การประชุมวิชาการ

“*ศาสตราจารย์สังเวียน อินทรวิชัย* ด้านตลาดการเงินไทย”

ครั้งที่ 24 ประจำปี 2559

การนำเสนอผลงานวิจัยเรื่อง

“Revisiting the Day-of-the-Week Effect in the Stock Exchange of Thailand”

โดย ผศ.อบรม เชาวน์เลิศ

วันศุกร์ที่ 25 พฤศจิกายน 2559 เวลา 16:00 – 16:50 น.

ห้อง 206 คณะพาณิชยศาสตร์และการบัญชี

มหาวิทยาลัยธรรมศาสตร์ ท่าพระจันทร์

Revisiting the Day-of-the-Week Effect in the Stock Exchange of Thailand

November 25, 2016
Anya Khanthavit
Obrom Chaowalerd

Introduction

- A myriad of empirical evidence shows the day-of-the-week effect.
- In the U.S.:
  - French (1980)
  - Gibbons and Hess (1981)
- In international markets:
  - Chang, Pinegar and Ravichandran (1993)
- In emerging markets:
  - Eastern European countries: Ajayi, Mehdian and Perry (2004)
  - ASEAN countries: Lim and Chia (2010)
  - Central European countries: Stavarek and Heryan (2012)

Introduction (cont.)

- Thailand:
  - Liu and Pan (1997)
    - Could not find the effect.
  - Kamath, Chakornpipat, and Chatrath (1998)
    - Could find the effect.
  - Holden, Thompson and Rungsit (2005)
  - Chukwuogor and Feridun (2006)
  - Lean, Smyth and Wong (2009)
  - Lim and Chia (2010)
  - Tangjitprom (2011)
  - Sattayatham, Sopipan and Premanode (2012)
    - Could find the effect.

Introduction (cont.)

- Contributions
  - We used the SET, SET50, and mai indices.
    - Examining the DoW effect for stocks of all major characteristics and groups
    - Acknowledging the effect's firm-size dependence.
  - We examined and tested for possible alternative explanations of the effect.
    - Choudhry (2000): Partly the spillover from the Japanese market
    - Brooks and Persand (2001): Partly the co-movement with the world market
    - Thaler (1987), Pettengill (2003) and Philpot and Peterson (2011): Not been thoroughly reviewed
  - The data are from September 2, 2002 to August 31, 2015.

Methodology

- Gibbons and Hess (1981)

$$r_t = \delta_{Mo} D_{Mo,t} + \delta_{Tu} D_{Tu,t} + \cdots + \delta_{Fr} D_{Fr,t} + \varepsilon_t, \qquad (1)$$

Data

- Daily returns on the SET, SET50 and mai index portfolios
- Period: September 2, 2002 to August 31, 2015
- Total number of observations: 3,176

Descriptive statistics

Table 1

Descriptive Statistics

Statistics	SET Index	SET 50 Index	MAI Index
Average	0.0426%	0.0434%	0.0340%
Standard Deviation	1.3344%	1.4885%	1.9011%
Skewness	-0.8446	-0.6859	-18.1303
Excess Kurtosis	0.124358	11.4165	697.2518
Jarque-Bera Statistic	20,842.93***	17,496.88***	6.4509*e*+07***
AR(1) Coefficient	0.0288	0.0169	-0.0291*

Note: * and *** are significance at 90- and 99-percent confidence levels, respectively.

Empirical results

- Day-of-the-week effects

$$r_t = \delta_{Mo} D_{Mo,t} + \delta_{Tu} D_{Tu,t} + \cdots + \delta_{Fr} D_{Fr,t} + \varepsilon_t, \qquad (1)$$

Table 2

Tests for Day of the Week Effects

Statistics	SET Index	SET 50 Index	MAI Index
$\delta_{Mo} \times 100$	-0.1216*	-0.1184*	0.0036
$\delta_{Tu} \times 100$	0.0131	0.0184	0.1196**
$\delta_{We} \times 100$	0.0897*	0.0788	0.0922*
$\delta_{Th} \times 100$	0.0166	0.0143	0.0693
$\delta_{Fr} \times 100$	0.2053***	0.2144***	-0.1174
Wald Statistic	20.1328**	16.7642**	4.4868

Note: *, ** and *** are significance at 90-, 95- and 99-percent confidence levels, respectively.

