# INSIDER TRADING IN POLITICALY CONNECTED FIRMS:
# AN EVIDENCE FROM THAILAND

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for the Degree of Master of Science Program in Finance

Department of Banking and Finance

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# การซื้อขายหลักทรัพย์ของพนักงานบริษัทในบริษัทไทยที่เกี่ยวข้องกับการเมือง

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KEYWORDS : INSIDER TRADING, INFORMED TRADING, POLITICAL CONNECTION, EVENT STUDY

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Political connection can heavily affect the financial performance of a firm. Firms that are connected to a government official can benefit from various regulations, tax breaks, and concessions while firms that are connected to the opposition might suffer. Empirical results from various studies conclude that political connection is a significant factor in explaining excess return in listed firms. This study compares trading behavior of connected and unconnected during four categories of events which are change in government, change in public policy, display of favoritism, and unfavorable events. Market transaction and insider transaction data between 2001 and 2008 is obtained from the Stock Exchange of Thailand and the Securities Exchange Commission of Thailand respectively.

This research uses cumulative abnormal return as proxy for excess return. Additionally the probability of information-based trading, buy-sell imbalance, and frequency imbalance is used as proxy for trading behavior. This study found that there is excess return in some political events and that insiders trade opportunistically to maximize profit (minimize loss). It can be concluded that not all type of political events are significant and that insiders sometimes trade before material information becomes public.

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ความเกี่ยวข้องทางการเมืองมีผลกระทบต่อสมรรถภาพทางการเงินของบริษัทมหาชนอย่างมาก บริษัทมหาชนที่มีความเกี่ยวข้องกับรัฐบาลนั้นจะสามารถได้รับ สิทธิประโยชน์จากกฎระเบียบได้ในหลายช่องทาง เช่น การลดภาษี และ สัมปทาน ในขณะที่บริษัทมหาชนจำกัดที่มีความเกี่ยวข้องกับฝ่ายค้านอาจจะเสียผลประโยชน์ หลักฐานในเชิงประจักษ์จากการศึกษาในหลายที่สรุปได้ว่า ความเกี่ยวข้องทางการเมืองเป็นปัจจัยที่สำคัญในการอธิบายการได้มาของอัตราผลตอบแทนที่ได้รับเกินจริงจากบริษัทมหาชนจำกัด การศึกษาฉบับนี้ได้มีการเปรียบเทียบพฤติกรรมของการซื้อ-ขายของบริษัทมหาชนจำกัดที่เกี่ยวข้องและไม่เกี่ยวข้องทางการเมืองระหว่างเหตุการณ์ โดยแบ่งเหตุการณ์ในการศึกษา 4 เหตุการณ์ ประกอบด้วย การเปลี่ยนรัฐบาล การเปลี่ยนแปลงนโยบาย การให้สิทธิพิเศษแก่บริษัทใดบริษัทหนึ่ง และเหตุการณ์ที่มีผลเสียต่อรัฐบาล ในการศึกษานี้ได้ใช้ข้อมูลการทำธุรกรรมในตลาดจากตลาดหลักทรัพย์แห่งประเทศไทย และข้อมูลการทำธุรกรรมของบุคคลภายในจากสำนักงานคณะกรรมการกำกับหลักทรัพย์และตลาดหลักทรัพย์ แห่งประเทศไทยในระหว่างปี ค.ศ. 2001 ถึง 2008

งานวิจัยฉบับนี้ใช้อัตราผลตอบแทนเกินปกติสะสมเป็นตัวแทนของอัตราผลตอบตอบแทนที่ได้รับเกินจริง probability of information-based trading, buy-sell imbalance, frequency imbalance เป็นตัวแทนของพฤติกรรมการซื้อ-ขาย ในการศึกษาค้นพบว่า มีอัตราผลตอบตอบแทนที่ได้รับเกินจริงเกิดขึ้นในบางเหตุการณ์ทางการเมือง และบุคคลภายในมีโอกาสในการทำกำไรสูงสุด (หรือขาดทุนน้อยที่สุด) ในการศึกษานี้สามารถสรุปได้ว่ามีบางเหตุการณ์ทางการเมืองที่สามารถสร้างผลตอบแทนได้ที่รับเกินจริงอย่างมีนัยสำคัญ และบุคคลภายในมีการซื้อ-ขาย ก่อนที่ข้อมูลข่าวสารจะถูกเผยแพร่ต่อสาธารณะ

ภาควิชา การบัญชี ลายมือชื่อนิสิตนิสิต.....

สาขาวิชา การธนาคารและการเงิน ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก.....

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# CHAPTER I

# INTRODUCTION

## 1.1 Background and Problem Review

Politics is an important aspect of a country. The government's policy has tremendous effect on the economy and firms in the capital market can derive benefit from concessions and market control granted to them by their political connections. Examples of political benefits can be seen in both developed and emerging markets. Empirical evidence obtained in a study conducted by Goldman, Rocholl, and So (2009) on S&P 500 companies found that political connections do matter and that the magnitude of firm value increases significantly for firms with political connections. In emerging markets such as Indonesia, Fisman (2001) found that heavily connected firms suffer severely when their political counterpart is in risk of losing power. In the case of Thailand, Bunkanwanicha and Wiwattanakantang (2009) found that business tycoons would run for government office and pass laws which benefited their family's firms. This obvious conflict of interest in the government makes Thailand a very interesting country to study.

In addition to the conflict of interest, the period between 2000 and 2008 were filled with various interesting political events such as elections, controversial policy changes, unfair grants, and even a military coup. Moreover Thailand's legal system is weak, the country ranked 78 out of 178 countries in the 2010 Corruption Perceptions Index by Transparency International. The large number of events coupled with a weak system of checks and balances should provide plenty of opportunities for politicians to enrich connected firms. A study conducted by Claessens, S., Djankov, S., and Lang, L (2000) found that there is a blur between ownership and control for firms in East Asia. This means that firm owners are also manager and therefore are also insiders. In a situation where insiders have control over regulations, it is possible for them to gain a large profit from insider trading. Insiders will know exactly how much government contracts and regulations affect the performance of the firms. Following this logic,

connected firms should have abnormal return during political events and insiders are expected trade heavily to reap the benefits. It would be very interesting to examine how insiders/politicians trade during political events and how they differ from unconnected firms[1]. A significant difference in insider trading between connected and unconnected firms can indicate that the system of check and balances in Thailand is extremely lacking that insiders have no fear of acting. On the other hand, the absence of significant difference it can mean various things. One possibility is that the current system of check of balances is sufficient to guard against the abuse of power. Another possibility is that the connection is so public that any action by the insider can affect their political career.

The aim of this study is to investigate the trading preference of insiders and informed traders, during political events between 2001 and 2008. This study control for the severity of the events by segregating the events into different types based on impact and whether it favorable or unfavorable for the government. Additionally the shift in political connection is controlled by categorizing the firms based on their political connection after every election or coup. Unconnected firms will act as the control group to examine abnormal activities in the connected firms. This study will provide insight into the trading behavior of insiders during political events and how their political affiliation affects them. Moreover it would be interesting to see if allegations made against different political factions hold some truth

## 1.2 Research Question

There have been many preceding researches which concluded that firms can derive benefit from political connections. In extreme cases business owners enter politics in order to manipulate regulations to benefit their firms. These studies use various proxies such as abnormal return, buy-hold portfolios, and financial ratios as proxies to measure the benefit. Although these proxies are sufficient, it does not mean that insiders are actually trading to gain profit. The main issue in this study is to examine

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[1] Unconnected firms and control group are used interchangeably.

whether insiders in politically connected firms actually initiate trades to obtain profit and how their political affinity affects their preferences.

## 1.3 Objective

The study has four main objectives as follows:

- To reinvestigate whether connected firms have abnormal return during political events.
- To investigate whether insider in connected firms actually act during political events to maximize profit.
- To investigate the preference of insiders in connected firms based on their political affinity.
- To investigate what type of events causes the connected firm insiders to act differently than the unconnected firm insiders.

## 1.4 Scope of Study

The sample contains trading data of firms listed on the Stock Exchange of Thailand (SET) during the period between 2000 and 2008. Additionally there is also insider trading declarations to the Securities Exchange Commission of Thailand (SEC) in the same period. The sample will extend to approximately 450 firms.

## 1.5 Brief Methodology

This paper will use four of the methods to examine information-based trading and insider trading:

- Market adjusted cumulative abnormal return (CAR) by Brown and Warner (1985).

- Probability of information-based trading (PIN) by Kiefer, O'Hara, and Paperman (1996).
- Buy-sell imbalance (BSI) by Kumar and Graham (2006).
- Frequency imbalance (FI), a modification of the BSI.

## 1.6 Contribution

The results in this paper could indicate whether insiders in political connected firms actually trade to obtain benefit from their political connections. It will provide insight to the preference of insiders based on their political affinity. Furthermore, the events were separated based on their impact, which should provide a clue to when insiders prefer to act. The results will indicate whether the current system of checks and balances in Thailand is adequate, and if it is not, in what type of event is it not adequate.

## 1.7 Organization

The paper is divided into seven main chapters. Chapter one outlines the problem, objectives, and scope of this study. Chapter two is the literature review, which discusses previous researches and provides a framework for this paper. Chapter three uses the framework to develop the hypothesis that will be tested in this paper. Chapter four provides in depth detail about the raw data and how it was processed. Chapter four explains the various methodologies in this research. Chapter five presents the empirical results and its interpretations. Finally, chapter six summarizes the finding of this study.

# CHAPTER II

# LITERATURE REVIEW

This chapter discusses various literatures relating to the topics covered. It should provide a basic framework of the concepts in this study. The literature review is divided into two main parts; the importance of political connection, and indicators of insider trading.

## 2.1 The Importance of Political Connection

There are various studies that support the idea that political connection influences firm value. Faccio (2006) conducted a global study in 47 countries and found that firms with political connections exist in 35 countries. Within these countries, connections are widespread in countries will poor laws and regulations. The study found that there is significant average excess return of 2.29% when a business owner enters politics. In addition to the global study, there are also various country-specific studies; examples include the United States, Indonesia, and Thailand.

Goldman, Rocholl, and So (2009) studied the impact of firm connections through the company board in the United States. They suggested that, “a company’s value goes up in anticipation on future benefits following the nomination of politically connected individuals to the board… (and) when the connected board member’s political party gains control of the presidency, the value generated by the member increases while the value generated by a director connected to the opposing party decreases.” They found that during the 2000 presidential election there is a significant difference between a Democrat connected portfolio of S&P 500 companies and a Republican connected portfolio consisting of S&P 500 companies. A study by Fisman (2001) in Indonesian measured the degree of connection using a “political connectedness index,” from this index it is apparent that firm connections and performance are positively correlated. He specifically studied the period during Presidents Suharto’s health crisis and found that firms with higher index values will lose value more severely than firms with lesser connections.

In the case of Thailand, Bunkanwanicha and Wiwattanakantang (2009) used financial ratios and cumulative abnormal return to test for political benefits. They concluded that when a business tycoon enters politics, his/her family firm enjoys great benefits. They found that during the government's term, a connected firm can outperform an unconnected firm by as much as 160%. They conducted an event study during various controversial changes in public policy. An example is the Telecommunications Business Act, which was passed on November 9, 2001. This law limited foreign ownership in the telecommunications industry to 25%. At this time various top government officials' families owned telecommunication companies and this law effectively benefited these "connected" firms by barring foreign competitors from entering the Thai market. Their study found that there is positive significant cumulative abnormal return for connected firms during changes in public policy.

In summary, the preceding studies found evidence that political connections affect firm value. Additionally they found that political affiliation towards the government or opposition determines whether a firm profit or suffer. They also find that there is a conflict of interest in the government since there are changes in public policies which clearly benefit the politician's firm.

## 2.2 Indicators of Insider Trading

Insiders can obtain a huge amount of profit by using material non-public information that is available to them because of their position in the firm or through their political connection. There are regulations to prevent insider trading, insiders can circumvent them by acting through proxies. Therefore it is essential to monitor both insiders and informed traders. The presence of information asymmetry can greatly affect the trading costs within the market. Studies in market microstructure found that firms that are perceived as being heavily traded by informed traders are subjected to a higher bid-ask spread. Lin, Sanger, and Booth (1995) conducted a study on informed trading and the bid-ask spread in the New York Stock Exchange (NYSE). They identified informed trading as large volume trades and uninformed trading as smaller trades. They found that "average quote revision is slightly greater than 60 percent of half the effective

spread following a large trade and only 20 percent for a small trade." Similarly, Hasbrouck (1991) found that large trades cause the bid-ask spread to widen. In addition to the trade sizes, Kiefer, O'Hara, and Paperman (1996) proposed a model using maximum likelihood and trading frequency to estimate the probability of information-based trading (PIN). They concluded that it is not just the size of the trades that signifies informed trading, but also how often he stock is traded.

PIN estimates the probability, however it does not differentiate whether the informed trader prefer buying or selling. There are many studies which use buy-sell imbalance (BSI) as a proxy to indicate trading preferences. An example is a study by Graham and Kumar (2006), which used BSI to examine dividend clientele. With PIN and BSI, it would be possible to explain trading behaviors of insiders in connected firms.

# CHAPTER III

# HYPOTHESIS DEVELOPMENT

## 3.1 Testing Information-based Trading Activity

This study focuses on firm insiders; however the superset or informed traders are also important. Insiders can chose to disguise their transactions by using proxies so their transactions do not appear in the declarations presented to the Securities Exchange Commission. The first two hypotheses test for abnormality in informed trading activity in connected firms relative to the control group. Using intuition it can be stated that government connected firms[2] and opposition connected firms[3] should have a higher amount of information-based trading because their connections makes them highly sensitive to political events. The probability of informed trading (PIN) will be used as proxy for information-based trading activity. According to this statement the null hypotheses for first and second hypothesis are:

**Hypothesis 1:** Government firms will have the same amount of informed trading as unconnected firms.

$$PIN_{\text{government}} = PIN_{\text{unconnected}}$$

**Hypothesis 2:** Opposition firms will have the same amount of informed trading as unconnected firms.

$$PIN_{\text{opposition}} = PIN_{\text{unconnected}}$$

## 3.2 Testing for Insider Trading Preferences

PIN measures the probability of informed trading, but it does not specifically look at insiders or present the preference of the traders. To examine the specifics, a different proxy required. Buy-sell imbalance (BSI) will examine the volume of

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[2] Government connected firms and government firms are used interchangeably

[3] Opposition connected firms and opposition firms are used interchangeably

buys and sells made by the insiders. In addition to volume, frequency imbalance (FI) will examine the frequency of buys and sells. Hypotheses three to six will test the preference of insiders in politically connected firms relative to the insiders in the control group. From the findings from Bunkanwanicha and Wiwattanakantang (2009) and Goldman, Rocholl, and So (2009); government firms benefit from their connection, while opposition firms suffer. Using intuition it can be said that, insiders in government firms will buy before favorable events are announced and sell after to maximize their benefit and vice versa in unfavorable events. Insiders in opposition firms will sell before the event and buy after to minimize their loss and vice versa in unfavorable events. According to the statements above, the null hypotheses for first and second hypothesis are:

**Hypothesis 3**: Volume-wise, insiders in government firms will have the same preference as the insiders in unconnected firms

$$BSI_{\text{government}} = BSI_{\text{unconnected}}$$

**Hypothesis 4**: Volume-wise, insiders in opposition firms will have the same preference as the insiders in unconnected firms

$$BSI_{\text{opposition}} = BSI_{\text{unconnected}}$$

**Hypothesis 5**: Frequency-wise, insiders in government firms will have the same preference as the insiders in unconnected firms

$$FI_{\text{government}} = FI_{\text{unconnected}}$$

**Hypothesis 6**: Frequency-wise, insiders in opposition firms will have the same preference as the insiders in unconnected firms

$$FI_{\text{opposition}} = FI_{\text{unconnected}}$$

# CHAPTER IV

# DATA DESCRIPTION

## 4.1 Sample and Data

There are 2925 firm events in the sample; it consists of all firms listed on the Stock Exchange of Thailand in the period between 2000 and 2008. Firms with incomplete of unavailable data were excluded.

## 4.2 Data Source

Financial Data

Daily return total return of the stocks and SET index were obtained from DATASTREAM.

Political Data

Data on the connection between business firms and politicians were obtained from "Political Connection and Corporate Governance: Evidence from Thailand" by Subhapholsiri (2009). A political connection is recognized when a firm fulfills either of the two conditions:

- When a family owning 10% or more of the firm is related to any politician.
- When two or more member of the board of management is related to any politician.

Relation in this study is defined as blood lineage, in-law relationship, or a business partner in two or more businesses. In case there are connections to more than one individual politician, blood lineage has the most priority, while business partner has the least. If the priorities are tied then connection is based on the politician that appears the most. Finally, if the appearance is tied then the cabinet connection takes priority over

representative connection. The list of members of different political parties and their position was obtained from the Thai National Assembly website (www.parilament.go.th).

Microstructure Data

Market microstructure data from 2000 to 2008 was provided by the Stock Exchange of Thailand. The data only includes orders which were matched and is presented in the following format: Deal Confirm Number, Buyer Order Number, Buyer Order Date, Seller Order Number, Seller Order Date, Deal Time, Deal Date, Security Symbol, Deal Volume, Deal Price, Buy Order Time, and Sell Order Time.

Insider Transaction Data

In Thailand, company insiders are expected to submit the 59-2 form to the Securities Exchange Commission to declare their transactions. The 59-2 data period is between 2000 and 2008 and consists of the following fields: Company Name, Manager Name, Relation to Company, Type of Security, Form Submission Date, Deal Date, Volume, Price, Total Value, Buy Sell Flag, and Remaining Stocks. From the data, transactions involving non vanilla stocks were excluded.

Events Data

Event data are obtained from many sources; such as the events in the study of Bunkanwanicha and Wiwattanakantang (2009), local news, and announcements from the Office of the Council of State (http://www.krisdika.go.th). The study will cover thirteen events on Table 2.

### 4.3 Identification of Political Affinity and Classification of Firms

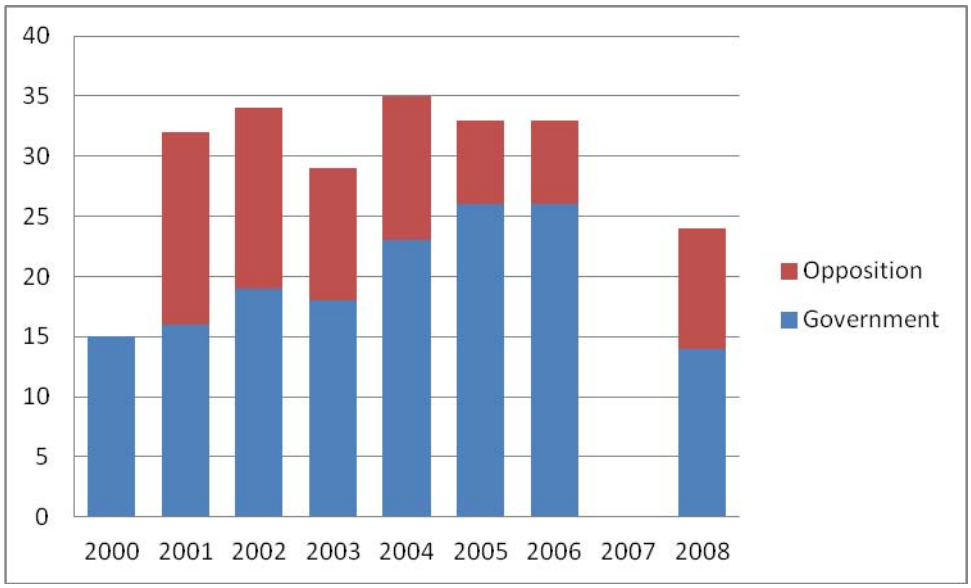
After an election a coalition between different parties are formed; these coalition are divided into two sides which are the government and opposition. Each year the firms are divided into three groups based on their political affinity. The connected firms are divided into government or opposition firms based on the party of their politician. The rest of the firms that are not connected to any politicians are referred to as

unconnected firms and is used as the control group. The number and composition of connected firms in each year is shown in Figure 1 and a detailed description is shown on Table 1. The number politically connected firms doubled after the Thai Rak Thai party (TRT) won the 2001 election. The significant increase in connected firms is because TRT was composed of various business families in Thailand. The number of government firms steadily increase every year from 2001 to 2006 when the Thai Rak Thai party was in power, suggesting that more and more business families are entering politics to increase their wealth. This is reflected in Table 1 where the average market cap increase drastically after 2001. In 2007, there were no connected firms because of a military coup in the previous year; various politicians were banned from politics after the coup. To cope with this issue I use the connected firms from 2006 by assuming that even though the politicians were banned, they still hold political power and can act through proxies.

