2010. The data set on news was collected from the crisis timeline of events and policy actions from the Federal Reserve Bank of Saint Louis and Bloomberg news. This author distinguished between "hard" and "soft" news. Hard news consisted of announcements of policy decisions, the publication of new economic data, etc., while soft news consisted of articles about expectations and analyses of the future and rumors. This author identified 191 items of hard news and 77 items of soft news.

This author's classification of good and bad news follows Baig and Goldfajn (1999) and Jo and Willett (2000). Examples of good news are credible economic reforms, upgraded credit ratings, the removal of capital controls, good economic indicators (such as lower inflation rate, trade surplus, and so on), financial aid agreements, news forecasts of a better economic outlook, and political stability.

Bad News includes financial troubles or bankruptcies of firms, non-credible economic reforms, downgrades in credit ratings, reports that indicated conflicts with international organizations, the imposition of capital controls, worse than expected economic indicators (such as a higher inflation rate, and so on). News items that could not be defined clearly were excluded.

Research Methodology

In order to investigate which news affects the SET index returns and how, event-study methodology is applied for the main estimation methodology following the standard protocol of event study (Mackinlay, 1997; Kenourgios et al., 2008). The measurement of Abnormal Returns (AR) is important for an event study (Vithessonthi and Tongurai, 2009), where ARs are simply actual returns minus expected returns (Armitage, 1995). The very method of event studies has come to refer generally to procedures for estimating abnormal returns and testing their level of significance. The abnormal return is the actual ex post return of SET index over

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the event window, minus the normal return of SET index over the event window. MSCI_EM index will be the market return in this research. In other words, MSCI_EM index will be used as the explanatory variable to account for common external shocks in SET index. MSCI_EM index that is designed to measure the equity market performance of 21 emerging markets. The MSCI_EM index consists of the following 21 emerging market country indices: Thailand, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Morocco, Peru, Philippines, Poland, Russia, South Africa, Taiwan, and Turkey. ARt is an abnormal return on SET index, Rt is the actual return on SET index, and $E(R_t|X_t)$ is the normal return on SET index.

$$AR_t = R_t - E(R_t|X_t) \qquad (1)$$

The market model is a statistical model that relates the return of SET index to the return of the MSCI_EM index. The model's linear specification follows from the assumed joint normality of stock index returns. For the SET index, the market models is:

$$R_t = \alpha + \beta R_{mt} + \varepsilon_t \qquad (2)$$

$$E(\varepsilon_t = 0), var(\varepsilon_t) = \sigma_{\varepsilon_t}^2$$

Where Rt and Rmt are the period-t return on SET index and the MSCI_EM index respectively, and εt is the zero mean disturbance term. α, β, and $\sigma\_(\varepsilon\_t)^2$ are the parameters of the market model.

$$AR_t = R_t - \hat{\alpha} - \hat{\beta} R_{mt} \qquad (3)$$

Rt is the change on the SET index and Rmt is the value weighted market index change (MSCI_EM index). The abnormal return ARi is the disturbance term of the market model.
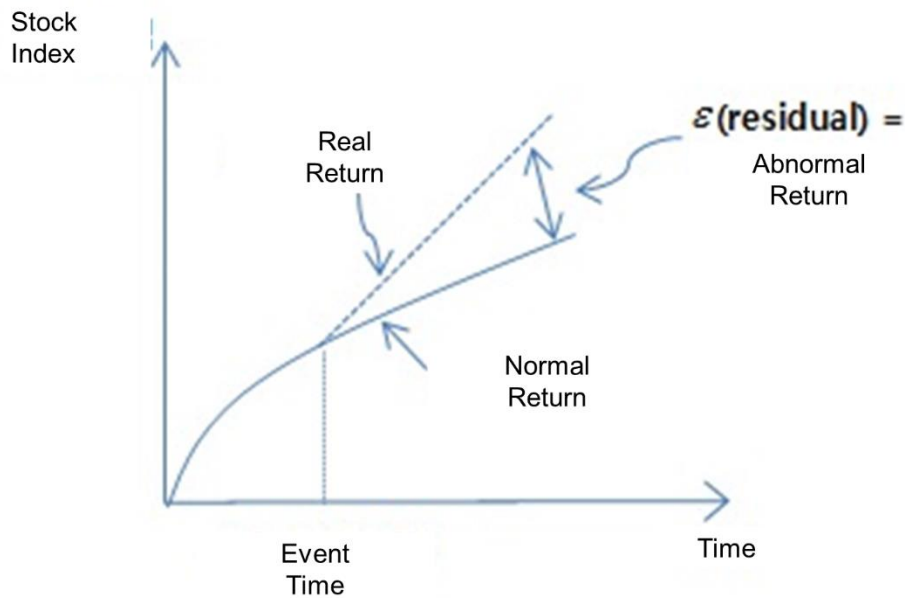