Alternative explanations

- Data mining [Sullivan, Timmermann and White (2001)]
  - The DoW effect could be an artifact from data mining.
  - However, the effect was consistently found by the previous studies.
    - Holden, Thompson, and Rungsit (2005)
    - Chukwuogor and Feridun (2006)
    - Lean, Smyth, and Wong (2009)
    - Lim and Chia (2010)
    - Tangjitprom (2011)
    - Sattayatham, Sopipan, and Premanode (2012)

Alternative explanations (cont.)

- Misspecifications of the distribution and heteroskedasticity assumptions [Connolly (1989); Chen, Lee, and Wang (2002)]
  - Kamath, Chakornpipat, and Chatrath (1998) employed alternative estimation techniques and tests for the DoW effect in Thailand. All the techniques and tests gave similar results.
  - This study recomputed the Wald statistics: The results remained unchanged even when the OLS covariance matrices were used in our Wald tests.

Alternative explanations (cont.)

- The stock-settlement procedure [Gibbons and Hess (1981)] and the check-clearing procedure [Lakonishok and Levi (1982)]
  - The Friday returns are higher because of the risk-free benefits over the longer settlement and check clearing periods. Buyers are willing to pay more for stocks on Friday, hence leading to higher closing prices and positive returns.
  - The market micro structures of the main market on which the SET and SET 50 stocks are trading and of the mai market on which the mai stocks are trading are the same. If two explanations were correct, the test had to have found the DoW effect for the mai index portfolio too.

Alternative explanations (cont.)

- The mispricing of stocks on Friday [Keim and Stambaugh (1984)].
  - If it is the Friday mispricing, the price must reverse on Monday, constituting a significant, negative autocorrelation of the Friday return with the Monday return.

Empirical results (cont.)

- The Friday mispricing hypothesis

$$r_t = \delta_{Mo} D_{Mo,t} + \cdots + \delta_{Fr} D_{Fr,t} + \rho_{Mo} D_{Mo,t} r_{t-1} + \cdots + \rho_{Fr} D_{Fr,t} r_{t-1} + \varepsilon_t, \qquad (2)$$

Table 3

Tests for Friday Mispricing Explanation

Statistics	SET Index	SET 50 Index
ρ_{Mo}	0.2555*	0.2185
ρ_{Tu}	0.0087	0.0055
ρ_{We}	-0.0824	-0.0836
ρ_{Th}	0.0311	0.0048
ρ_{Fr}	0.0339	0.0281

Note: * is significance at a 90-percent confidence level.

- The Friday mispricing cannot be the explanation.

Alternative explanations (cont.)

- Psychological behavior of investors [Pettengill, 1994)]
  - Investors were pessimistic on Monday and optimistic on Friday.
  - The psychological link cannot explain the DoW effect of those stocks on the main market.

Alternative explanations (cont.)

- Information flow effects
  - General and macro information [Pettengill and Buster (1994)].
  - Micro, firm-specific information [French (1980)]
    - Firm might delay the announcement of bad news until the weekend to avoid market disruption.
  - Low activities of institutional investors on Monday, their strategic planning day [Wang and Walker (2000)].

Alternative explanations (cont.)