**Figure 1**

**Number of Connected Firms**

The figure shows the composition of connected firms from 2000 to 2008 based on their year end connection.



## Table 1

## Firm Description

The table shows the insider transaction by frequency, insider transaction by volume, year-end market cap, yearly return, and year-end debt to equity ratio of connected and unconnected firms. The firm connections in this table are based on the year end connection.

| | Avg. Transaction Vol. (shares) | | Avg. Number of Transactions | | Avg. Market Cap (million THB) | | Annual Return | | Avg. Debt to Equity Ratio (%) | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year | connected | unconnected | connected | unconnected | Connected | unconnected | connected | unconnected | connected | unconnected |
| 2000 | 220,862 | 1,618,729 | 9.67 | 19.20 | 4,016.40 | 26,433.48 | -1.18 | -0.32 | 2827.07 | 392.26 |
| 2001 | 1,263,768 | 1,499,956 | 17.40 | 10.53 | 8,617.57 | 3,797.27 | 0.15 | 0.26 | 125.27 | 3021.27 |
| 2002 | 2,297,920 | 4,750,006 | 12.62 | 12.94 | 7,550.72 | 4,685.91 | 0.30 | 0.28 | 64.01 | 291.06 |
| 2003 | 9,786,267 | 4,909,043 | 15.16 | 13.77 | 18,973.83 | 10,498.72 | 0.71 | 0.61 | 58.06 | 147.50 |
| 2004 | 2,249,679 | 4,303,349 | 14.63 | 12.02 | 17,975.56 | 8,880.44 | -0.17 | -0.25 | 57.31 | 107.29 |
| 2005 | 16,036,622 | 12,929,559 | 30.75 | 14.61 | 18,496.56 | 9,548.82 | -0.20 | -0.07 | 51.94 | 89.94 |
| 2006 | 21,837,544 | 11,418,821 | 18.10 | 13.62 | 14,617.68 | 9,425.58 | 0.10 | 0.03 | 50.87 | 91.82 |
| 2007 | 14,553,558 | 29,486,788 | 17.48 | 14.32 | 20,528.15 | 11,884.62 | 0.12 | 0.06 | 34.29 | 87.20 |
| 2008 | 2,509,289 | 29,604,791 | 14.84 | 14.16 | 15,849.91 | 6,281.20 | -0.67 | -0.46 | 45.69 | 98.18 |

## 4.4 Transaction Classification

Transaction frequency for each stock is essential to obtain the probability of informed trading. The transactions are identified as buyer or seller initiated by examining the buy time and sell time. If buy time is greater than sell time then the transaction was buyer initiated, and vice versa if it is seller initiated. Buy time and sell time is calculated using the buy order date, buy order time, sell order date, and sell order time fields available in the micro structure data. The formula for calculating buy time and sell time is:

$$Buy\,Time = Buy\,Order\,Date + Buy\,Order\,Time$$

$$Sell\,Time = Sell\,Order\,Date + Sell\,Order\,Time$$

Figure 2 shows the frequency of buying and selling each year with markers to identify different political events covered in this study. There are certain events where there is a noticeable jump in transaction, namely the 2001 elections and the 2006 Telecommunication Business Act. These jumps in transaction might be a result of the political events.

Figure 2

Monthly Market Transaction by Frequency

The figure shows the frequency of buy and sell transactions of vanilla stocks in the Stock Exchange of Thailand from 2000 to 2008. Additionally, the arrows indicates the occurrence of the events which are covered in this study.

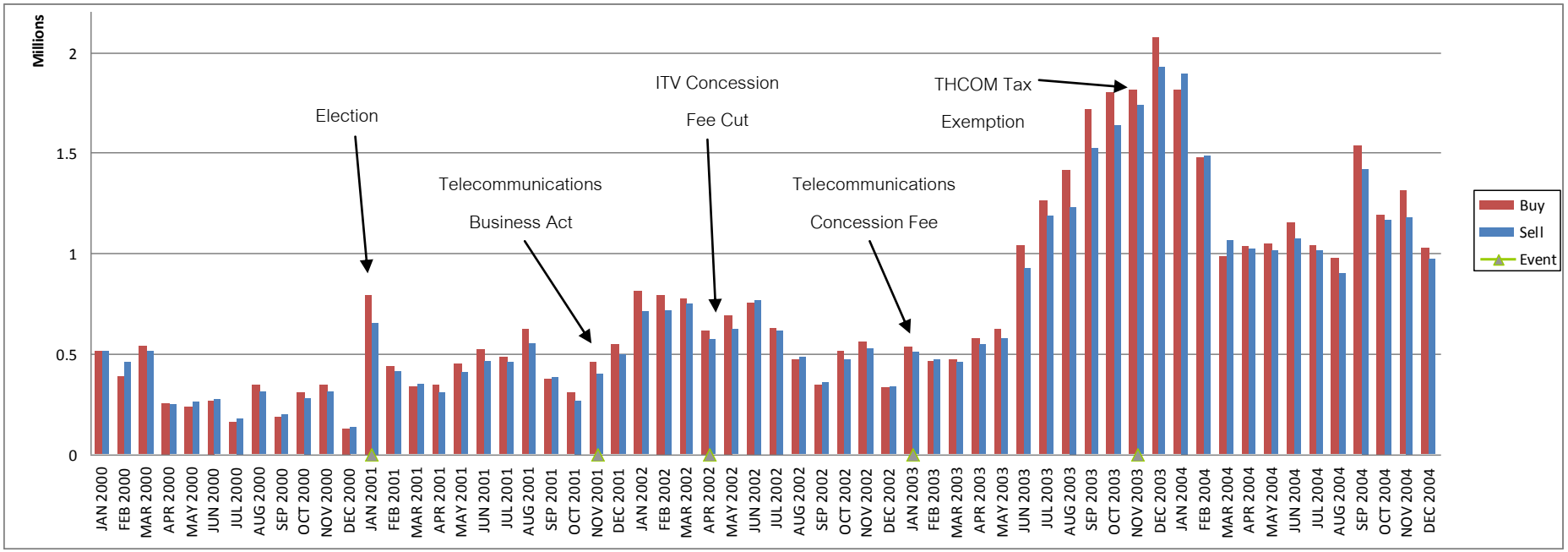
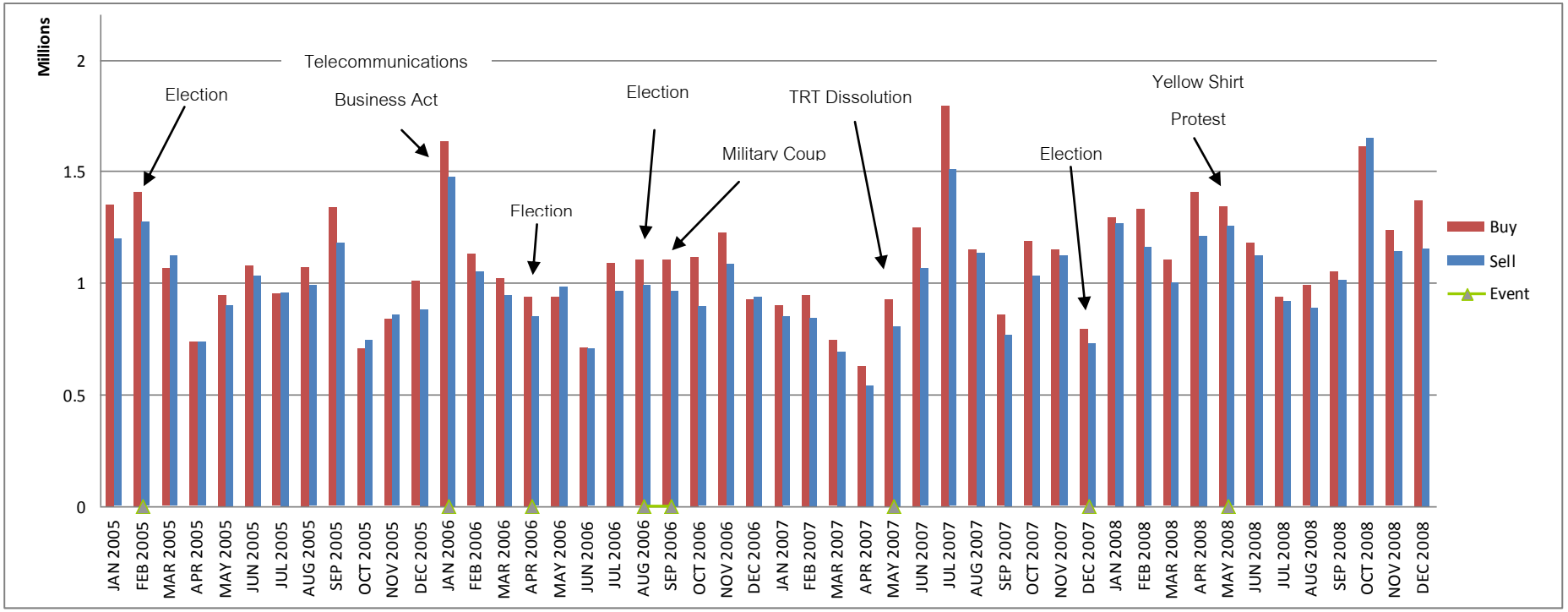


Figure 2

Monthly Market Transaction by Frequency (continue)



### 4.5 Political Events

The events are separated into four types based on impact and favorability. The first type is when there is a change in the governing body this event has high impact and is favorable for the incoming government; examples include elections and coups. During this type of event the connection type of the firms can change when there is a new ruling body. The second type includes events where there are changes in public policy which benefits connected firms; these types of events have moderate impact and is favorable towards the government. The third type includes events where the government openly displays favoritism towards a specific firm. Favoritism has small impact and is favorable for the government; it includes giving companies tax holidays and concession fee discounts. The last type includes unfavorable events such as protest or court rulings that impact the political structure. Examples of this kind of events include protests and dissolution of political parties.

There was a slight issue with elections, coups, and events occurring in the same year as an election or coup. Political connection during election years are based on the result of the election, therefore a problem arises when looking at the period or event before the election date because their connection will be based on the results of the election. To cope with this issue, the period before the election dates will use political connection from the previous year. Additionally there are problems with the 2006 coup and certain events that occur around it. There was a ban on various politicians therefore there was no connected firms present to address this issue, it is assumed that the banned politicians still hold influence and should be viewed as the opposition. Therefore there will be some years that the inverse of the political connection is used. The list of events and their description is shown on Table 2

## Table 2

### Event Description

The table shows the date, description, type, connection year used, and the reasoning behind the connection year for each event. Type one, two, three, and four denotes change in government, change in public policy, display of favoritism, and unfavorable events respectively.

| Event | Date | Description | Type | Connection Before/After | Reasoning |
|---|---|---|---|---|---|
| 1 | 08-01-01 | National Election:<br>Thai Rak Thai party won the National election. | 1 | 2000 / 2001 | Elections |
| 2 | 09-11-01 | Telecommunications Business Act:<br>Foreigners can own up to 25% of a telecommunication company. | 2 | 2001 / 2001 | |
| 3 | 10-04-02 | ITV Concession Fee Cuts:<br>Concession Fees for ITV was cut. | 3 | 2002 / 2002 | |
| 4 | 23-01-03 | Telecommunications Concessions Contract Modification:<br>A law that increases the exercise tax for companies entering telecommunications industry. | 2 | 2003 / 2003 | |
| 5 | 20-11-03 | Shin Satellite Tax Exemption:<br>A connected firm was given an 8 year tax break. | 3 | 2003 / 2003 | |
| 6 | 07-02-05 | National Election:<br>Thai Rak Thai party won the National election. | 1 | 2004 / 2005 | Elections |
| 7 | 10-01-06 | Telecommunications Business Act:<br>Foreigners can own up to 49% of a telecommunication company. | 2 | 2005 / 2005 | Event 7 occurs before the 2006 Elections |

Table 2 – *Continued*

| Event | Date | Description | Type | Connection Before/After | Reasoning |
|---|---|---|---|---|---|
| 8 | 03-04-06 | National Election:<br>A snap election after government dissolution. | 1 | 2005 / 2006 | Election |
| 9 | 03-08-06 | National Election Invalidated:<br>Court ruled that 2006 Election violated voter's privacy. | 4 | 2006 / 2006 | |
| 10 | 19-09-06 | Military Coup:<br>A military coup was staged against the government. | 1 | 2006 / reverse 2006 | The after the coup the government was disbanded so we switch the roles of GCF and OCF for after period. |
| 11 | 30-05-07 | Thai Rak Thai Party Dissolution:<br>A major political party was dissolved and many politicians were banned from politics. | 4 | 2006 / 2006 | This event occurs before the 2007 election so we will use the 2006 connection. |
| 12 | 25-12-07 | National Election:<br>The People Power Party, a proxy of the Thai Rak Thai party, won the election. | 1 | reverse 2006 / 2007 | The 2006 government was not in power after the coup. |
| 13 | 26-05-08 | Yellow Shirt Protest:<br>The People Alliance for Democracy (Yellow Shirts) begins their anti-government rallies. | 4 | 2008 / 2008 | |

# CHAPTER V

# METHODOLOGY

## 5.1 Cumulative Abnormal Return

Cumulative abnormal return (CAR) is used for event studies to examine abnormality of returns around an event. This paper will use CAR to reinvestigate the possibility that connected firms will gain benefit during political events due to their political connection by using the same estimation period as Brown and Warner (1984). The event window is between day -244 and +5, where day 0 is defined as the event date. The impact of some events is larger than others; therefore an equally weighted portfolio of n firms is used. There can be a portfolio with a single firm for events that affect a specific firm or a portfolio consisting of various firms for events with large impact. CAR for portfolio p is calculated from day -1 to day +1 and is defined as:

$$CAR_p = \sum_{t=-1}^{1} \overline{AR_t}$$

$$\overline{AR_t} = \frac{1}{n} \sum_{i=1}^{n} AR_{i,t}$$

$$AR_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t}$$

Where $\overline{AR_t}$ is the average excess return of n stocks in a portfolio at day t, $AR_{i,t}$ is the excess return of security i, $R_{i,t}$ is the return of the security, $R_{m,t}$ is the market return, and $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the OLS value from the estimation period of day -244 to -6. The SET Index is used as the market return. The test statistic for CAR is defined as:

$$t - stat = \frac{\sum_{t=-1}^{1} \overline{AR_t}}{\sqrt{\sum_{t=-1}^{1} \hat{S}^2(\overline{AR_t})}}$$

## 5.2 Probability of Information-based Trading

The probability of information based trading (PIN) was proposed by Kiefer, O'Hara, and Paperman (1996). They use a tree diagram (Figure 3) to represent trading in each day. In one day there can be an event or none. When an event occurs, it can either be a bad or good event; from the end product of the trees are the arrival rate of buying and selling for each condition. PIN measures activities of informed traders and is defined as:

$$PIN = \frac{\mu\alpha}{\mu\alpha + 2\varepsilon}$$

Where $\mu$ the arrival rate of informed traders is, $\varepsilon$ is the arrival rate of uninformed traders, and $\alpha$ is the probability of an information event. The vector parameters $\theta = (\alpha, \delta, \varepsilon, \mu)$ for the stocks in time period T can be calculated using a likelihood function with B buys and S sells as input. The parameter $\delta$ is the probability of a bad event. The likelihood function is defined as:

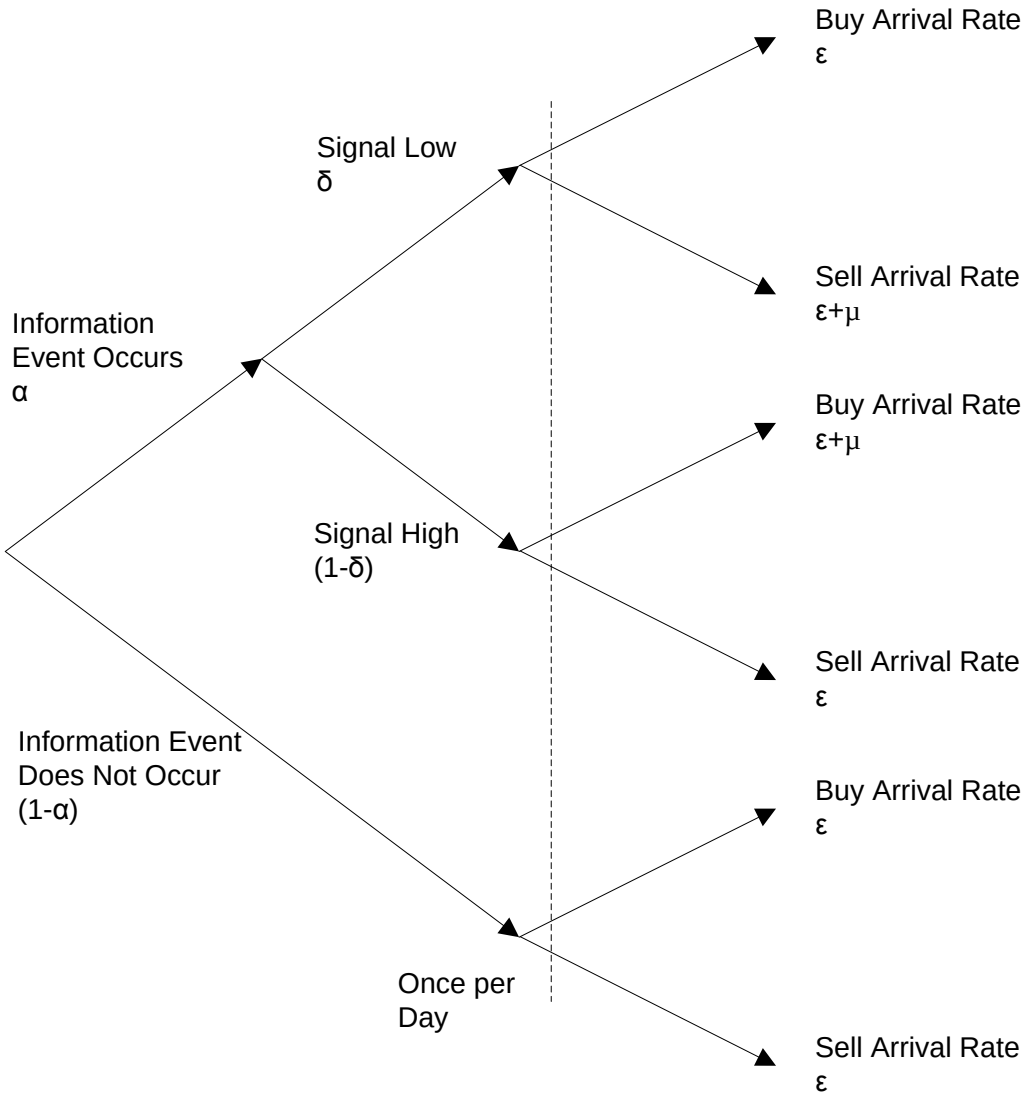
$$\begin{aligned} L(B,S \mid \theta) = (1-\alpha) * e^{-\varepsilon T} \frac{(\varepsilon T)^B}{B!} e^{-\varepsilon T} \frac{(\varepsilon T)^S}{S!} \\ + \alpha\delta * e^{-\varepsilon T} \frac{(\varepsilon T)^B}{B!} e^{-(\mu+\varepsilon)T} \frac{[(\mu+\varepsilon)T]^S}{S!} \\ + \alpha(1-\delta) * e^{-(\mu+\varepsilon)T} \frac{[(\mu+\varepsilon)T]^B}{B!} e^{-\varepsilon T} \frac{(\varepsilon T)^S}{S!} \end{aligned}$$

The event parameters $\alpha$ and $\delta$ are limited to [0, 1], while the arrival rate parameters $\mu$ and $\varepsilon$ can range from [0, $\infty$]. PIN is calculated for all firms before (-90 to -1 trading days) and after (1 to 90 trading days) the event.