Figure 1. Concept of Abnormal Return

In order to set an event window, the market reacts to the future news two days prior to the actual announcement due to information leakages and news publication lead times (Filson, 2004). Thus, the event window should be allocated to two days prior and one day after (-2, 1) the news release date (Filson, 2004). However, the current research focuses on a macroeconomic announcements and the Thai stock market. There should be few effects of leaks, making the appropriate event window considerably shorter than Filson's. According to EMH, with the release of new information, the news spreads fast and is reflected upon the stock indexes without delay. Moreover, the basis of the EMH is that the market consists of many rational traders who are constantly reading the news and reacting quickly to the significant information about the stock indexes. Thus, we employed an event window of (0, 0).

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$$CAR(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_\tau \qquad (4)$$

The CARs (Cumulative Abnormal Returns) from τ_1 to τ_2 are the sum of the included abnormal returns. The CARs of an event are computed by summing abnormal returns during its event window. The aggregate CARs are computed for the each news item. In addition, in order to check the robustness, we applied OLS regression with the dependent variable as SET index own return (Dooley and Hutchison, 2009; Jo and Willett, 2000). The dependent variable is the daily change in the SET index. The OLS regression methodology is focused on which type of news indicates a range of financial and real economic change during the sample period that had statistically and economically large impacts on the Thai stock market.

Research Results: News and the Behavioral Hypotheses
1. Hypothesis 1

"Thai stock market reacts stronger to bad news than good news." First, we tested the impact of all good and bad news on SET index. Each piece of news was considered as an event, and abnormal return patterns were checked after the news events. For the robustness test, OLS regression methodology was employed for SET index's own return on news.

$$SET\_R_t = \alpha + \beta_1 GN_t + \beta_2 BN_t + \varepsilon_t \qquad (5)$$

SET_Rt is "the daily return of SET index" and is measured in two ways; SET index adjusted with the global Index (MSCI_EM index) for the event studymethodology and SET own index for OLS regression methodology. GNt represents the dummy variable for good news. BNt represents the dummy variable for bad news. GNt (BNt) takes a value of 1 and 0, where 0 represents no news of that type in a given day.

The larger effect of bad news, rather than good news, was found at 1.28% decrease versus 1.18% increase in absolute value, indicating 10 basis points greater for bad news rather than good news. According to the SET own change, there was 1.33% increase for good news and 1.40% decrease for bad news. These numbers yield virtually identical results to the changes adjusted with the global index, indicating that it was 7 basis points greater for bad news rather than good news in both cases. This suggests that there is something to the view that the Thai stock market gives more weight to bad news than to good news during a crisis. The statistical significance of the coefficient differences was also checked in both cases. The differential between the good news and the bad news was significant at a 1 percent level (see Table 1).

Table 1. The Impact of good and bad news on Thai stock market

Explanatory Variables	Return Adjusted with Global Index (MSCI_EM INDEX) (1)	SET Own Return (2)
Constant (α)	-0.01 (-13.26)***	-1.39 (-13.51)***
Good News (β_1)	1.18 (10.34)***	1.33 (11.23)***
Bad News (β_2)	-1.28 (-11.82)***	-1.40 (-12.47)***
The significance tests for the differences between β_1 and β_2	*** [99.99%]	*** [99.99%]
R^2	0.5077	0.5303
Durbin-Watson	2.0929	2.0652
Number of observations	268	268

1) ( ) indicate t-values; 2) [ ] indicate p-values; 3) *** denotes statistical significance at 1%

2. Hypothesis 2

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"Thai stock market makes stronger reactions to bad news than to good news in negative momentum."