- Information flow effects: Micro, firm-specific information
  - Re-estimation of Equation (1) using re-defined Monday returns that were obtained from Monday opening prices and Monday closing prices.

$$r_t = \delta_{Mo} D_{Mo,t} + \delta_{Tu} D_{Tu,t} + \cdots + \delta_{Fr} D_{Fr,t} + \varepsilon_t, \qquad (1)$$

Table 4

Tests for Micro, Firm-Specific Information Explanation

Statistics	SET Index	SET 50 Index
$\delta_{Mo} \times 100$	-0.1791**	-0.1680**
$\delta_{Tu} \times 100$	0.0131	0.0184
$\delta_{We} \times 100$	0.0897*	0.0788
$\delta_{Th} \times 100$	0.0166	0.0143
$\delta_{Fr} \times 100$	0.2053***	0.2144***
Wald	33.7580***	26.6558***

Note: * and *** are significance at 90-percent and 99-percent confidence levels, respectively.

Alternative explanations (cont.)

- Speculative short sales [Chen and Singal, 2003)]
  - Speculative short sellers did not want to hold the positions and take risks over weekends. So, they bought stocks to close their short positions, drove the prices up and, therefore, led to significant, positive Friday returns.

Alternative explanations (cont.)

- Speculative short sales

	SBL not allowed	**SBL allowed**
SET	04/30/1975 – 12/31/1997	01/05/1998 – 08/31/2015
SET50	08/16/1995 – 12/31/1997	01/05/1998 – 08/31/2015

Alternative explanations (cont.)

- Speculative short sales

Table 5

Tests for the Speculative-Short-Sellers Explanation

Statistics	SET Index		SET 50 Index	
	SBL not Allowed	SBL Allowed	SBL not Allowed	SBL Allowed
$\delta_{Mo} \times 100$	-0.0899*	-0.2078***	-0.6000***	-0.2204***
$\delta_{Tu} \times 100$	-0.0801*	-0.0211	-0.3542*	-0.0261
$\delta_{We} \times 100$	0.0677*	0.1014*	0.0816	0.1002
$\delta_{Th} \times 100$	0.0334	0.0127	-0.2642	0.0054
$\delta_{Fr} \times 100$	0.1787***	0.2512***	-0.0744	0.2730***
Wald Statistic	34.5998***	36.6054***	6.0674	32.5959***

Note: *, ** and *** are significance at 90-, 95- and 99-percent confidence levels, respectively.

- Speculative short sales could not explain the DoW effect of the SET and SET50 index portfolios.

Alternative explanations (cont.)

- The order-flow hypothesis [Miller (1988); Abraham and Ikenberry (1994)]
  - Increased trading activities of individual investors on Monday might lead to significantly negative Monday returns.
  - The flows must be net buy orders that are significantly higher on Friday than on any other weekdays.

Alternative explanations (cont.)

- The order-flow hypothesis [Miller (1988); Abraham and Ikenberry (1994)]

  (I) The volume turnover ratio, i.e. the aggregate trading volume over market capitalization, was tested for the DoW effect. The model was the one in equation (1) with the turnover ratio substituting for the daily return.

  (II) The net-buy to market-capitalization ratio was tested for the DoW effect for trader groups.

Alternative explanations (cont.)

- The order-flow hypothesis (cont.)

Table 6

Tests for the Order Flow Explanation

Statistics	Main Market					MAI Market				
	Volume Turnover	Local Institutes	Proprietary Trader	Foreign Investors	Local Investors	Volume Turnover	Local Institutes	Proprietary Trader	Foreign Investors	Local Investors
$\alpha_{Mo} \times 10000$	33.6305***	-0.0084	0.0207	-0.0079	-0.0044	110.9320***	-0.0132	-0.0599*	-0.0631	0.1362
$\alpha_{Tu} \times 10000$	36.4807***	0.0054	0.0150	-0.2117	0.1913	119.9294***	-0.0832	-0.0102	0.0633	0.0302
$\alpha_{We} \times 10000$	37.6044***	0.0774	0.0190	0.0081	-0.1045	121.8382***	-0.4975**	-0.0781	0.0932	0.4825
$\alpha_{Th} \times 10000$	38.3968***	0.0421	0.0244	0.1166	-0.1798	128.8889***	-0.3188*	0.0083	0.2646	0.0459
$\alpha_{Fr} \times 10000$	39.0355***	0.1397***	-0.0785***	0.2152*	-0.2764**	124.4394***	-0.2933	0.0307	0.2860	-0.0234
Wald Statistic	26.1183***	4.4564	13.6749***	6.1657	7.2398	6.1677	4.3303	5.5148	2.3949	1.7248

Note: *, ** and *** are significance at 90-, 95- and 99-percent confidence levels, respectively.