Figure 3

Tree Diagram of Trading Process

The figure represents the tree diagram used by Kiefer, O'Hara, and Paperman (1996) to describe the daily trading process. Signal low means that the event is bad while signal high means that the event is good.



### 5.3 Buy-sell Imbalance

The buy-sell imbalance (BSI) measures if traders prefer to buy or sell; it was used in a study by Graham and Kumar (2006). In this study BSI is used with insider transaction data in order to examine the insider behavior around the event. BSI is defined as:

$$BSI_{i,t} = \frac{B_{i,t} - S_{i,t}}{B_{i,t} + S_{i,t}}$$

Where $B_{i,t}$ is the volume buyer is initiated transaction of stock i on time period t, and $S_{i,t}$ the seller. BSI is calculated for all firms before (-90 to -1 trading days) and after (1 to 90 trading days).

### 5.4 Frequency Imbalance

The frequency imbalance (FI) is another parameter that can is used to measure the preference of traders. FI is adapted from BSI and uses the frequency of buys and sells instead of volume. Frequency is also important since BSI values can be heavily affected by large volume transaction by major shareholders. To examine the insider behavior around the event, FI is calculated using the insider transaction data. FI is defined as:

$$FI_{i,t} = \frac{B_{i,t} - S_{i,t}}{B_{i,t} + S_{i,t}}$$

Where $B_{i,t}$ the frequency of buyer is initiated transaction of stock i on time period t, and $S_{i,t}$ the seller. FI is calculated for all firms before (-90 to -1 trading days) and after (1 to 90 trading days).

### 5.5 Welch's T-test

Welch's T-test is a type of t-test proposed by Welch (1938). The formula for Welch's T-test is:

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{\sigma_1^2}{N_1} - \frac{\sigma_2^2}{N_2}}}$$

Where $\overline{x_n}$ , $\sigma_n$ , and $N_n$ are the mean, standard deviation, and size of sample n respectively. The test can compare data with different mean, variance and size. This makes this test suitable for this study because the number of connected firms can change after elections. Additionally, the mean and variance of the proxies used to measure preference can shift. In order to examined whether one group is lesser or greater than the other, one tailed t-test is used. This means for one null hypothesis there is two alternative hypotheses.

$$H_0 : Group_A - Group_B = diff = 0$$
$$H_{A1} : diff > 0$$
$$H_{A2} : diff < 0$$

# CHAPTER VI

# EMPIRICAL RESULTS

## 6.1 Cumulative Abnormal Return

The cumulative abnormal return (CAR) for firms was calculated for the four types of events. Firm affinity after the events was used to define the firm connections. The first event study concerns the change in government, and includes events one, six, eight, ten, and twelve which are the 2001 election, 2005 election, 2006 election, 2006 military coup, and 2007 election respectively. Two portfolios of stocks consisting of government and opposition constructed firms were constructed. From Table 2 there are no events which yielded significant average CAR, however there are some distinguishable trends; government firms will generally have positive CAR while opponent connected firms will have negative CAR. This is consistent with the findings by Goldman, Rocholl, and So (2009) that concluded that winning connected firms will benefit while losing firms will suffer. The exception is during the 2001 election, 2006 military coup, and 2007 election. During the 2001 election, the prime minister was under investigation for corruption and was not cleared of the charge until August 2001 therefore it was logical for government firms to have negative abnormal return. In the case of the coup, a military government was viewed as a major obstacle to economic process therefore all firms suffers negative return. Following the military coup, there was a return to democracy; therefore there is positive CAR for both types of connected firms. In addition the difference between the two portfolios of connected firms did not yield significant CAR.

The second event study involves the change in public policy; focusing on the telecommunications sector. The firms were divided into two groups which were firms that had government connection and firms that were never connected; there were no opponent connected firms. The event study includes event two, four, and seven which are the 2001 Telecommunications Business Act, 2002 Telecommunications Concession Contract Modification, and 2006 Telecommunications Business Act respectively. CAR for each firm is presented on Table 3. There are some similarities and differences

between the findings in this paper and Bunkanwanicha and Wiwattanakantang (2009). Both studies found that on average, there is positive CAR for connected firms. Another similarity is that that there is significant difference between a portfolio of connected and unconnected firms during the Telecom Concession 2003. The difference between the two studies is that unlike Bunkanwanicha and Wiwattanakantang (2009), this study did not find negative average CAR in unconnected firms or significant difference between two portfolios during the Telecom Act 2001. The difference in the finding could be explained by the definition of connected firms. This study focused on telecommunications firms while Bunkanwanicha and Wiwattanakantang included all firms.

The third event study covers display of favoritism towards a specific firm. The firms were divided into two groups which were firms that were directly affected and unconnected firms belonging to the same industry. The event study includes event three and five which are the 2002 ITV concession fee cuts and the 2003 Shin Satellite (THCOM) tax break respectively. CAR for ITV could not be calculated because it was first traded on 13 March 2002, therefore there was insufficient historical data. SHIN can be used as a proxy for ITV since it is the parent company. From Table 4there is negative and positive CAR for directly affected firm during 2002 and 2003 respectively, this is contrary to Bunkanwanicha and Wiwattanakantang (2009) which found positive CAR during both events. As for the difference between the two groups, there is only significant positive CAR during the THCOM tax break in 2003.

The final event study covers the occurrence of unfavorable events. The event study includes events nine, eleven, and thirteen which are the 2006 Election Invalidation, Thai Rak Thai Party Dissolution, and Yellow Shirt Protest respectively. From Table 5 there is no significant CAR or distinguishable trends in the table. Overall the results using CAR is inconclusive; the certain evidence suggests that political connections matter while others do not. It is possible that the informed traders or insiders choose to act before the window period in which the abnormal return was calculated; this can lead to a lack of evidence. The results from other tests should shed some light on informed and insider trading behavior.

Table 3

## Connected Firm Reactions After Change in Government

The table reports the average three-day cumulative market adjusted abnormal returns (CAR) and t-statistics in brackets after a change in government. Gov – Opp is the difference in CAR between the portfolio of government and opposition firms. Day zero is the first trading day that the change in government occurred. * and ** denotes 10% and 5% significant level respectively.

| Portfolio | 2001 Election | | 2005 Election | | 2006 Election | | 2006 Military Coup | | 2007 Election | |
|---|---|---|---|---|---|---|---|---|---|---|
| Government Connect | -0.022 | (-1.256) | 0.007 | (0.732) | 0.008 | (0.733) | -0.016 | (-0.936) | 0.026 | (1.620) |
| Opposition Connect | -0.005 | (-1.294) | -0.004 | (-0.216) | -0.005 | (-0.294) | -0.001 | (-0.064) | 0.007 | (0.370) |
| Gov – Opp | -0.017 | (-0.662) | 0.011 | (0.635) | 0.013 | (0.736) | -0.015 | (0.774) | 0.019 | (1.054) |

## Table 4

## Connected Firm Reactions After Change in Public Policy

The table reports the three-day cumulative market adjusted abnormal returns (CAR) and t-statistics in brackets after the change in policy. Panel A represents telecommunications firms that were connected to the government, Panel B represents unconnected telecommunication firms, and Panel C represents the difference between a portfolio of government firms and unconnected firms. Day zero is the day that the change in public policy occurs. * and ** denotes 10% and 5% significant level respectively. – are values that could not be calculated because of missing historical data.

**Panel A: Government firms**

| Firm | Telecom Act 2001 | | Telecom Concession 2003 | | Telecom Act 2006 | |
|---|---|---|---|---|---|---|
| MLINK | - | - | - | - | 0.013 | (0.515) |
| SHIN | 0.036 | (1.263) | 0.005 | (0.191) | -0.021 | (-1.054) |
| JAS | 0.004 | (0.108) | 0.436 | (7.458)** | 0.079 | (2.060)** |
| ADVANC | 0.032 | (1.058) | -0.034 | (-0.860) | 0.001 | (0.027) |
| THCOM | 0.000 | (0.019) | 0.019 | (0.681) | -0.031 | (-1.312) |
| Average | 0.018 | | 0.107 | | 0.008 | |

**Panel B: Unconnected firms**

| Firm | Telecom Act 2001 | | Telecom Concession 2003 | | Telecom Act 2006 | |
|---|---|---|---|---|---|---|
| AIT | - | - | - | - | 0.001 | 0.023 |
| BLISS | - | - | - | - | -0.045 | -0.724 |
| CSL | - | - | - | - | 0.003 | 0.087 |
| DTAC | -0.059 | (-1.671)* | 0.055 | (1.884)* | -0.024 | (-0.808) |
| IEC | 0.050 | (1.016) | -0.003 | (-0.100) | 0.056 | (0.891) |
| INET | - | - | -0.013 | (-0.620) | 0.014 | (0.524) |
| MSC | -0.009 | (-0.133) | -0.003 | (-0.056) | -0.019 | (-0.334) |
| SAMART | -0.074 | (-1.774)* | 0.020 | (0.564) | -0.015 | (-0.475) |

Table 4 – Continued

| Firm | Telecom Act 2001 | | Telecom Concession 2003 | | Telecom Act 2006 | |
|---|---|---|---|---|---|---|
| SAMTEL | 0.002 | (0.052) | 0.050 | (1.553) | 0.038 | (1.334) |
| SIM | - | - | - | - | 0.036 | (1.114) |
| SIS | - | - | - | - | 0.028 | (0.572) |
| SVOA | 0.016 | (0.242) | -0.007 | (-0.231) | 0.038 | (1.279) |
| TRUE | 0.071 | (1.794)* | 0.047 | (1.197) | 0.005 | (0.119) |
| TT&T | 0.038 | (0.660) | 0.221 | (5.015)** | 0.085 | (2.624)** |
| Average | 0.005 | | 0.041 | | 0.014 | |

Panel C: Difference between government firms and unconnected firms

| Portfolio | Telecom Act 2001 | | Telecom Concession 2003 | | Telecom Act 2006 | |
|---|---|---|---|---|---|---|
| Gov-Un | 0.014 | (0.171) | 0.065 | (2.871)** | -0.006 | (-0.369) |

## Table 5

## Firm Reactions after Display of Favoritism

This table reports the three-day cumulative market adjusted abnormal returns (CAR) and t-statistics in brackets after the change in policy. Panel A represents firms that were directly affected by the display of favoritism, Panel B represents unconnected firms which belong to the same industry as the directly affected firms; namely broadcasting and telecommunications, and Panel C represents the difference between a portfolio of directly connected firms and unconnected firms. Day zero is the day that the change in public policy occurs. * and ** denotes 10% and 5% significant level respectively. – are values that could not be calculated because of missing historical data or firms that did not belong in the same industry as directly affected firms during the event.

**Panel A: Directly affected firms**

| Firms | ITV Concession Fee 2002 | | THCOM Tax Break 2003 | |
|---|---|---|---|---|
| SHIN | -0.005 | (-0.148) | 0.024 | (0.768) |
| THCOM | - | - | 0.103 | (1.11) |
| ADVANC | - | - | -0.016 | (-0.474) |
| Average | -0.005 | | 0.037 | |

**Panel B: Unconnected firms**

| Firms | ITV Concession Fee 2002 | | THCOM Tax Break 2003 | |
|---|---|---|---|---|
| GRAMMY | 0.087 | (2.927)** | - | - |
| LIVE | 0.210 | (2.708)* | - | - |
| NMG | -0.029 | (-0.724) | - | - |
| POST | -0.004 | (-0.061) | - | - |
| TRUE | -0.033 | (-0.845) | -0.020 | (-0.390) |
| DTAC | - | - | 0.022 | (0.474) |
| IEC | - | - | -0.049 | (-0.783) |
| INET | - | - | -0.024 | (-0.446) |
| MSC | - | - | -0.085 | (-2.065)** |

Table 5 – *Continued*

| Firms | ITV Concession Fee 2002 | THCOM Tax Break 2003 |
|---|---|---|
| SAMART | - - | -0.038 (-0.617) |
| SAMTEL | - - | 0.009 (-0.133) |
| SVOA | - - | -0.017 (-0.263) |
| TT&T | - - | -0.008 (-0.115) |
| Average | 0.046 | -0.025 |

**Panel C: Difference between directly firms and unconnected firms**

| Portfolio | ITV Concession Fee 2002 | THCOM Tax Break 2003 |
|---|---|---|
| Dir-Un | -0.053 (-1.328) | 0.063 (1.956)** |

## Table 6

### Connected Firm Reactions After Unfavorable Events

This table reports the average three-day cumulative market adjusted abnormal returns (CAR) and t-statistics in brackets after occurrence of unfavorable events. Gov-Opp represents the difference in CAR between a portfolio of government and opposition firms. Day zero is the first trading day that the change in government occurred. * and ** denotes 10% and 5% significant level respectively.

| Portfolio | 2006 Election Invalidated | TRT Dissolution | Yellow Shirt Protest |
|---|---|---|---|
| Government Connect | -0.003 (-0.315) | 0.006 (0.804) | 0.009 (0.509) |
| Opposition Connect | -0.003 (-0.168) | -0.010 (-0.40) | 0.002 (0.577) |
| Gov-Opp | -0.001 (-0.035) | 0.015 (0.765) | 0.007 (0.577) |

## 6.2 Probability of Information-based Trading Results

The statistical description of probability of information-based trading in government, opposition, not connected firms around different types of events are shown on Table 7. Panel A represents the firms during change in government. The mean PIN for all types of firms is about 0.30 which means that on average, about one in three trades around change in government are information-based. The standard deviation for each type of connected firm ranges from 0.15 to 0.19 which is quite similar to the control group. Overall there is very little difference in the descriptive statistics between any types of firms in any period. It can be guessed from the descriptive statistics that political connections are irrelevant do not affect informed trader activity. The actual comparison shows there is no significant difference between government firms and control group at five or ten percent significant level. In other words, political connection does not affect informed trader activity in government firms. In opposition firms there is significant difference of ten percent with the control group before and after the event, however it does not support the hypothesis since negative difference signifies that information-based trading in the control group is greater than the opposition firms. Therefore political connection does not affect informed trader behavior during change in government.

Panel B presents the PIN descriptive statistics during change in public policy. The mean PIN for all types of firms is about 0.30, which has similar implications to events occurring around change in government. This is surprising because PIN should be lower during change in public policy since the event has lower impact than change in government. The standard deviation is similar in connected firms and control group during all periods; this also suggests that political connections do not affect informed trader behavior. The t-test yielded significant difference at ten percent between government and control group, however it does not support the hypothesis since the difference is negative.

The next panel displays the PIN values during display of favoritism. Unlike the first two events there is a sight difference in mean PIN in government firms

and the rest of the firms. The mean for government firms is 0.25 while opposition firms and the control group is around 0.30. This suggests that on average, informed traders are less active in government firms during display of favoritism. This is surprising because government firms are suppose to rely heavily on their political connections and therefore should have a higher PIN values. The comparison between government firms and control group shows that there is a five percent significant difference before the event. The result is similar to firms during change in political policy where the difference was negative and does not support the hypothesis. In opposition firms there were no significant difference in any period.

The final section, Panel D, shows PIN values around unfavorable events. The mean and standard deviation in all firms are quite similar suggesting that there is no difference between the firms. There was negative significant difference between government firms and the control group. Overall there is no support for the hypothesis that connected firms will have higher information based trading. Contrary to the study by Goldman, Rocholl, and So (2009), Fisman (2001), and Bunkanwanicha and Wiwattanakantang (2009), the PIN comparison suggests that political connection does not matter in any kind of event. Even though the empirical results does not support the hypothesis that political connections matter, result for information-based trading is still inconclusive because of the sensitivity of the probability of information-based trading model. There are instances where the values in likelihood functions do not converge resulting in missing PIN. These missing values might have affected the results.

## Table 7

## Probability of Information-based Trading

The table reports the descriptive statistics for probability of information-based trading (PIN) in government connected, opposition connected, and unconnected firms. Additionally, the table reports the Welch's T-Test between probability of information based trading (PIN) in connected and unconnected firms (control group). PIN is calculated during change in government, change in public policy, display of favoritism, and unfavorable events; they are shown on Panel A, B, C, and D respectively. *Before* and *after* in the period row denotes a 90 trading day period preceding and succeeding the event. PIN values are limited to [0,1], higher PIN values means that most of the transaction are made by informed traders. The first p-value is the result of a one-tailed test with an alternate hypothesis where connected firms have greater PIN, while the latter is the alternative hypothesis where connected firms have less PIN.

**Panel A: Around change in government**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 71 | 75 | 42 | 48 | 1696 | 1676 |
| Mean | 0.30 | 0.31 | 0.28 | 0.34 | 0.32 | 0.30 |
| Standard deviation | 0.15 | 0.19 | 0.17 | 0.17 | 0.18 | 0.16 |
| P-value ($H_a$:diff>0) | 0.89 | 0.69 | 0.92 | 0.94 | | |
| P-value ($H_a$:diff<0) | 0.11 | 0.31 | 0.08 | 0.06 | | |

Table 7 – *Continued*

**Panel B: Around change in public policy**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 44 | 45 | 30 | 26 | 931 | 920 |
| Mean | 0.28 | 0.28 | 0.29 | 0.32 | 0.31 | 0.29 |
| Standard deviation | 0.15 | 0.13 | 0.15 | 0.16 | 0.18 | 0.17 |
| P-value ($H_a$:diff>0) | 0.90 | 0.70 | 0.78 | 0.80 | | |
| P-value ($H_a$:diff<0) | 0.10 | 0.30 | 0.22 | 0.20 | | |

Table 7 – *Continued*

**Panel C: Around display of favoritism**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 24 | 23 | 23 | 19 | 566 | 568 |
| Mean | 0.24 | 0.26 | 0.28 | 0.32 | 0.29 | 0.30 |
| Standard deviation | 0.09 | 0.14 | 0.17 | 0.19 | 0.17 | 0.18 |
| P-value ($H_a$:diff>0) | 0.98 | 0.88 | 0.58 | 0.70 | | |
| P-value ($H_a$:diff<0) | 0.02 | 0.12 | 0.42 | 0.30 | | |

Table 7 – *Continued*

**Panel D: Around unfavorable events**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 47 | 51 | 18 | 18 | 1096 | 1067 |
| Mean | 0.32 | 0.27 | 0.30 | 0.35 | 0.30 | 0.30 |
| Standard deviation | 0.19 | 0.09 | 0.12 | 0.19 | 0.15 | 0.15 |
| P-value ($H_a$:diff>0) | 0.76 | 0.99 | 0.53 | 0.81 | | |
| P-value ($H_a$:diff<0) | 0.24 | 0.01 | 0.47 | 0.19 | | |

## 6.3 Buy-sell Imbalance Results

The buy-sell imbalance (BSI) was calculated for government connected, opposition connected, and unconnected firms during each type of event using insider transaction data; shown on Table 8. In Panel A, mean BSI for government connected firm is -0.10 before and 0.05 after a change in government. This means that on average, government connected firm insiders prefer to sell then buy after. In opposition firms mean is 0.17 before and 0.22 after implying that insiders buy in both periods but more heavily after. In unconnected firms there is little change in mean before and after the event with BSI at 0.05 before and 0.04 after. The most interesting statistic is the high standard deviation in all groups. Most of the standard deviation is close to one, which is large considering BSI is bounded to [-1, 1]. The standard deviation implies that there is a large group of pure sellers and pure buyers. The comparison between connected and unconnected firms shows that there is no significant difference between government firms and unconnected firms before and after change in government. This is contrary to our hypothesis that insiders in government firms have buying preference before and selling after to maximize profit. The result for opposition connected firm also yielded no significant difference. This means that there is no abnormality in politically connected firms and insiders in connected firms behave the same as insiders in the control group. This result does not support Goldman, Rocholl, and So (2009) findings which suggest that there is excess return for government firms and loss for opposition firms after elections. In other words, insiders that should logically be affected by political connections are not taking action to maximize gain and/or minimize loss.