"Thai stock market makes stronger reactions to good news than to bad news in positive momentum."

Next, this author tested the hypotheses on reactions to good and bad news in positive momentum and negative momentum. In other words, this author tested the hypothesis that during crises markets respond more to bad than to good news and that during market upswings markets tend to discount bad news while in declining markets they tend to discount good news. This author tested if confirmation bias in rising markets, with respect to market optimism, leads the market to pay more attention to good news and tend to discount bad news while in declining markets, the climate of pessimism leads markets to pay more attention to bad news rather than good news. Confirmation bias occurs when individuals tend to discount information that is contrary to their initial beliefs. Confirmation bias may apply to feedback on specific mental models about the chief determinants of market behavior. In rising (falling) markets, confirmation bias with respect to market optimism (pessimism), will lead the market to pay more attention to good (bad) news and tend to discount bad (good) news. Thus, investors may largely ignore specific pieces of bad (good) news in good (bad) times while placing great weight on them in bad (good) times.

In order to find positive and negative momentum, one method used was based on SET 50 index and SET 50 Future index (SET Future one-month). The SET 50 index consists of top 50 companies in the SET index. The base value of 100 was set on August 16, 1995. It has over 70% market value of the SET index thus, it moves along with the SET index. SET 50 is listed on futures and option markets. The basis, was checked, which is the value differential between a forward (future) price and spot price (future price minus spot price). Contango is the market condition where the price of a forward or futures contract is above the expected spot price at contract maturity (one month). When Contango occurred in the SET

50 market, this author defined the day as having "positive momentum." Backwardation is the market condition where the price of a forward or future contract is trading below the expected spot price at contract maturity. When backwardation occurred in the SET 50 market, this was defined as having "negative momentum."

Figure 2. Concept of Positive Momentum and Negative Momentum
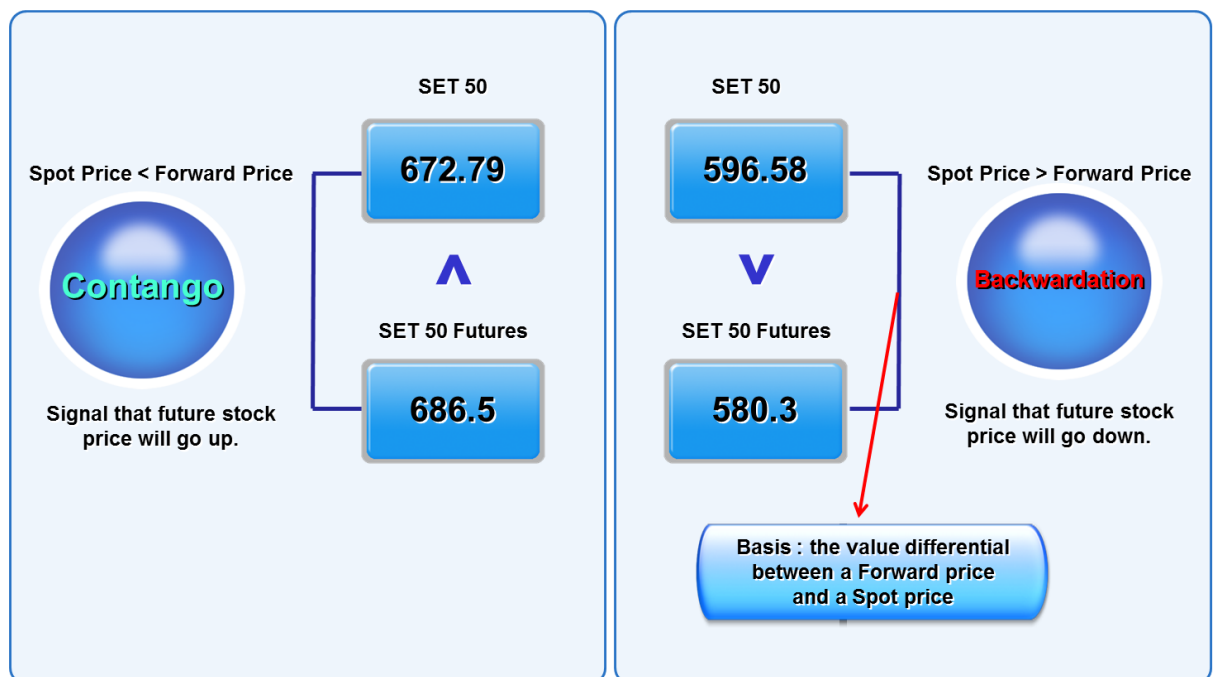
$$SET_{R_t} = \alpha + \beta_1(GN_t * PM_t) + \beta_2(GN_t * NM_t) \\ + \beta_3(BN_t * PM_t) + \beta_4(BN_t * NM_t) + \varepsilon_t \qquad (6)$$