Alternative explanations (cont.)

- The spillover effects [Choudhry (2000); Brooks and Persand (2001)]

$$r_t = \delta_{Mo} D_{Mo,t} + \delta_{Tu} D_{Tu,t} + \cdots + \delta_{Fr} D_{Fr,t} + \beta r_t^* + \varepsilon_t, \qquad (3)$$

Table 7

Tests for the Spillover Explanation

Statistics	Japanese Spillover		U.S. Spillover		Large-Stock Effect
	SET Index	SET 50 Index	SET Index	SET 50 Index	
$\delta_{Mo} \times 100$	-0.1050*	-0.0998	-0.1138*	-0.1180*	-0.0163***
$\delta_{Tu} \times 100$	0.0109	0.0160	-0.0090	0.0253	-0.0033
$\delta_{We} \times 100$	0.0722	0.0593	0.0879*	0.0469	0.0196***
$\delta_{Th} \times 100$	-0.0056	-0.0104	0.0045	0.0129	0.0039
$\delta_{Fr} \times 100$	0.2000***	0.2085***	0.2059***	0.2028***	0.0147***
β	0.3462***	0.3870***	0.2297***	0.3066***	0.8892***
Wald Statistic	22.4557***	18.8600***	22.0721***	17.0966***	20.3233***

Note: * and *** are significance at 90- and 99-percent confidence levels, respectively.

Alternative explanations (cont.)

- The firm-size dependence [Brusa, Lui, and Schlman (2000)]
  - The SET-listed small stocks, which contribute little to the value-weighted SET index portfolio, may not have the DoW effect.

Table 7

Tests for the Spillover Explanation

Statistics	Japanese Spillover		U.S. Spillover		Large-Stock Effect
	SET Index	SET 50 Index	SET Index	SET 50 Index	
$\delta_{Mo} \times 100$	-0.1050*	-0.0998	-0.1138*	-0.1180*	-0.0163***
$\delta_{Tu} \times 100$	0.0109	0.0160	-0.0090	0.0253	-0.0033
$\delta_{We} \times 100$	0.0722	0.0593	0.0879*	0.0469	0.0196***
$\delta_{Th} \times 100$	-0.0056	-0.0104	0.0045	0.0129	0.0039
$\delta_{Fr} \times 100$	0.2000***	0.2085***	0.2059***	0.2028***	0.0147***
β	0.3462***	0.3870***	0.2297***	0.3066***	0.8892***
Wald Statistic	22.4557***	18.8600***	22.0721***	17.0966***	20.3233***

Note: * and *** are significance at 90- and 99-percent confidence levels, respectively.

A conclusion

- We revisited the day-of-the-week effect on the Stock Exchange of Thailand using daily return data on the SET, SET 50 and MAI index portfolios.
- The study found the DoW effect for the SET and SET 50 index portfolios but not for the mai index portfolio.
- Compared to the previous studies on the Thai market, the tests in this study are most complete. There is only one possible explanation—the order flow explanation.

A conclusion

- The authors tested for alternative explanations of the DoW effect of the SET and SET 50 index portfolios.
- Compared to the previous studies on the Thai market, the tests in this study are most complete. There is only one possible explanation—the order flow explanation.
  - The buy order flows from local institutes and foreign investors drove the price up, hence constituting positive Friday returns and the DoW effect.
  - The negative Monday return was from net selling of local institutes, foreign investors and local investors in a significantly thin market on Monday.

Questions and comments

Thank you.

Future research

- The next important questions are:
  - why local institutes and foreign investors were net buyers and drove the prices upward on Friday, and
  - why local institutes, foreign investors and local investors were selling on Monday.