Panel B shows the descriptive during change public policy. The mean is -0.05 and -0.43 for government firms before and after change in public policy respectively. From the mean, it can be interpreted that insiders in government firms have a selling trend that increases in magnitude after the event. It is expected for insiders in government connected firm to sell after change in public policy to take profit. The mean BSI for opposition firm is 0.37 and -0.14 before and after respectively. The mean shows that opposition connected firm insiders prefer to buy before then sell after the event.

This preference is contrary to the expectation that opposition will sell before and buy after to minimize loss. Unconnected firms have a selling trend, which increases slightly in magnitude after the event. Standard deviation for each group also suggests that there is a large group of pure sellers and pure buyers. There was negative significant difference between government firms and the control group after the event. This means that there is an excess amount of selling by insiders in government firms. The results support the hypothesis that government insiders will take profit after a change in public policy. On the other hand, opposition firms also negative significant difference before the event. This means that there is excess selling made by insiders in opposition firms. It makes sense that insiders in opposition firms are selling before to avoid loss because it is likely that they will suffer from the change in public policy.

BSI values for each type of firm during display favoritism are shown in Panel C. The mean of government firms is -0.28 and -0.22 before and after the event respectively. This is unexpected since BSI should be positive before and negative after to indicate that government connected firm insiders buy before and sell after to maximize profit. Even though the mean is negative there is a positive change in magnitude suggesting that that is a slowdown in the selling trend which might be attributed to the event. The mean for opposition firms is 0.16 and 0.31 before and after the event respectively. This is also unexpected since BSI should be negative before and positive after display of favoritism because display of favoritism should negatively affect the opposition firms. Mean BSI of unconnected firms is -0.25 and 0.03 before and after the event respectively. Looking at all of the firms it seems that there is a buying trend for all firms after the event since change in magnitude is all positive. There was no significant difference between government firms and the control group. This could mean that political connection does not matter during display of favoritism, however it is likely that the impact of the event is small, therefore there is no difference. In the case of opposition firms there were negative significant difference at 5% before and 10% after. Insiders in opposition firms are selling before the event to avoid the loss, and the trend continues to after the event. It was expected that they would buy back the stocks after the event, however it is possible that the favor granted to the government firms heavily

affected the performance of opposition firms. Therefore, during display of favoritism there is partial support that political connections is relevant and do impact insider trading preferences for opposition firms.

The final panel examined unfavorable events. The mean for government connected firm is -0.32 and 0.19 in the period before and after the event respectively. From the mean, it appears that insiders in government firms are selling before and buying after, which is the opposite of the hypothesis. In opposition firms, insiders have a buying trend and the magnitude increases after the event. In the control group there is little change in BSI and the mean is close to zero during the period before and after the event. Comparison results show that there is negative significant difference between government connected and unconnected firms before the event. This means that insiders in government firms are selling in order to avoid loss. On the other hand opposition firms are selling after the event, this means that unfavorable events both negatively affect both types of connected firms but government connected insiders react before opposition connected insiders.

The result from the comparison between connected firms and unconnected firms show that political connections do not matter in every situation. For example, during elections there was no excess trading, which means that insiders in connected firms have the same preference as the control group. However in other events there were instances that insiders do take profit and avoid loss. During change in public policy government connected insiders were selling after the event, while opponent connected insiders were welling before the event; this supports the finding from Bunkanwanicha and Wiwattanakantang (2009). Other examples include opponent connected insiders selling before display of favoritism and when government firms are selling before unfavorable events. Therefore there are implications that insiders use material non-public information to take favorable positions before some events.

## Table 8

## Buy-sell Imbalance

The table reports the descriptive statistics for buy-sell imbalance (BSI) in government connected, opposition connected, and unconnected firms. Additionally, the table reports the Welch's T-Test between buy-sell imbalance (BSI) in connected and unconnected firms (control group). BSI is calculated during change in government, change in public policy, display of favoritism, and unfavorable events; they are shown on Panel A, B, C, and D respectively. *Before* and *after* in the period row denotes a 90 trading day period preceding and succeeding the event. BSI values are limited to [-1,1], negative BSI indicates that there is a selling preference, positive BSI indicates a buying preference, and zero BSI indicates neutral preference. The first p-value is the result of a one-tailed test with an alternate hypothesis where connected firms have greater BSI, while the latter is the alternative hypothesis where connected firms have less BSI.

The table reports the Welch's T-Test between buy-sell imbalance (BSI) in connected and unconnected firms (control group).

**Panel A: During change in government**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 37 | 41 | 27 | 28 | 712 | 821 |
| Mean | -0.10 | 0.05 | 0.17 | 0.22 | 0.05 | 0.04 |
| Standard deviation | 0.91 | 0.89 | 0.85 | 0.79 | 0.89 | 0.89 |
| P-value ($H_a$:diff>0) | 0.82 | 0.54 | 0.77 | 0.87 | | |
| P-value ($H_a$:diff<0) | 0.18 | 0.46 | 0.23 | 0.13 | | |

Table 8 – *Continued*

**Panel B: During change in public policy**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 28 | 28 | 20 | 18 | 416 | 428 |
| Mean | -0.05 | -0.43 | 0.37 | -0.14 | -0.02 | -0.08 |
| Standard deviation | 0.88 | 0.74 | 0.74 | 0.85 | 0.90 | 0.90 |
| P-value ($H_a$:diff>0) | 0.56 | 0.99 | 0.99 | 0.61 | | |
| P-value ($H_a$:diff<0) | 0.44 | 0.01 | 0.01 | 0.39 | | |

Table 8 – *Continued*

**Panel C: During display of favoritism**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 15 | 16 | 14 | 14 | 297 | 310 |
| Mean | -0.28 | -0.22 | 0.16 | 0.31 | -0.25 | 0.03 |
| Standard deviation | 0.90 | 0.90 | 0.83 | 0.79 | 0.84 | 0.88 |
| P-value ($H_a$:diff>0) | 0.56 | 0.85 | 0.95 | 0.90 | | |
| P-value ($H_a$:diff<0) | 0.44 | 0.15 | 0.05 | 0.10 | | |

Table 8 – *Continued*

**Panel D: During unfavorable events**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 26 | 29 | 14 | 11 | 538 | 526 |
| Mean | -0.32 | 0.19 | 0.17 | 0.46 | 0.03 | -0.01 |
| Standard deviation | 0.84 | 0.82 | 0.81 | 0.86 | 0.90 | 0.90 |
| P-value ($H_a$:diff>0) | 0.98 | 0.89 | 0.74 | 0.95 | | |
| P-value ($H_a$:diff<0) | 0.02 | 0.11 | 0.26 | 0.05 | | |

## 6.4 Frequency Imbalance Results

This section displays the descriptive statistics for frequency imbalance (FI) for different group of firms around each event. FI is slightly different from BSI because it looks at the frequency instead of the volume traded. FI calculated for firms during change in government are on Panel A of Table 9. The mean of -0.14 and 0.01 for government firms before and after the event suggests that insiders are selling more often before and buying and selling at the same frequency after the event. In opposition connected and unconnected firms there was a trend in buying, however the magnitude is greater in opposition firms. The t-test between connected and unconnected firms shows that there is some significant difference in FI. Comparison shows that there is significant difference at 10 percent between government firms and the control group, meaning that there is excess selling in government firms by insiders. This does not match the expected behavior from BSI; this suggests that there might be differences in excess trading volume-wise and frequency-wise. As for opposition connected firm, there was no excess buying or selling, which is similar to the results from BSI comparison.

FI values for firms during display of favoritism are in Panel B. The mean of -0.03 and -0.35 in government firms shows that there is a selling trend which increases in magnitude after the event, while opposition firms and unconnected firms had a change in trend where insiders were buying more frequently and later switched to selling. Looking at the comparison, it seems that insiders in government firms have an abnormal frequency of selling after (0.02) the event relative to the control group; while insiders in opposition firms have an abnormal frequency of selling before (0.05) the event. The result of the government firm comparison partially supports the hypothesis that insiders will try to take profit. Additionally, the result in opposition firms does support the hypothesis that insiders will try to avoid loss. Therefore, the trends in FI and BSI are similar for changes in public policy.

Panel C shows the FI values for firms during display of favoritism. The mean FI for government firms suggest that insiders sell continuously, which is the opposite of what is expected. The mean in opposition firms suggests a buying trend that

increases significantly after the event. Unconnected firms' values are close to zero and change very little before and after the event. The FI comparison shows that there was no excess buying or selling in government and opposition firms, except in opposition firms before (0.04) the event. This partially supports the hypothesis that insiders in opposition firms will sell before the event to avoid loss.

Lastly, Panel D describes different groups for firms during unfavorable events. The mean of government firms suggest that insiders sell before and buy after. In opposition connected firm, insiders have a buying trend which increases after the event. In unconnected firms there is a small buying trend with little change in magnitude. The comparison results show that there is excess selling before (0.00) the event by insiders in government firms and excess selling after (0.06) the event by insiders in opposition firms. Overall, the trend in FI and BSI is similar; it suggests that there is very little difference in trading by insiders frequency-wise and volume-wise.

## Table 9

## Frequency Imbalance

The table reports the descriptive statistics for frequency imbalance (FI) in government connected, opposition connected and unconnected firms. Additionally, the table reports the Welch's T-Test between frequency imbalance (FI) in connected and unconnected firms (control group). FI is calculated during change in government, change in public policy, display of favoritism, and unfavorable events; they are shown on Panel A, B, C, and D respectively. *Before* and *after* in the period row denotes a 90 trading day period preceding and succeeding the event. FI values are limited to [-1,1], negative FI indicates that there is a selling preference, positive FI indicates a buying preference, and zero BSI indicates neutral preference. The first p-value is the result of a one-tailed test with an alternate hypothesis where connected firms have greater FI, while the latter is the alternative hypothesis where connected firms have less FI.

**Panel A: During change in government**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 37 | 41 | 27 | 28 | 712 | 821 |
| Mean | -0.14 | 0.01 | 0.19 | 0.17 | 0.06 | 0.07 |
| Standard deviation | 0.85 | 0.84 | 0.80 | 0.79 | 0.86 | 0.86 |
| P-value ($H_a$:diff>0) | 0.92 | 0.68 | 0.78 | 0.75 | | |
| P-value ($H_a$:diff<0) | 0.08 | 0.32 | 0.22 | 0.25 | | |

Table 9 – *Continued*

**Panel B: During change in public policy**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 28 | 28 | 20 | 18 | 416 | 429 |
| Mean | -0.03 | -0.35 | 0.30 | -0.05 | 0.01 | -0.04 |
| Standard deviation | 0.89 | 0.75 | 0.76 | 0.77 | 0.87 | 0.86 |
| P-value ($H_a$:diff>0) | 0.59 | 0.98 | 0.95 | 0.51 | | |
| P-value ($H_a$:diff<0) | 0.41 | 0.02 | 0.05 | 0.49 | | |

Table 9 – *Continued*

**Panel C: During display of favoritism**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 15 | 16 | 14 | 14 | 297 | 310 |
| Mean | -0.18 | -0.12 | 0.18 | 0.29 | -0.22 | 0.04 |
| Standard deviation | 0.87 | 0.87 | 0.79 | 0.75 | 0.81 | 0.84 |
| P-value ($H_a$:diff>0) | 0.56 | 0.77 | 0.96 | 0.88 | | |
| P-value ($H_a$:diff<0) | 0.44 | 0.23 | 0.04 | 0.12 | | |

Table 9 – *Continued*

**Panel D: During unfavorable events**

| | Government Connected | | Opposition Connected | | Unconnected | |
|---|---|---|---|---|---|---|
| Period | Before | After | Before | After | Before | After |
| Number of firm events | 26 | 29 | 14 | 11 | 538 | 526 |
| Mean | -0.39 | 0.15 | 0.20 | 0.42 | 0.06 | 0.03 |
| Standard deviation | 0.74 | 0.77 | 0.76 | 0.76 | 0.87 | 0.87 |
| P-value ($H_a$:diff>0) | 1.00 | 0.80 | 0.73 | 0.94 | | |
| P-value ($H_a$:diff<0) | 0.00 | 0.20 | 0.37 | 0.06 | | |

## 6.5 In Depth Examination of Telecommunications Firms

Various events in this study specifically affect firms in the telecommunications business. This section examines the trading behavior of a sample of individuals firms during the Telecommunications Business Act 2001, Telecommunications Concessions Contract Modification 2003, Shin Satellite Tax Exemption 2003, and the Telecommunications Business Act 2006. Connected firms include SHIN, ADVANC, THCOM, JAS and unconnected firms include DTAC, TRUE, and TT&T.

a) Telecommunications Business Act 2001

The Telecommunications Business Act 2001 was passed on November 09, 2001. (Bunkanwanicha and Wiwattanakantang, 2009) During this event we see that activity in the market reduces considerably slightly before the event then spikes up after the event which suggests that the event affects many telecommunication firms. Surprisingly, there is very little or no insider activity in SHIN, ADVANC, THCOM. Insiders bought 500,000 shares in JAS before the event; however they did not sell after. There also were not many insider transactions by insiders in unconnected firms; the only notable transaction was 15 million shares purchased by insiders before the event.

b) Telecommunications Concessions Contract Modification 2003

The modification to the concession contracts was announced by the government in January 21, 2003. (Bunkanwanicha and Wiwattanakantang, 2009) The actions of insiders during this event are similar to that of the Telecommunications Business Act 2001, where there is little insider activity and very little shares were actually sold by the insiders.

c) Shin Satellite Tax Exemption 2003

The next event is when the Board of Investment announced on November 20, 2003 that THCOM is awarded an eight-year tax break. (Bunkanwanicha and Wiwattanakantang, 2009) There noticeable transaction by SHIN after the event where more than 2.5 million shares were sold; this is significant since THCOM is a subsidiary of SHIN. However the surprising event was when insiders in THCOM actually sold shares before the event, which could negate the possible gain from the announcement. During this event JAS insiders also sold more than 20 million shares.

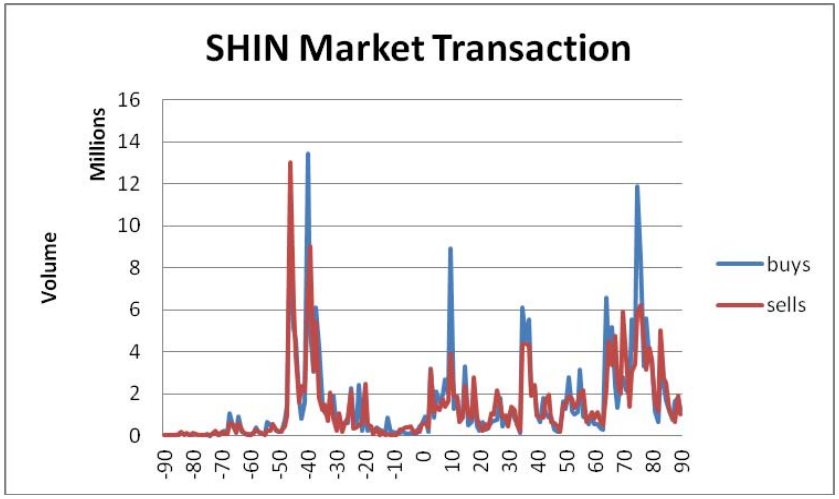
d) Telecommunications Business Act 2006

The Telecommunications Business Act 2006 came into effect on January 10, 2006. After this event there was a significant sale of about 400 million SHIN shares by insiders, this suggests that there is definitely some profit being made. Even though there is a clear sign in SHIN, there was sales before the event made by insiders in the subsidiary companies such as ADVANC and THCOM which suggests that only insiders in the parent company is taking advantage.

By examining the telecommunications firm specifically, it can be concluded unlikely that insiders are taking advantage of every policy change and that the findings using other proxies were influenced by the non telecommunications connected companies. In the case of the Telecommunications Business Act 2006 we can also conclude that not all insiders are equally informed even though the companies belong to the same group.

Figure 4

Telecommunications Firm Trading during Telecommunications Business Act 2001



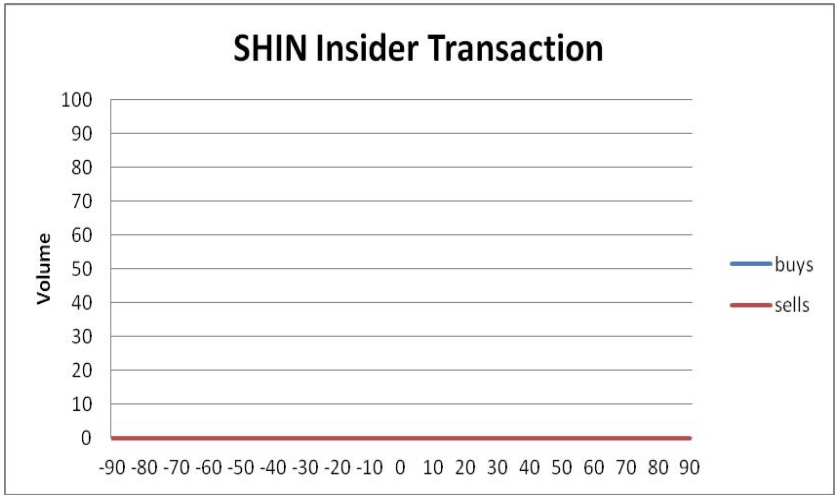
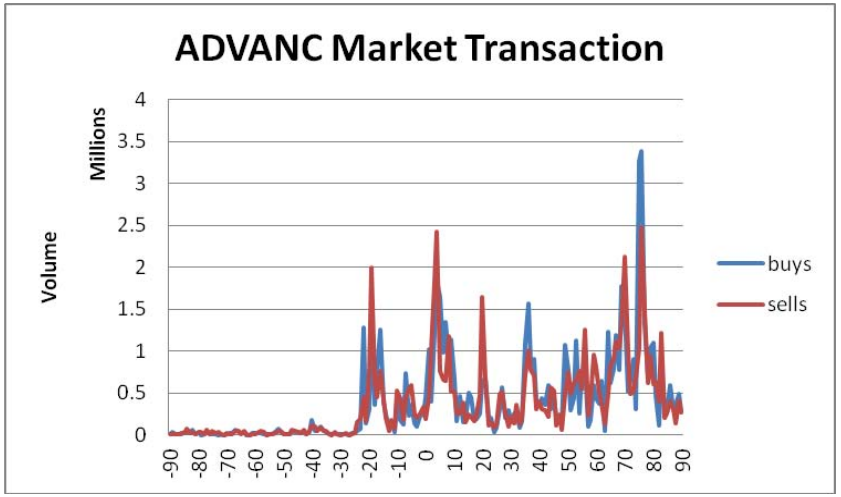
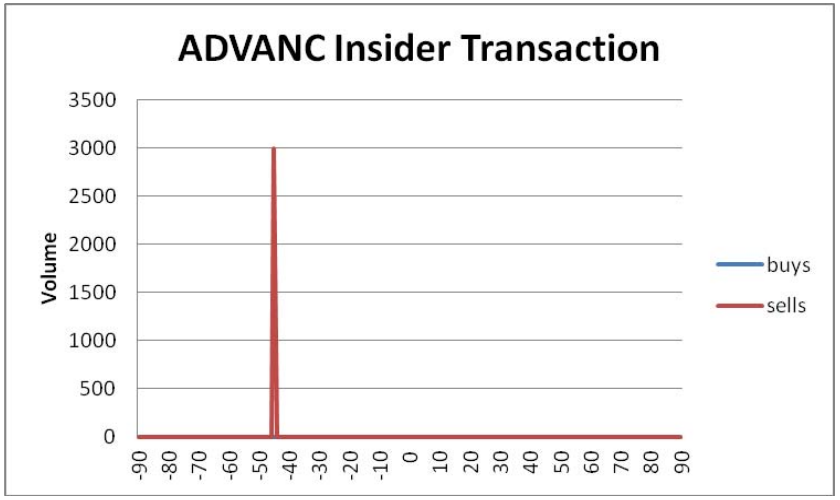
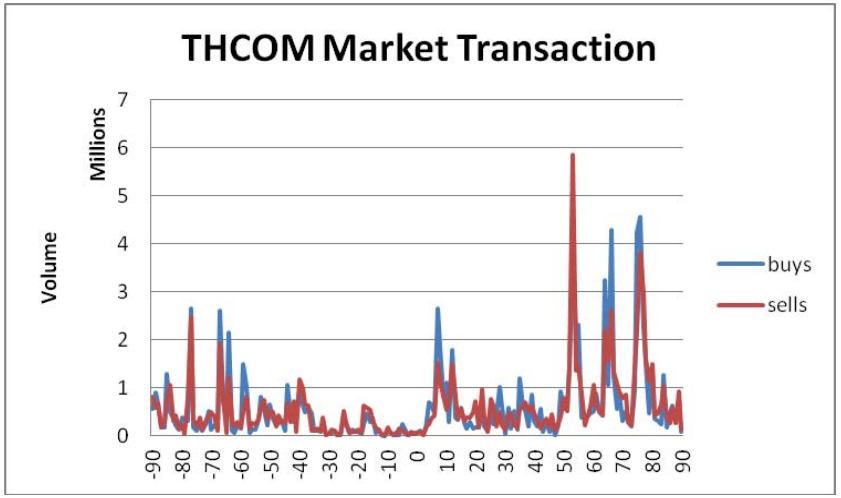
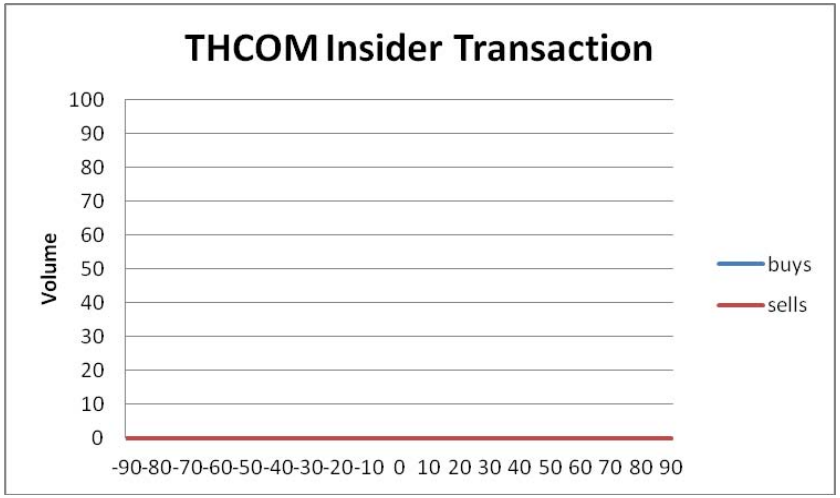