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PM_t represents a dummy variable for "Positive Momentum" and NM_t represents a dummy variable for "Negative Momentum." These dummy variables take 1 for good or bad news. The dummy variables take 0 if there is no news of the same kind in a given day. These dummy variables also take 1 for positive or negative momentum.

As we see in Table 2 for the change adjusted with global index (MSCI_EM index), there was larger effect from good news with positive momentum (1.29% increase) than good news with negative momentum (1.14% increase). Moreover, bad news with negative momentum had a larger effect than bad news with positive momentum, 1.36% versus 0.98% decrease. According to the SET index's own change, as shown in Table 2, there is a 1.47% decrease for bad news with negative momentum versus 1.13% decrease for bad news with positive momentum. In addition, the figure shows 1.56% increase for good news with positive momentum versus 1.25% increase for good news with negative momentum. This reveals virtually identical results to the change adjusted with the global index.

Overall, in the case of good news, the coefficient difference between upward and downward trends was significant at a 10 percent level. In the case of bad news, the coefficient difference was significant at a 10 percent level too. This suggests that the Thai stock market gives more weight to positive momentum than to negative momentum during a crisis in the case of good news. In the case of bad news, the Thai stock market gives more weight to negative momentum than to positive momentum during a crisis. These results support views based on human senses that currency traders in the Thai stock market selectively screen for information based on optimism and pessimism. In other words, "confirmation bias" has been found in stock traders' behavior against the global news in the Thai stock market (see Table 2).

Table 2. The impact effects of news with momentum on the Thai stock market

Explanatory Variables	Return Adjusted with Global Index (MSCI_EM INDEX) (1)	SET Own Return (2)
Constant (α)	-0.01 (-4.13)***	-1.13 (-4.55)***
Good News with Positive Momentum (β_1)	1.29 (5.75)***	1.56 (6.72)***
Good News with Negative Momentum (β_2)	1.14 (8.62)***	1.25 (9.09)***
Bad News with Positive Momentum (β_3)	-0.98 (-4.13)***	-1.13 (-4.55)***
Bad News with Negative Momentum (β_4)	-1.36 (-11.17)***	-1.47 (-11.69)***
The significance tests for the differences between β_1 and β_2	* [91.51%]	** [94.87%]
The significance tests for the differences between β_3 and β_4	* [93.21%]	*** [98.54%]
R^2	0.5118	0.5340
Durbin-Watson	2.0948	2.0629
Number of observations	268	268

1) ( ) indicate t-values; 2) [ ] indicate p-values; 3) *** denotes statistical significance at 1%, ** 5%, and * 10%.

3. Hypothesis 3

"Thai stock market tends to react stronger to hard news than soft news."
We examine the impact effects of soft and hard news on the SET index.

$$SET_{R_t} = \alpha + \beta_1 HGN_t + \beta_2 HBN_t +$$

$$\beta_3 SGN_t + \beta_4 SBN_t + \varepsilon_t \qquad (7)$$

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In the equation, HGN_t is a dummy variable for "hard-good-news," HBN_t is a dummy variable for "hard-bad-news," SGN_t is a dummy variable for "soft-good-news," and SBN_t is a dummy variable for "soft-bad-news." These dummy variables take 1 for all kinds of news, and 0 for no news for the dummy variables in the equation during a given day.

We find a larger effect of soft-bad news (1.52% decrease) than hard-bad news (1.13% decrease). However, soft-good news has smaller effect than hard-good news, 1.09 versus 1.19 increase. According to the SET index own change, as shown in Table 3, figures show a 1.63% decrease for soft-bad news versus 1.26% decrease for hard-bad news. This reveals virtually identical results to the changes adjusted with the global index. Table 3 also shows a 1.23% increase for soft-good news versus 1.35% increase for hard-good news. This reveals virtually identical results to the change adjusted with the global index too. The bad news with a hard-soft differential was statistically significant while the good news with a hard-soft differential was not significant. Therefore, in conclusion, in the case of bad news, these results suggest that the Thai stock market gives more weight to soft news than to hard news during a crisis (see Table 3).

Table 3. The impact effects of hard and soft news on the Thai stock market

Explanatory Variables	Return Adjusted with Global Index (MSCI_EM INDEX) (1)	SET Own Return (2)
Constant (α)	1.10 (4.01)***	-1.63 (-9.74)***
Hard News (Good) (β_1)	1.19 (9.56)***	1.35 (10.39)***
Soft News (Good) (β_2)	1.09 (4.01)***	1.23 (4.31)***
Hard News (Bad) (β_3)	-1.13 (-8.15)***	-1.26 (-8.76)***
Soft News (Bad) (β_4)	-1.52 (-8.79)***	-1.63 (-9.04)***
The significance tests for the differences between β_1 and β_2	Not Significant [25.88%]	Not Significant [31.31%]
The significance tests for the differences between β_3 and β_4	* [92.31%]	Not Significant [88.67%]
R^2	0.5196	0.5175
Durbin-Watson	2.1023	2.0725
Number of observations	268	268

1) ( ) indicate t-values; 2) [ ] indicate p-values; 3) *** denotes statistical significance at 1% and * 10%.

Conclusion

Although there is strong support was found for this author's conjecture that Thai stock market was market efficient, there may be interesting behavioral aspects of market behavior to explore. Making use of a newly constructed data set of good and bad news, this author investigated a set of behavioral hypotheses about market responses to good and bad news.

Over the period studied, this author found that the Thai Stock market responded considerably stronger to bad than good news and that this held in both rising and falling markets. Of course, it is possible that over this period the bad news tended to be more important than the good news. However, this author

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found this result interesting as we have no prior reason for believing that the bad news over the period was systematically more important than the good news. While not necessarily inconsistent with the view that on average investors are overly optimistic, the results suggest that there is no such a bias with respect to reactions to news in the sample.

One of this author's most interesting findings is the Thai stock market responded considerably stronger to the bad news during negative momentum while it did to the good news with positive momentum. Such confirmation bias has been found in many aspects of human behavior. Thus, it is certainly a plausible hypothesis. During good times of stock markets, bad news will be heavily discounted relative to good news. On the other hand, during crisis or pessimistic times, bad news will have more impact than good news. The author also founded that the Thai stock market gives more weight to soft news than to hard news during the crisis in the case of bad news.

Although some of these findings are not consistent with this author's belief that both the EMH (Efficient Market Hypothesis) and behavioral approaches, the findings should be part of any financial researcher's tool kit rather than being subject to a strong dividing line between adherents committed to the general superiority of one approach over the other. Furthermore, a great deal of further work must be done to test other hypotheses as well as considering different time periods, countries, and types of markets.

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Acknowledgement

Appendix (SET's Significant News)

$$R_t = \alpha + \beta R_{mt} + \sum_{j=1}^{J} \gamma_j d_j + \varepsilon_t \qquad (8)$$

Where R_t is the SET return on day t, R_{mt} is the global market return on day t (MSCI_EM index), J is the total number of events for SET index, d_j is the dummy variable that takes the value of one during event j's event window, ε_t is the error term.