Figure 4 - Continued



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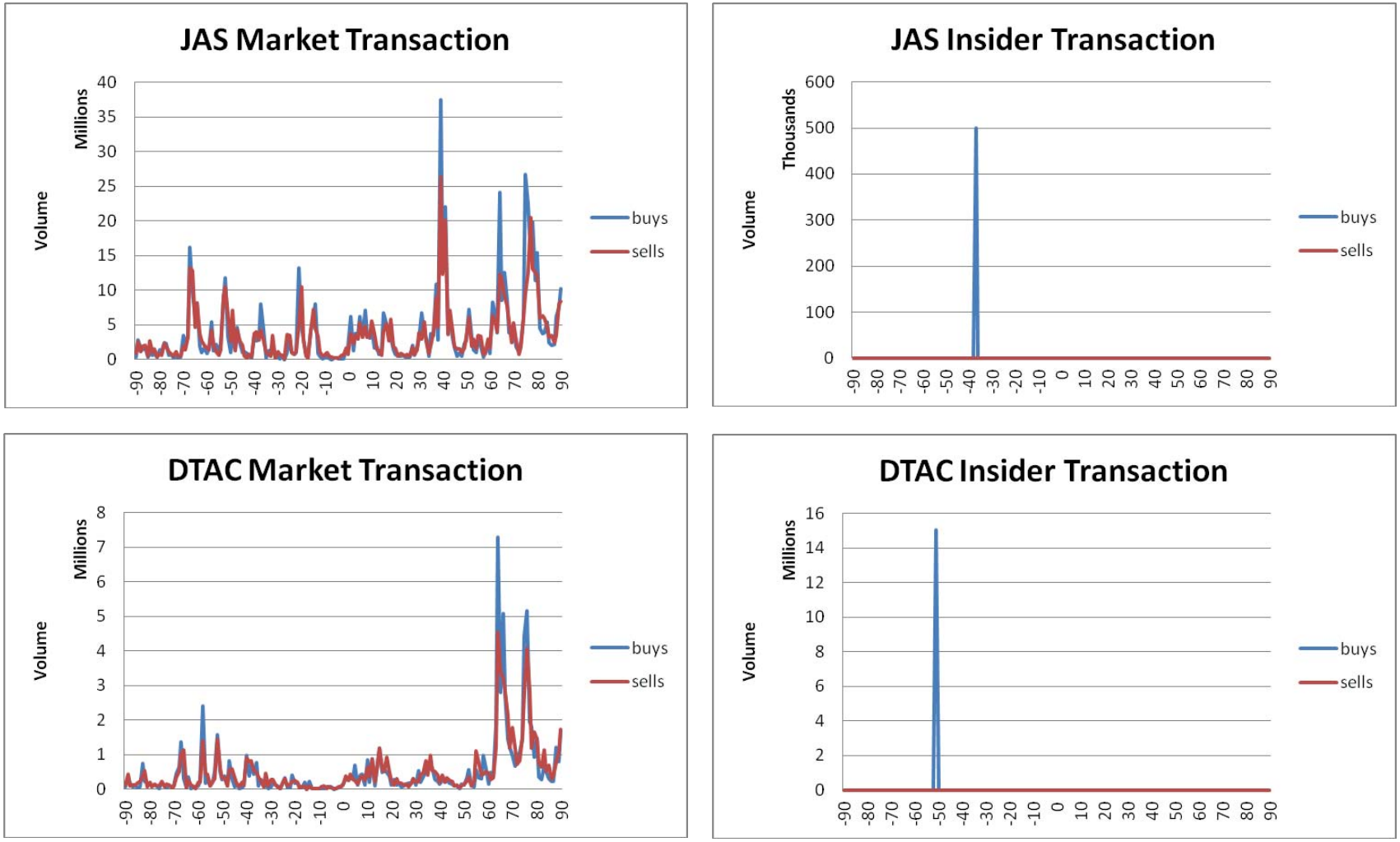

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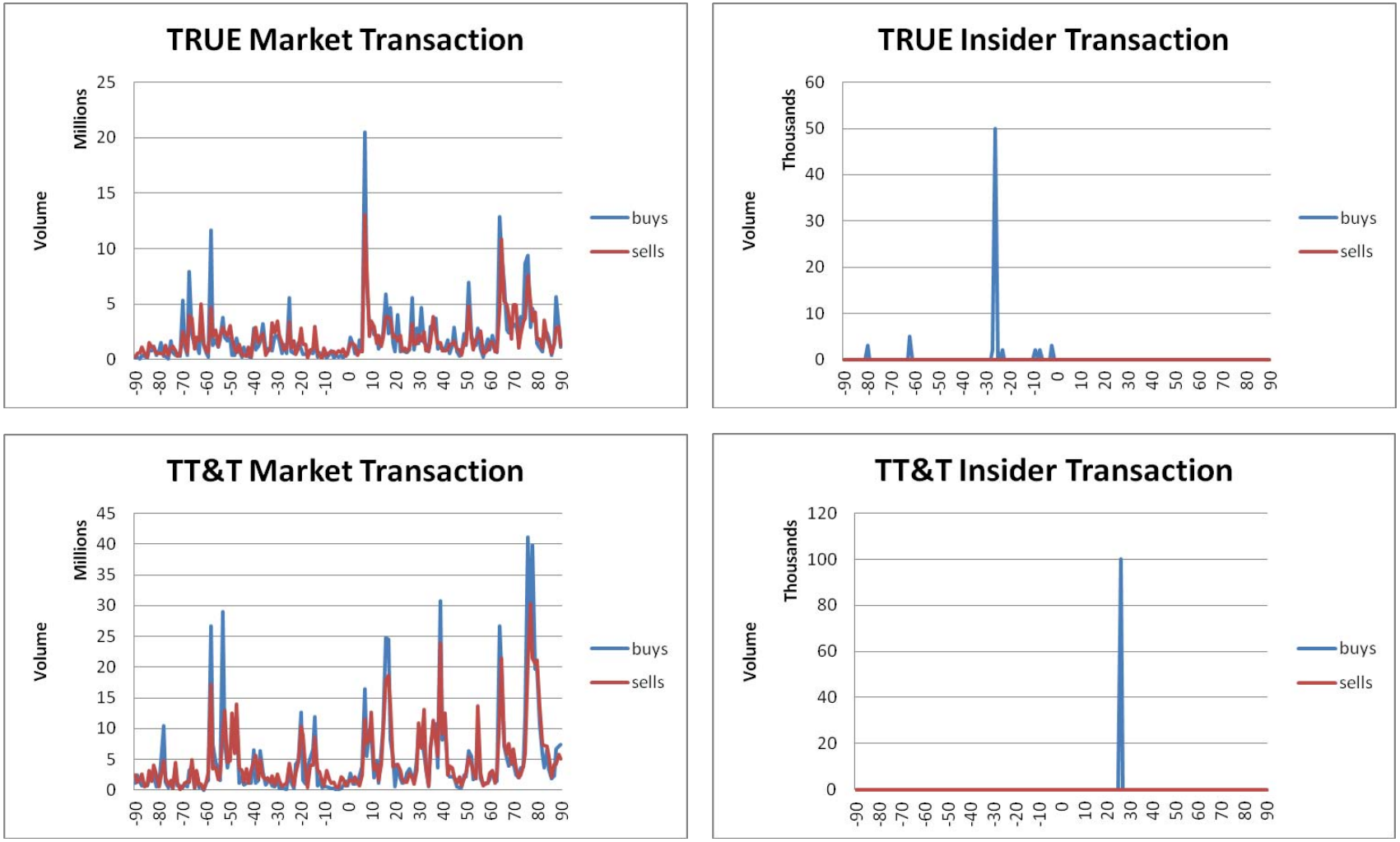
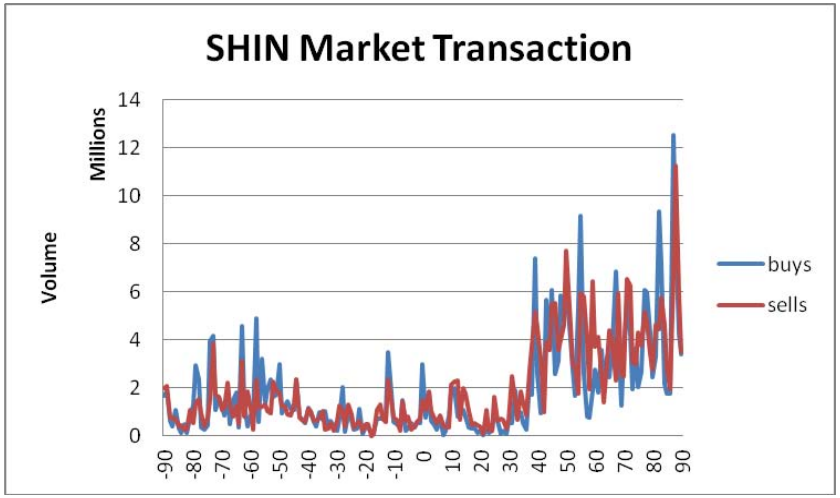
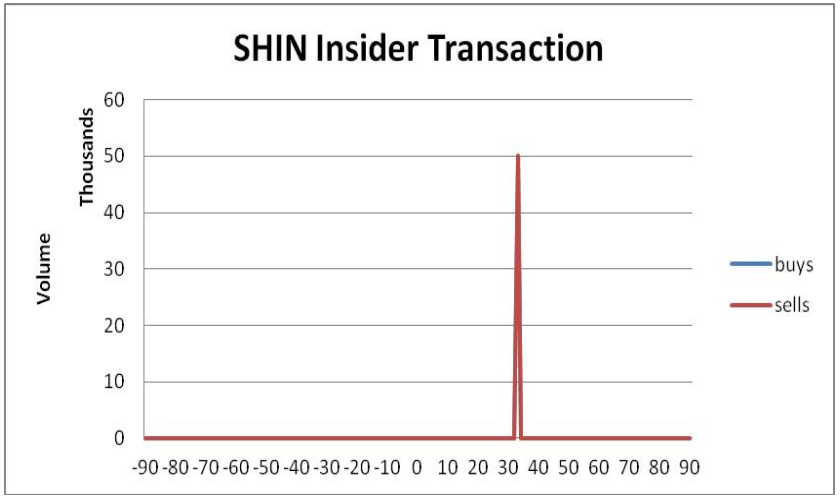


Figure 5

Telecommunications Firm Trading during Telecommunications Concession Contract Modification 2003



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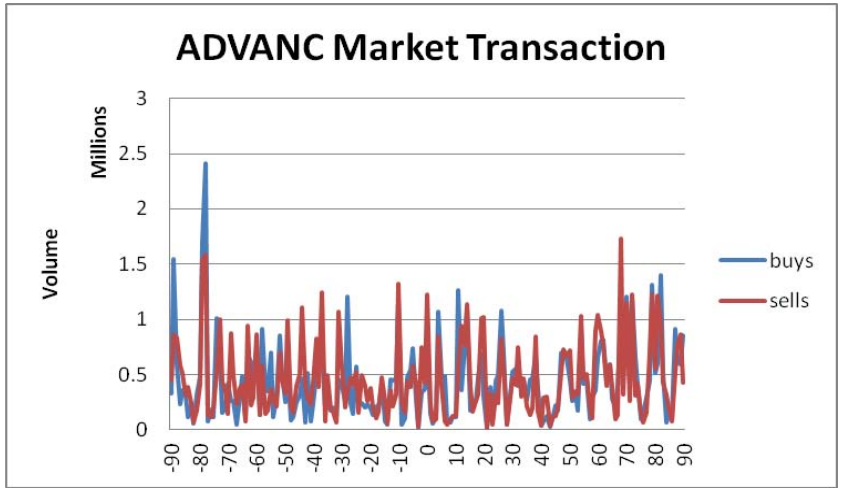


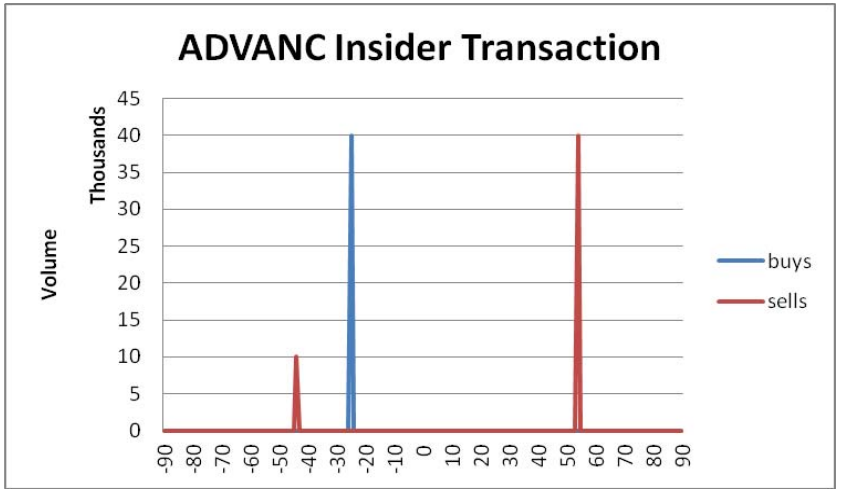


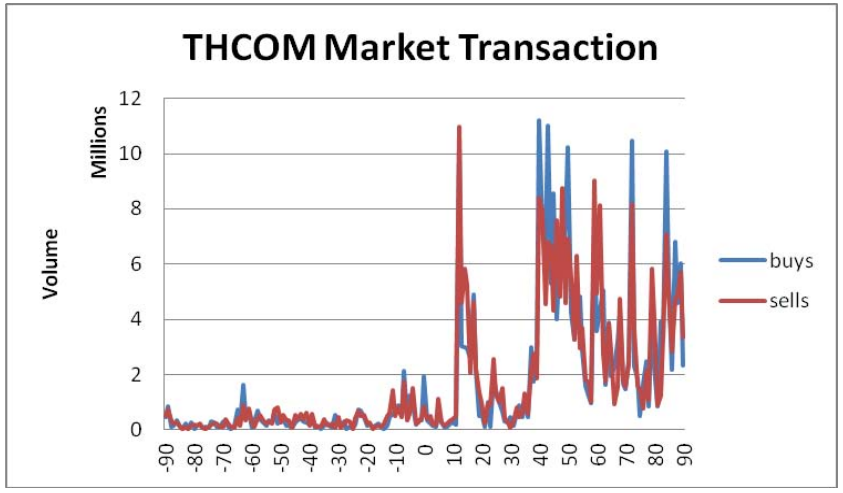


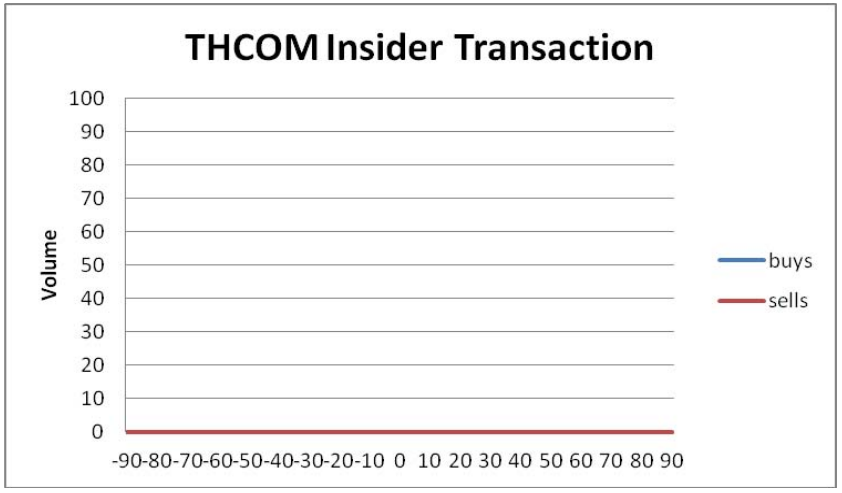

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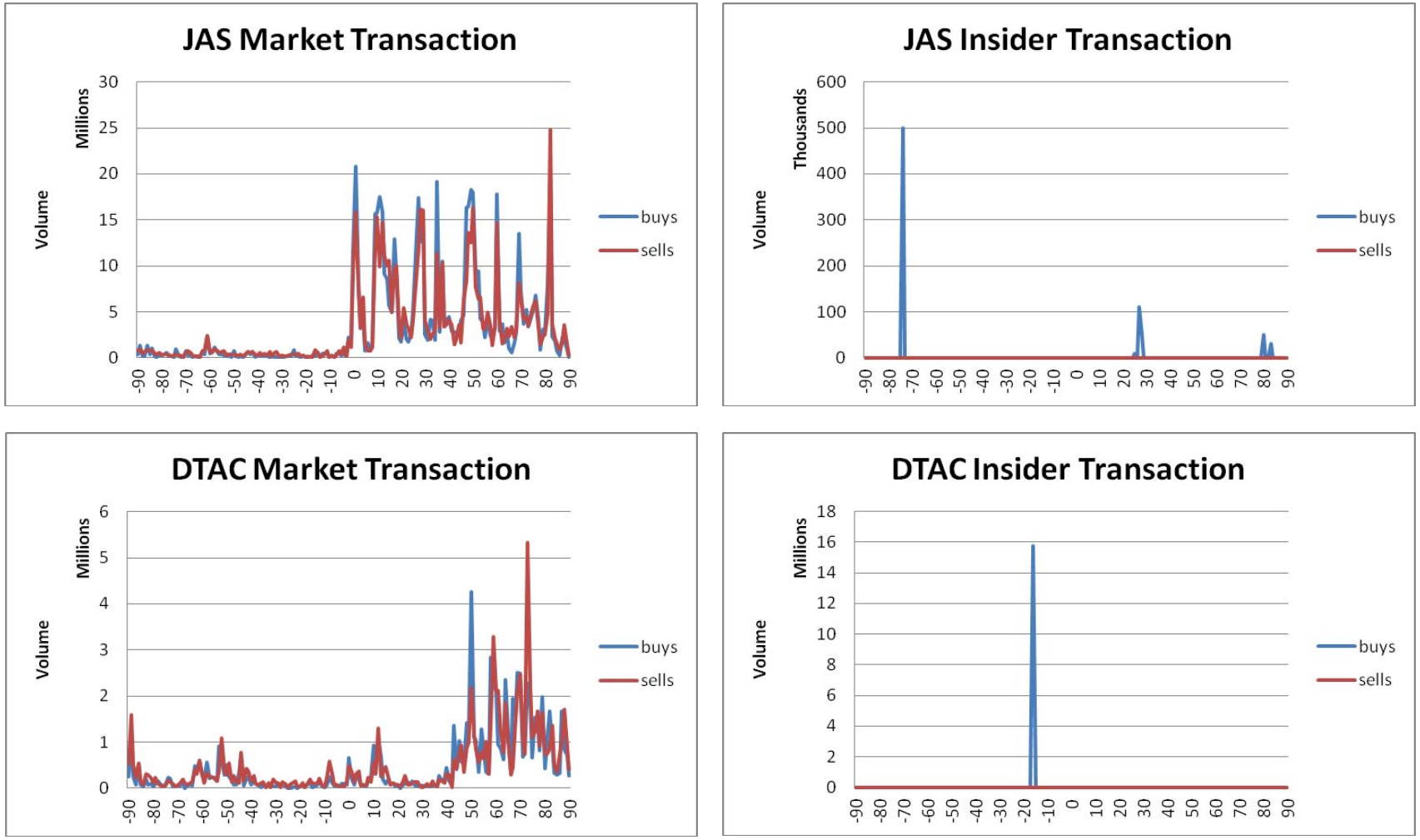