Date	CAR	t-value	Signifi-cance	NEWS
08/01/07	−0.0392	−3.1408	***	Subprime woes
08/10/07	−0.0335	−3.4450	***	The fallout from the U.S. subprime mortgage crisis Friday is spreading worldwide
08/16/07	−0.0634	−5.4515	***	Recent global financial turmoil triggered by mass U.S. subprime loan defaults drove global investors to seek safer assets such as U.S. treasury bonds
08/17/07	−0.0216	−2.7097	***	Fitch Ratings downgrades Countrywide Financial Corporation to BBB+
08/20/07	0.0506	4.2517	***	The U.S. Central Bank will cut its federal fund rates as early as September (The Fed's move shows an active commitment to stabilizing markets)
09/19/07	0.0266	2.6256	***	The U.S. Federal Reserve cut its benchmark interest rate by a half point to 4.75%
10/22/07	−0.0276	−2.7794	***	Skyrocketing oil prices
11/12/07	−0.0284	−2.7212	***	Negative expectation of the global economy
11/21/07	−0.0391	−2.6822	***	Subprime woes
11/26/07	0.0413	3.4539	***	Thanksgiving rally (Black Friday)
01/22/08	−0.0328	−3.6544	***	Subprime woes
01/28/08	−0.0377	−3.057	***	SG Bank announced that one futures trader at the bank had fraudulently lost the bank €4.9 billion (the equivalent of $7.2 billion U.S.) the largest such loss in history
02/11/08	−0.0207	−2.8204	***	U.S. economic index went down
02/14/08	0.0379	2.9349	***	Japanese economic growth is much higher than expected
09/08/08	0.0552	3.6630	***	U.S. Bailout Plan
09/16/08	−0.0667	−4.6184	***	Lehman Brothers Holdings Incorporated files for Chapter 11 bankruptcy protection
09/19/08	0.0389	3.4016	***	The U.S. rescue plan for the stock market
10/14/08	0.0248	4.7682	***	The U.S., Japan, and Europe promised dollar liquidity
11/06/08	−0.0648	−5.9832	***	U.S. economic index went down
11/13/08	−0.0163	−2.7534	***	Global crisis woes
11/20/08	−0.0485	−5.4064	***	Global crisis woes
12/02/08	−0.0076	−3.0089	***	Report from the National Bureau of Economic Research stated that the U.S. has been in a recession since December 2007
12/08/08	0.0723	5.5395	***	U.S. stimulus plan

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Date	CAR	t-value	Signifi-cance	NEWS
12/15/08	0.0533	3.4913	***	Big 3 bailout
01/15/09	−0.0489	−4.8519	***	Global economy woes
02/17/09	−0.0390	−3.2699	***	Global concern over East Europe default woes
02/20/09	−0.0364	−2.9530	***	Global crisis woes
03/02/09	−0.0352	−3.3813	***	The U.S. government's assistance to American International Group (AIG)
03/30/09	−0.0250	−2.7039	***	GM woes
04/02/09	0.0286	2.6415	***	Global financial crisis could be over earlier than expected
07/13/09	−0.0326	−2.8506	***	U.S. economy woes
11/27/09	−0.0410	−3.7718	***	Dubai default threat rattles world stocks
02/05/10	−0.0198	−2.6152	***	P.I.G.S. could default due to very high national debt
09/19/08	0.0389	3.4016	***	The U.S. rescue plan for the stock market
10/14/08	0.0248	4.7682	***	The U.S., Japan, and Europe promised dollar liquidity
10/22/08	−0.0428	−4.1520	***	Global economy woes
10/23/08	−0.0516	−5.9927	***	Global economic crisis
11/06/08	−0.0648	−5.9832	***	U.S. economic index went down
11/13/08	−0.0163	−2.7534	***	Global crisis woes
11/20/08	−0.0485	−5.4064	***	Global crisis woes
12/02/08	−0.0076	−3.0089	***	Report from the National Bureau of Economic Research stated that the U.S. has been in a recession since December 2007
12/08/08	0.0723	5.5395	***	U.S. stimulus plan
12/15/08	0.0533	3.4913	***	Big 3 bailout
01/15/09	−0.0489	−4.8519	***	Global economy woes
02/17/09	−0.0390	−3.2699	***	Global concern over East Europe default woes
02/20/09	−0.0364	−2.9530	***	Global crisis woes
03/02/09	−0.0352	−3.3813	***	The U.S. government's assistance to American International Group (AIG)
03/30/09	−0.0250	−2.7039	***	GM woes
04/02/09	0.0286	2.6415	***	Global financial crisis could be over earlier than expected
07/13/09	−0.0326	−2.8506	***	U.S. economy woes
11/27/09	−0.0410	−3.7718	***	Dubai default threat rattles world stocks
02/05/10	−0.0198	−2.6152	***	P.I.G.S. could default due to very high national debt

*** means statistically significant at 99% respectively.