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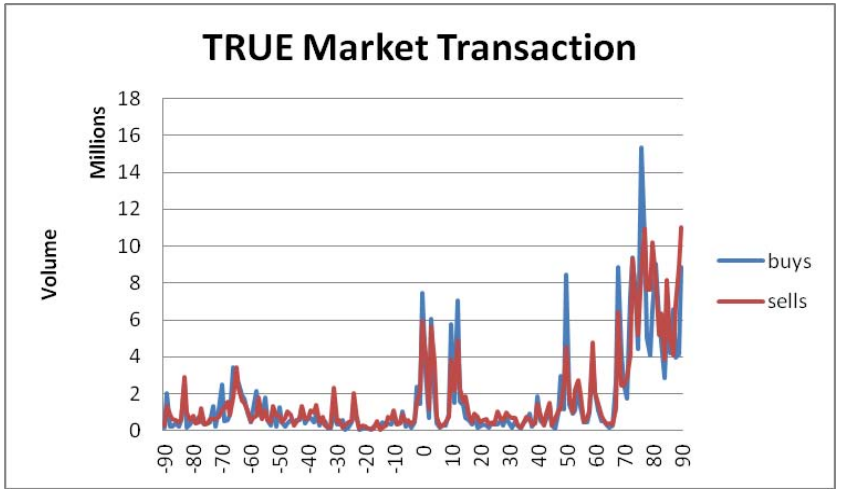
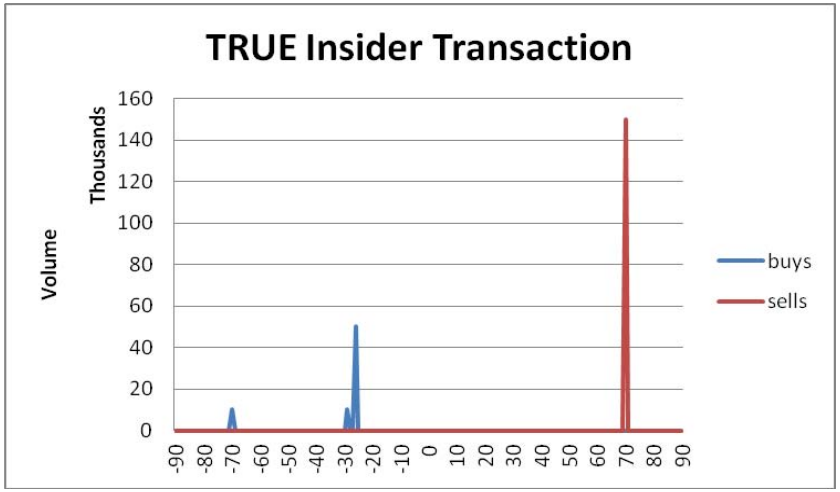
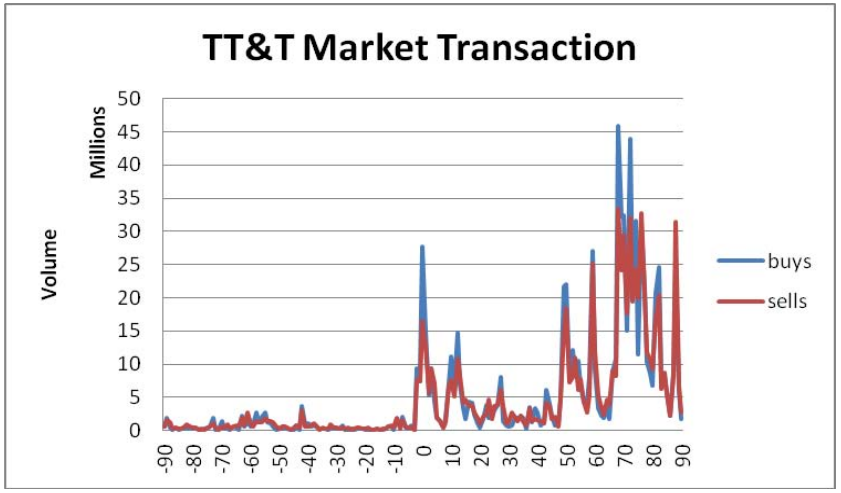


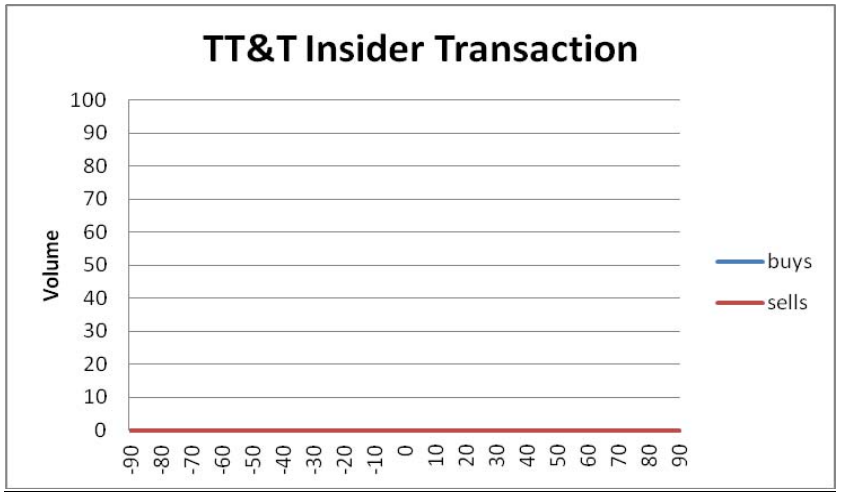



Figure 6

Telecommunications Firm Trading during Shin Satellite Tax Exemption 2003

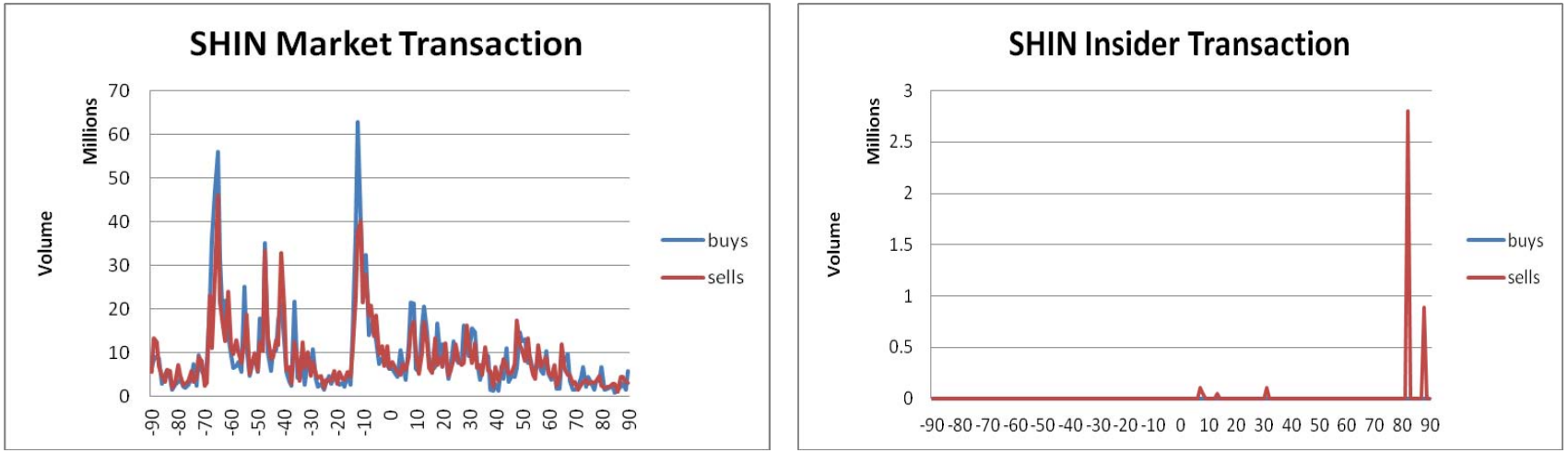
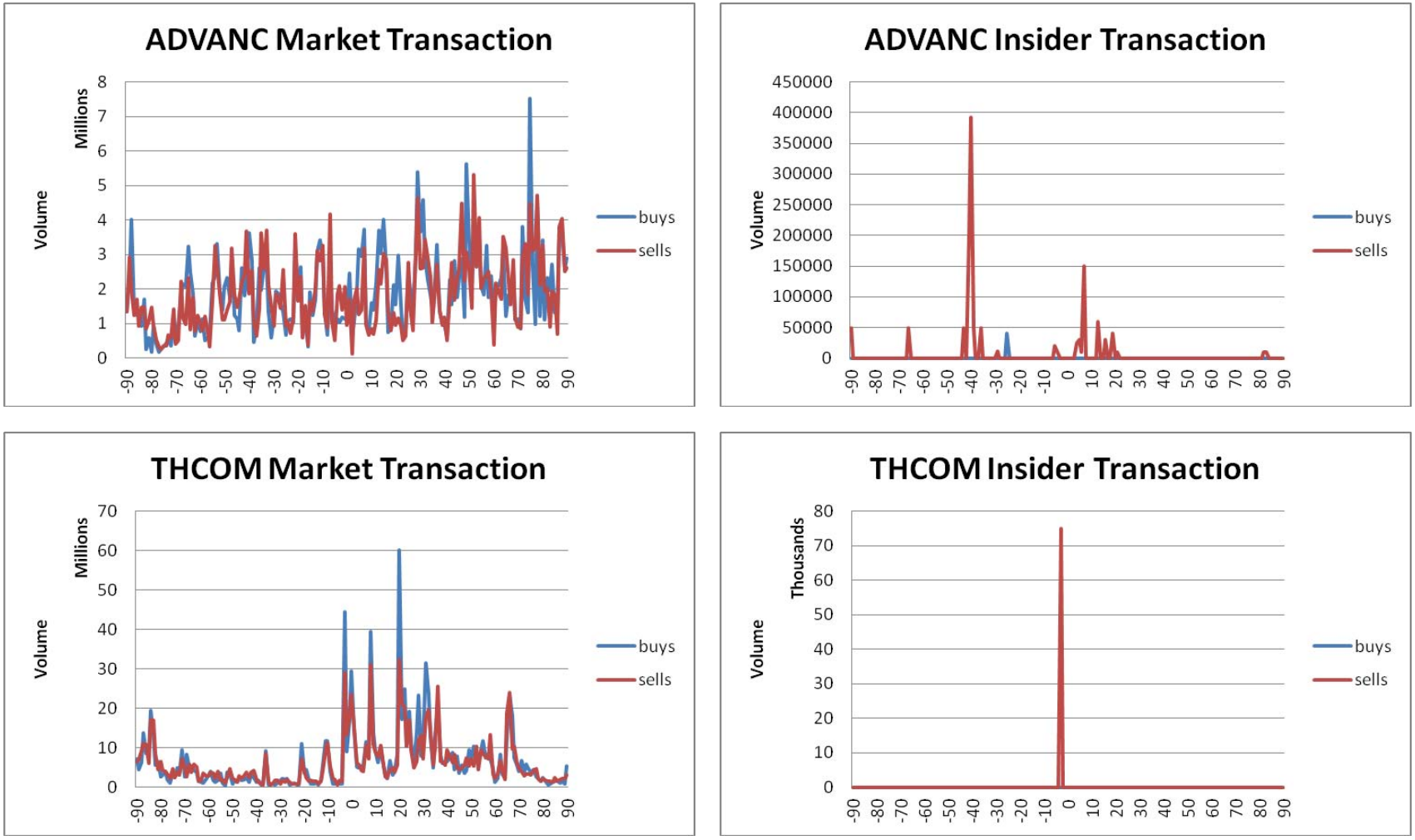


Figure 6 - Continued



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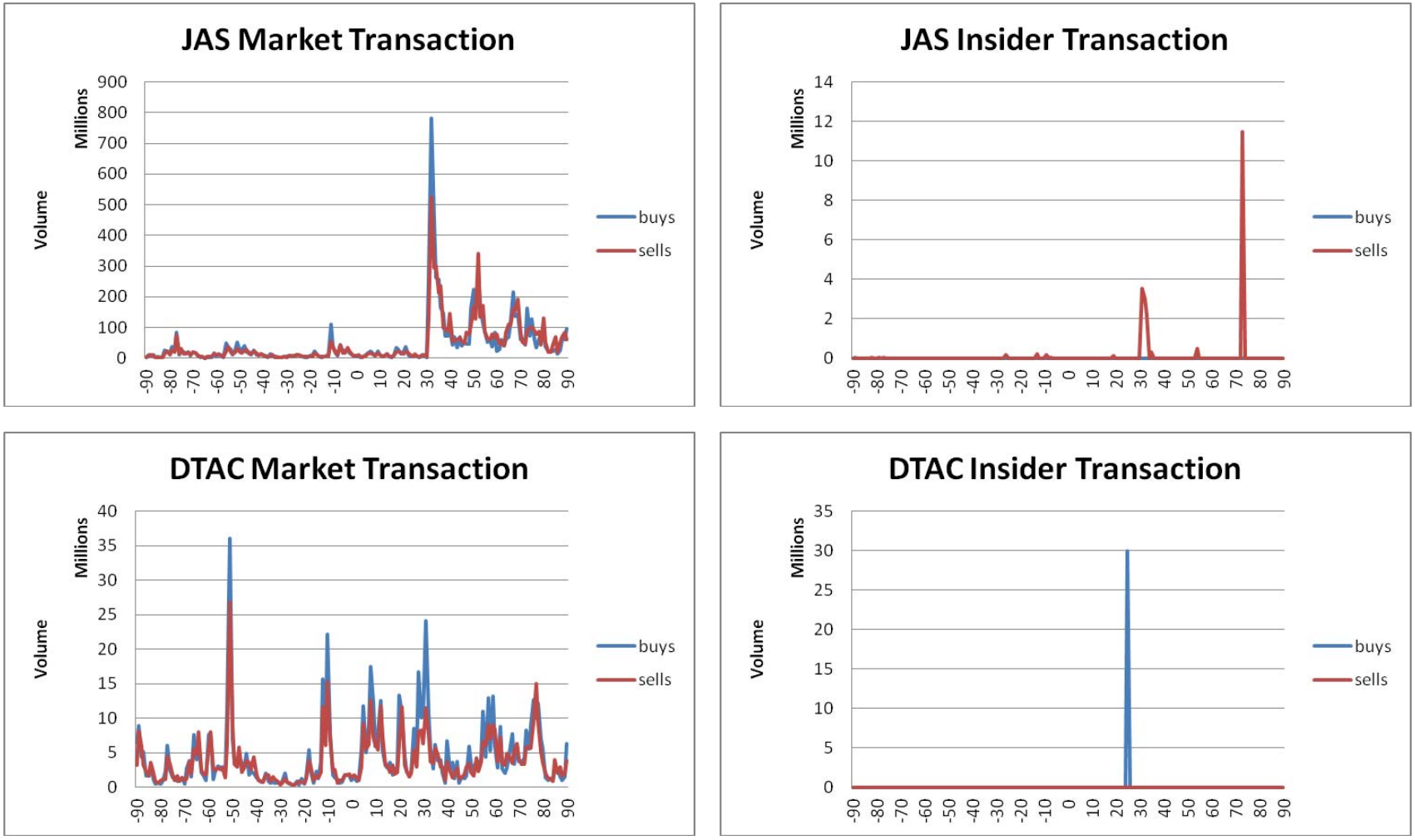

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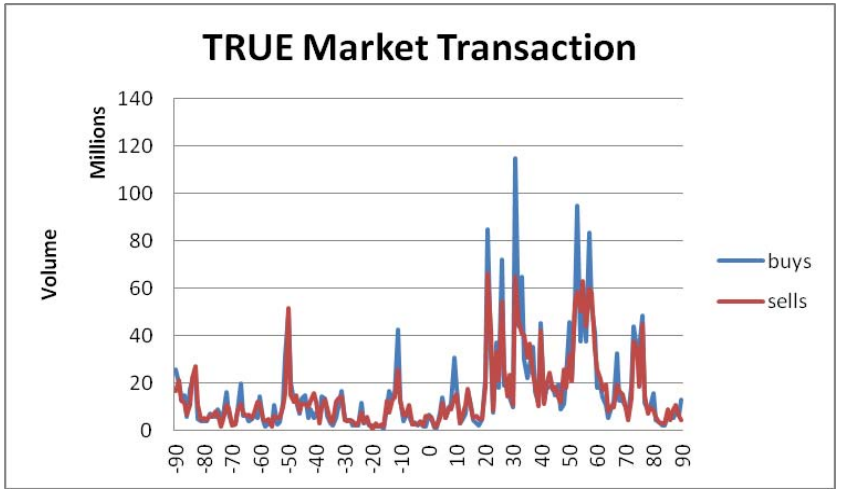
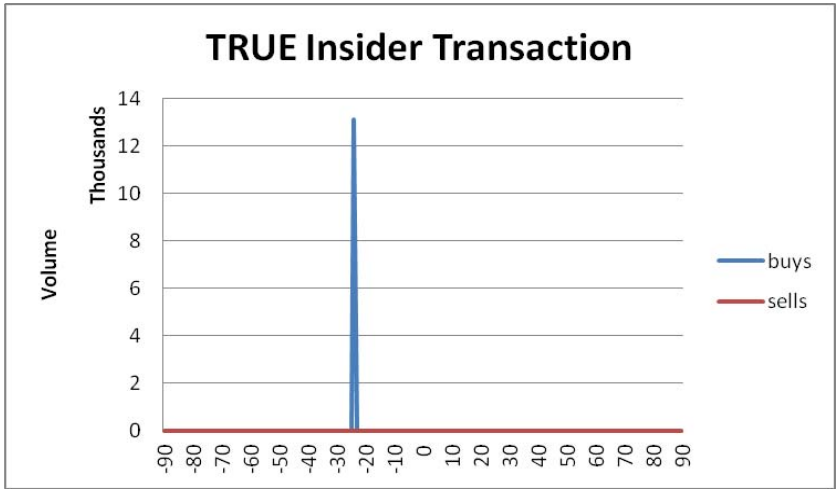
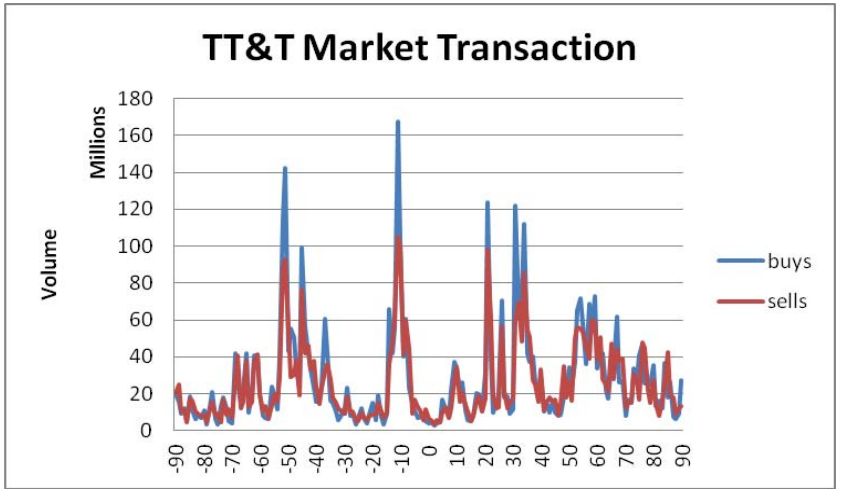


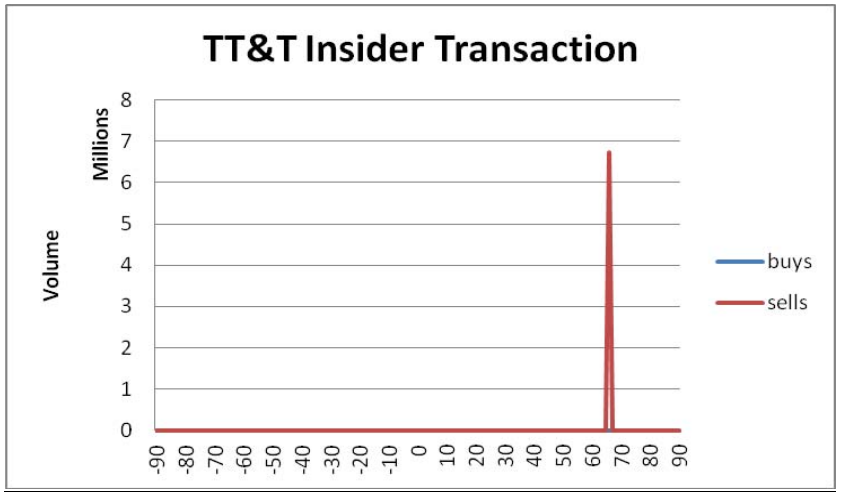
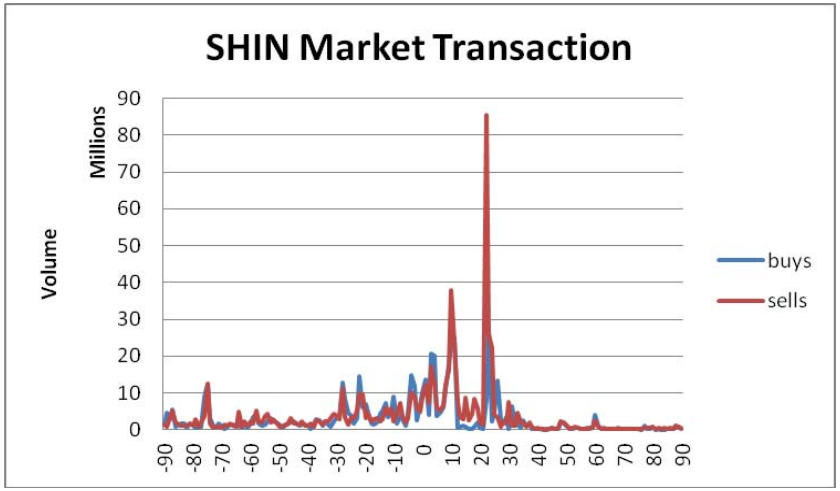



Figure 7

Telecommunications Firm Trading during Telecommunications Business Act 2006



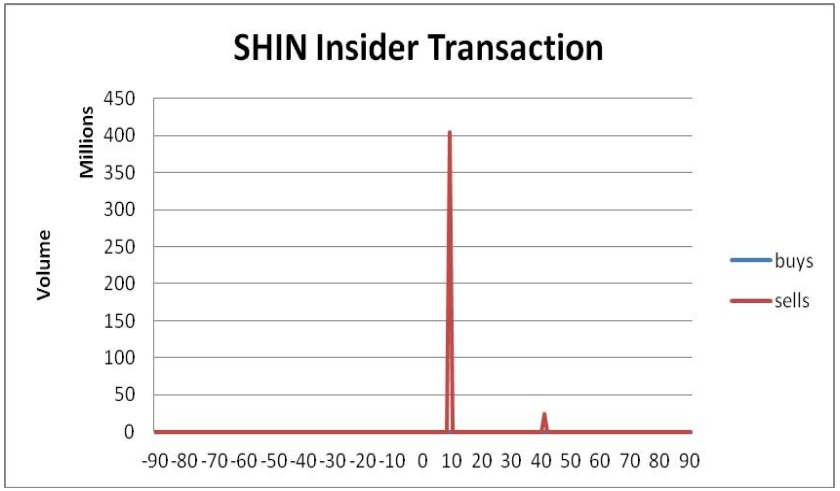
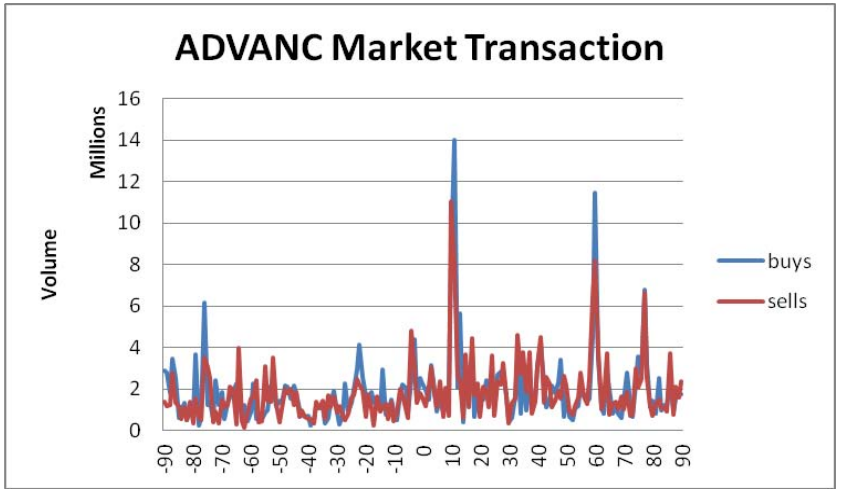
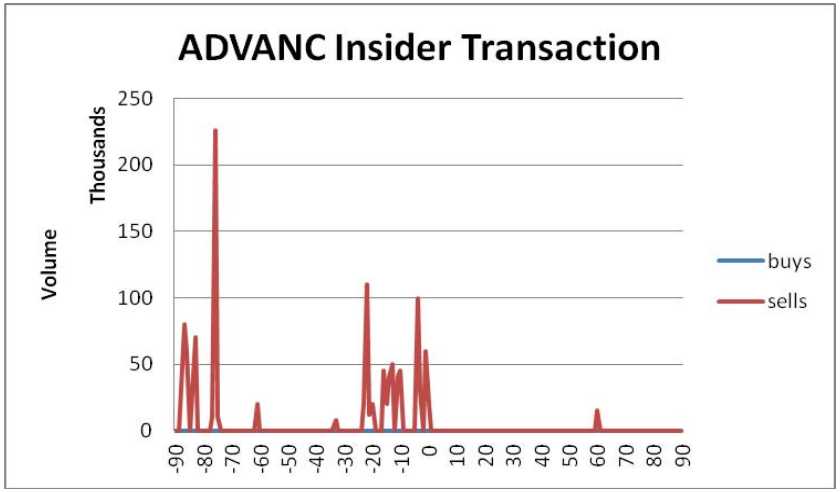
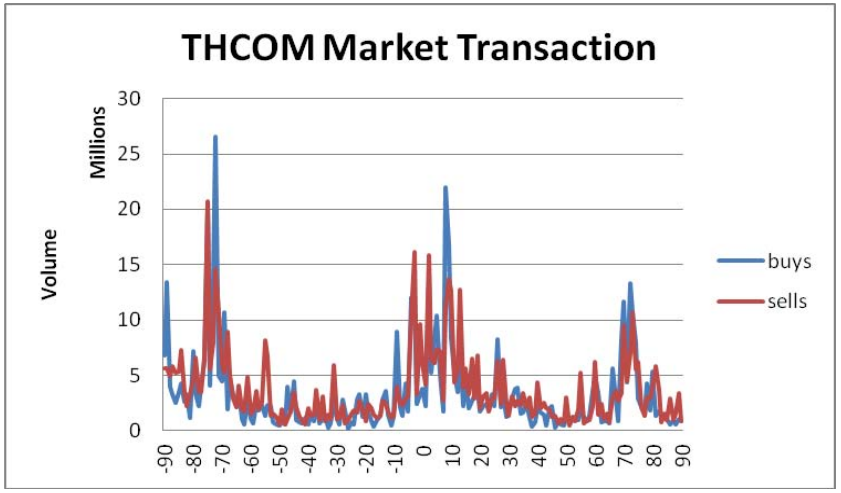
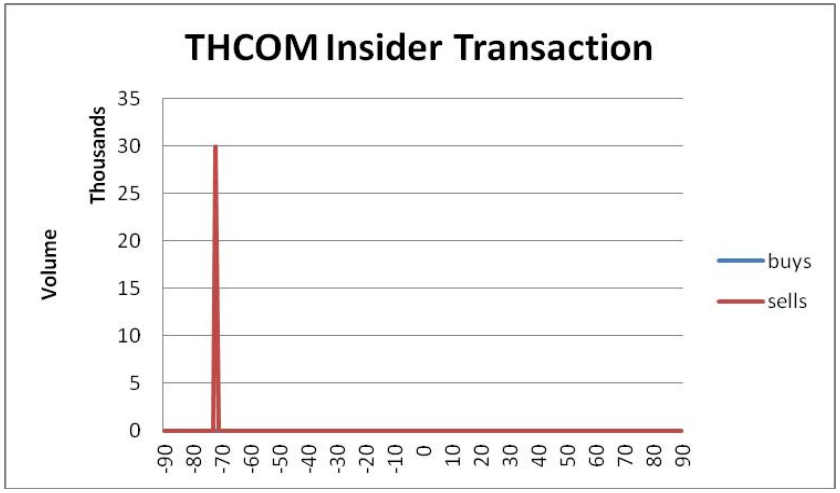



Figure 7 - Continued



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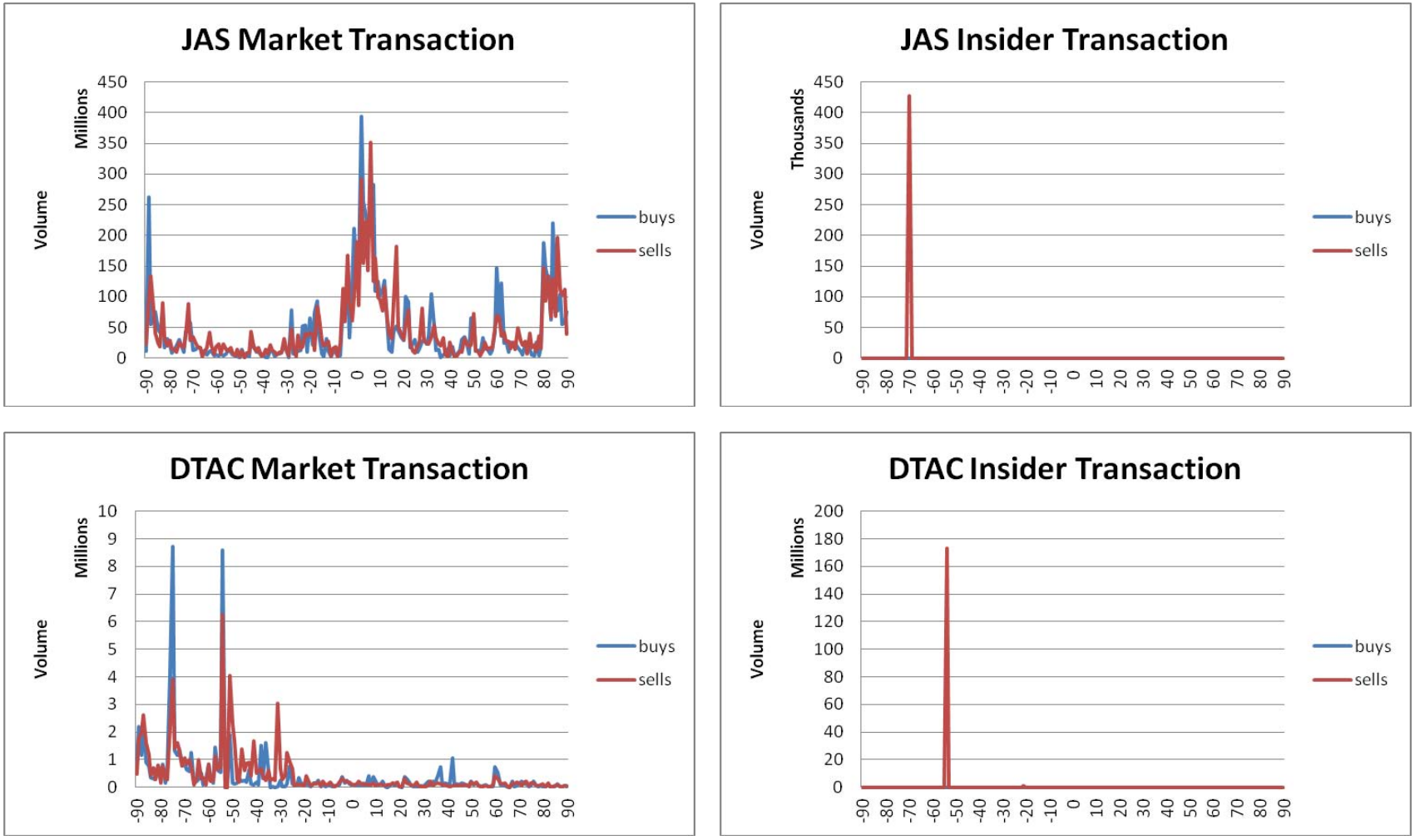
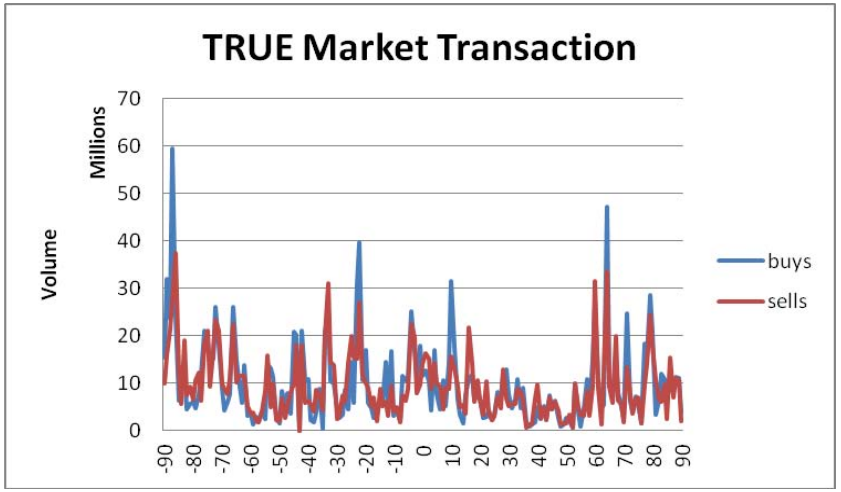
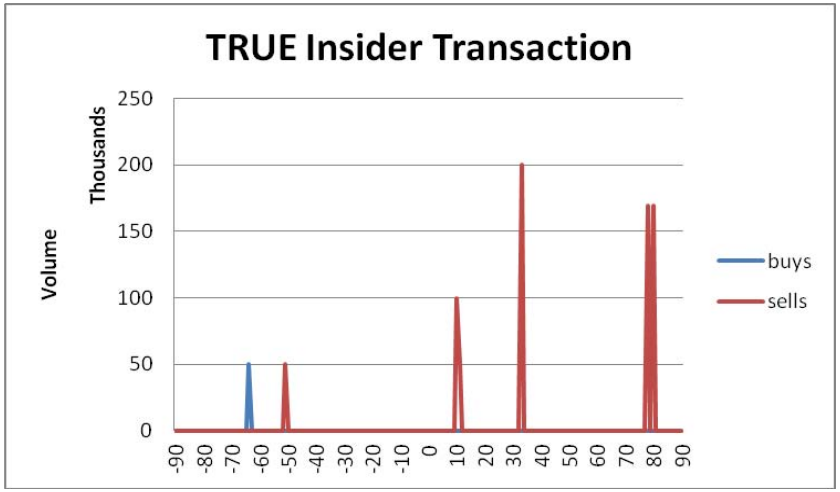
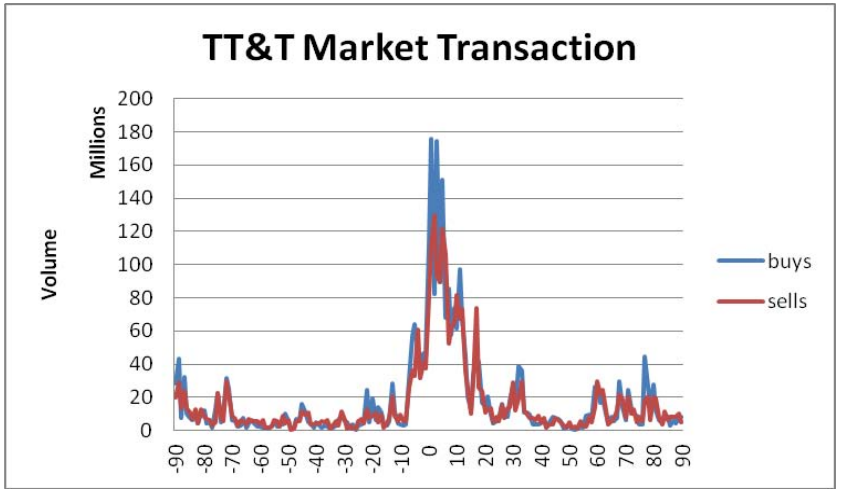
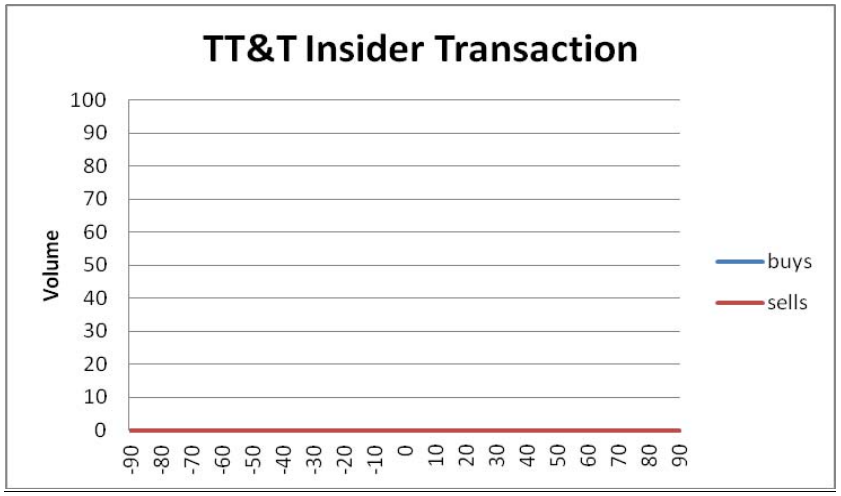


Figure 7 – Continued



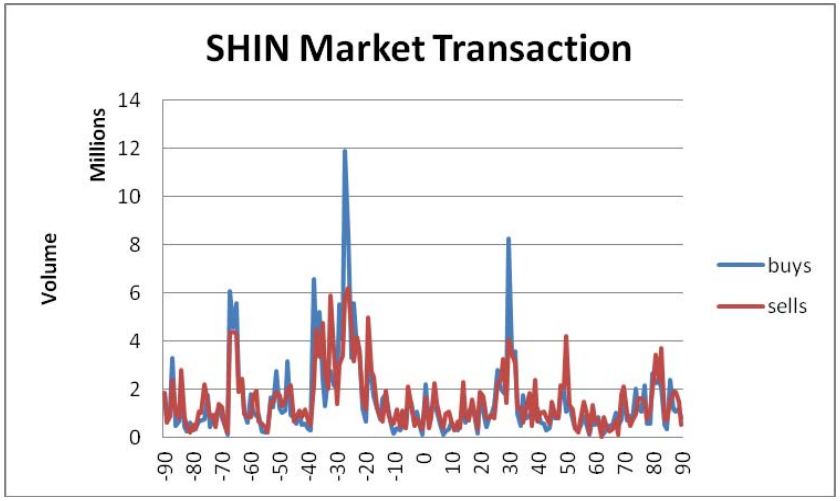



## 6.6 In Depth Examination of Broadcasting Firms

This section is similar to the previous section; however it focuses on broadcasting business. This section examines the trading behavior of two connected firms (SHIN and BEC) and two unconnected firms (POST and GRAMMY) when the ITV concession fee cut was announced by a company executive on 10 April 2002. Since ITV began trading in 13 March 2002, SHIN is used as a proxy. Trading volume for each stock is shown in figure x. From the figure we see that trading in the market is not affected by the event and there is very little trading by the insiders. Firms with insider activity are usually traded far from the event date suggesting that this event does not have substantial impact because it affects a small number of firms.

Figure 8

Broadcasting Firm Trading during ITV Concession Fee Cut 2002



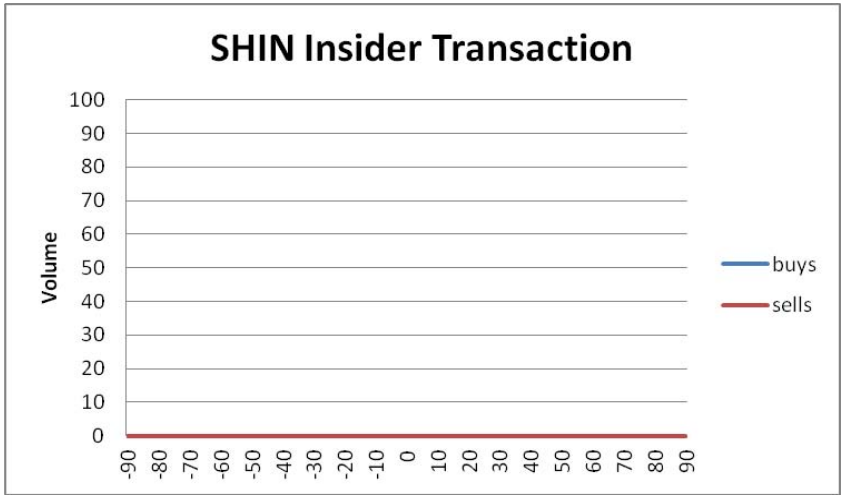



Figure 8 - Continued

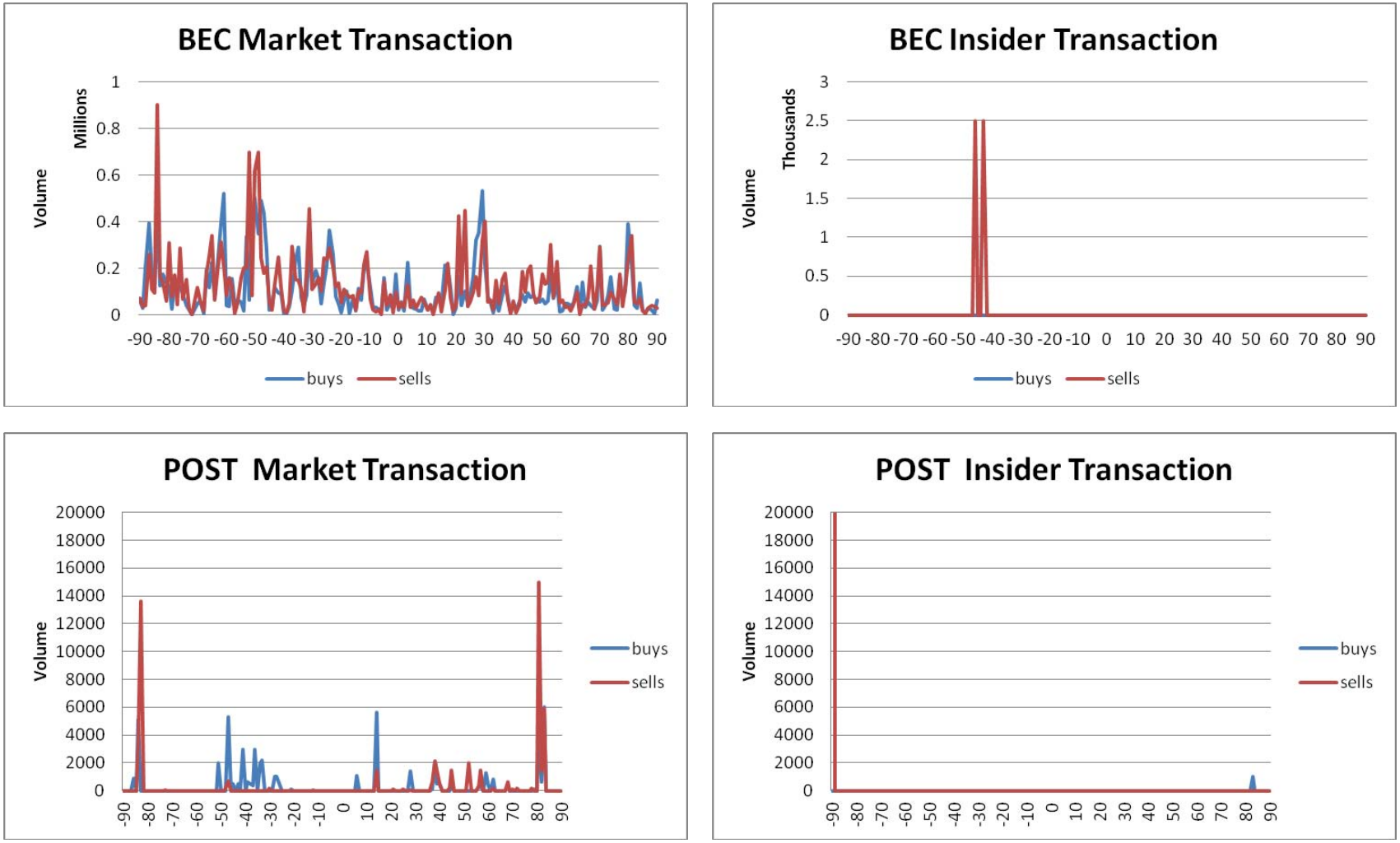
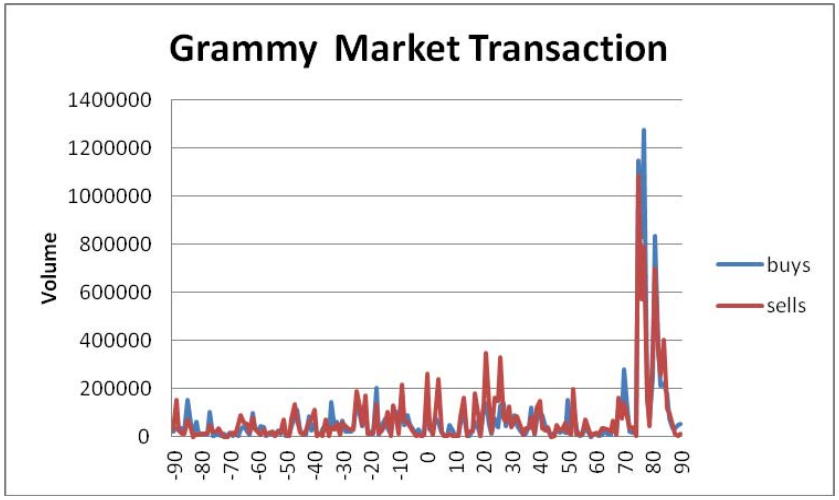
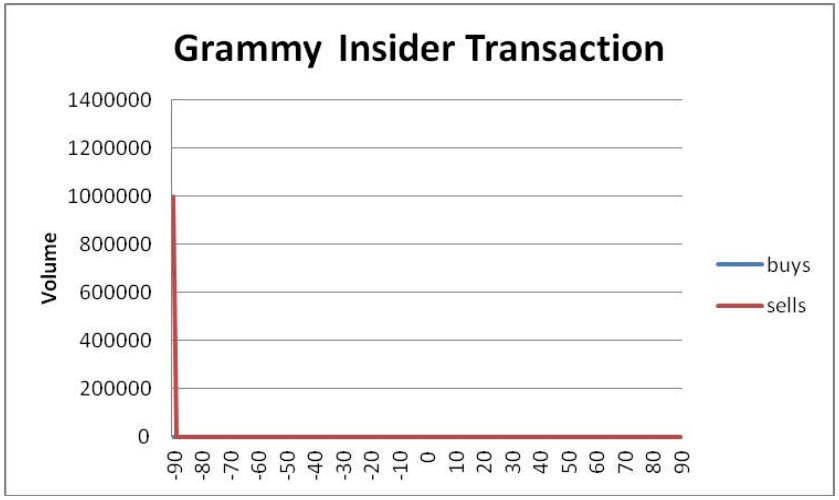


Figure 8 - Continued



# CHAPTER VII
# SUMMARY AND CONCLUSION

This study aims to establish the importance of political connections and its effect on insider trading behavior. To make the effect of political connections more evident, firms were categorized by their political connections and examined during four types political events. The event types include: change in government, change in public policy, display of favoritism, and occurrence of unfavorable events. Different variables such as cumulative abnormal return (CAR), probability of information-based trading (PIN), buy-sell imbalance (BSI), and frequency imbalances (FI) were calculated for the firms in order to describe the behavior. CAR is used to test whether there is a reason to act. The basic concept is that if there is an abnormal amount of return informed traders and insiders would definitely act to gain profit. PIN is used to test the activeness of informed traders. Informed traders are important since insiders are a subset of informed traders. PIN will capture insiders that act through proxies. BSI measures the buying and selling preference of insiders by looking at the volume, while FI looks at the frequency. In addition to the variables, five hypotheses were made to test the difference between connected firms and unconnected firms. The null hypothesis for the five hypotheses is that there is no excess trading in connected firms relative to unconnected firms. In other words the null hypothesis states that political connection does not matter therefore there should not be any difference in behavior between connected and unconnected firms.

During the change in government political connections did not matter. There was no clear motivation for insiders to act since there was no significant positive CAR. Additionally there was no difference in informed trader activity between connected and unconnected firms. Specific tests on insider trading also found that there was no difference in buying or selling preference between connected and unconnected firm volume-wise or frequency-wise.

As for insider behavior during change in public policy, there was positive CAR in the difference between a government and opponent portfolio in one event. This is not strong evidence since other events were not significant. Looking at informed

trader activity between connected and unconnected firms did not yield any significant results. Further analysis into insider activity found that insiders in government firms are selling to take profit after change in public policy. Additionally, insiders in opposition firms try to avoid loss that will result from the new policy by selling beforehand. This suggests that insiders have prior access to some significant information. Since most of the policies focused on the telecommunications sector, telecommunication firms were examined in detail. I found that the event did not actually affect insider trading heavily and that the results using different proxies might be influenced by the connected firms in the non telecommunications sector.

When the government displays favoritism towards a firm, political connection had no affect on information-based trading activities and little affect on insiders. Insiders in government firms react in the same manner as unconnected firms which suggest that a political connection does not matter. However this is not true in opposition firms where insider prefer to sell both before and after the event; this hints that they have material non-public information beforehand. Even though the proxies suggest that insiders are abusing their information, a specific look into broadcasting firms and telecommunications firms suggest that there is no foul play and that the results might be affected by non telecommunications and non broadcasting connected firms. Finally, when unfavorable events occur there was also abnormality in informed trader activities. However for insiders in government firms prefer to sell before the event, which suggests that they had prior knowledge of the event and is trying to avoid loss. Insiders in opposition firms probably did not have access to information beforehand so they react after the event.

In conclusion it appears that political connections in firms are not as significant as expected. Results from CAR did not suggest that there is strong motivation for insiders to act in every event while PIN suggests that insiders in Thailand are not acting through any proxies since there are no significant differences between information-based trading in connected and unconnected firms. This result is contradictory to various other studies which found significant evidence of political benefit. Even though empirical test from PIN does not support the hypothesis that

political connections matter, it is not 100 percent reliable because of the sensitivity of the probability of information-based trading model. The model is extremely sensitive and the values in the likelihood functions often do not converge resulting in missing values. The most unexpected result is that empirical evidence suggests that insiders in connected firms do not act differently from the market and that there is very little trade during the events.

Even though insiders do not trade; it does not mean that the problem of corruption is not severe in Thailand. The insiders that use proxies still exists but might not be detected by the PIN model used in this study. Additionally, the insider trading data on form 59-2 is declared by the insiders themselves and is definitely subjected to bias. Employee stock options were also not included in this study which can also cause bias. The reason for this is because there is a blur between ownership and control which allows insiders to assign employee benefits. The employee benefits could be designed to be exercised right before the events, which is why there is no evidence that insiders are not acting before the events. To obtain a more definitive result, this study could be repeated when unbiased insider trading data, a model designed for markets with a concentrated ownership is available, and firm employee benefits data are available.

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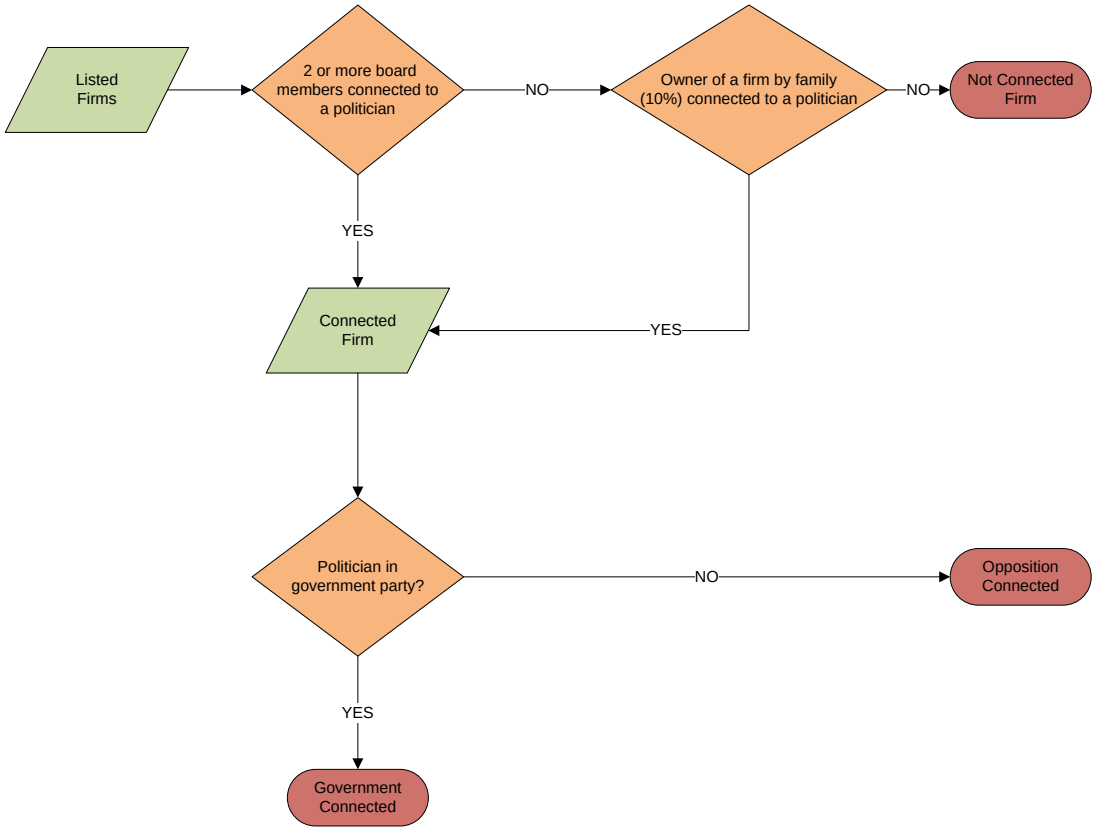
# APPENDICES

# Appendix A: Firm Connection Logic

The following diagram shows the logic to identifying firm connections. The pool of listed firms is separated by their board connections and major shareholder to identify connected firms and non connected firms. The connected firms are further separated by their political party into opposition and government connected firms.



## Appendix B: Comparing Government Connected Firms Before and After

This section focuses on the comparison of government firms before and after each type of event. Even though there was no excess trading by insider in government firms in many events, this group warrants further examination because they should be the most sensitive to political events. The result of the comparison in the table below is arranged into four panels. Panel A, B, C, and D describes the differences during change in government, change in public policy, display of favoritism, and unfavorable events respectively. The results show that there is no difference in trading preference during change in government and display of favoritism, while there is significant difference during change in public policy and unfavorable events. Insiders are selling more after change in public policy; this is consistent with the comparison against the control group in the main paper. During unfavorable events insiders are selling more after, this means that even though there is excess selling before the event, government insiders are still selling after the event.

**Comparison of government firms before and after**

The table reports the comparison of government firms before and after each event using Welch's T-Test. Two proxies were used which were buy-sell imbalance (BSI) and frequency imbalance (FI). The first p-value is the result of a one-tailed test with an alternate hypothesis where government firms has greater BSI / FI before, while the latter is the alternative hypothesis where government firms has less BSI / FI before.

**Panel A: During change in government**

| | BSI | FI |
|---|---|---|
| Degrees of freedom | 74.8 | 75.1 |
| T-stats | 0.73 | 0.76 |
| P-value ($H_a$:diff>0) | 0.87 | 0.77 |
| P-value ($H_a$:diff<0) | 0.13 | 0.23 |

**Panel B: During change in public policy**

| | BSI | FI |
|---|---|---|
| Degrees of freedom | 52.4 | 52.6 |
| T-stats | -1.74 | -1.42 |
| P-value ($H_a$:diff>0) | 0.96 | 0.92 |
| P-value ($H_a$:diff<0) | 0.04 | 0.08 |

**Panel C: During display of favoritism**

| | BSI | FI |
|---|---|---|
| Degrees of freedom | 28.9 | 28.9 |
| T-stats | 0.21 | 0.19 |
| P-value ($H_a$:diff>0) | 0.58 | 0.58 |
| P-value ($H_a$:diff<0) | 0.42 | 0.42 |

**Panel D: During unfavorable events**

| | BSI | FI |
|---|---|---|
| Degrees of freedom | 52 | 52.7 |
| T-stats | 2.29 | 2.65 |
| P-value ($H_a$:diff>0) | 0.99 | 0.99 |
| P-value ($H_a$:diff<0) | 0.01 | 0.01 |

# BIOGRAPHY

Mr. Thana Rakbancha was born in September 29, 1986. He attended Ruarmrudee International School and received his high school diploma in 2004. After high school, he decided to pursue a bachelor's degree in Computer Science at Mahidol University International College. After receiving his bachelor's degree in 2008, he went to work as a programmer at Digital Associates for two years. He decided to enroll in the Master of Science in Finance at Chulalongkorn University in 2010.