

## **Opportunistic Insider Trading during the Trade War**

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# Opportunistic Insider Trading during the Trade War

**Abstract:** This paper analyses the opportunistic and routine insider trading at all US companies during the trade war of 2018. The baseline results indicate the positive relation between opportunistic insiders and holding period returns during the trade war. These relations are the same for opportunistic trades instead of insiders during the same period. In addition, the insider's political connection indicates that opportunistic insiders are more profitable than routine insiders during the trade war. We also find that opportunistic females (insiders) and CEOs generate higher holding period returns from insider trading than opportunistic males (insiders) and directors. We also find that highly (lowly) compensated insiders and insiders of the technology (financial) sector generate higher holding period returns from insider buys (sells) than lowly (highly) compensated insiders and insiders of other sectors. All results suggest that opportunistic insiders can have a significant information advantage regarding the declaration of the trade war and the impact of this war on the stock market and firm performance, and that information can facilitate them to behave opportunistically.

**Keywords:** Opportunistic Insider Buy (Sell), Routine Insider Buy (Sell), Political Connection, Trade War, Asymmetric Information and Holding Period Returns.

## 1. Introduction

Opportunistic insiders are non-routine traders because they do not participate in seasonal trading over the years. These insiders may have a piece of significant information regarding the declaration of the trade war, the impact of this war on the stock market, and firm performance before available this information is to routine insiders, and that information can facilitate them to behave opportunistically; informed trading to earn more future returns (e.g., (Jagolinzer et al., 2020; Ali and Hirshleifer, 2017; Cohen et al., 2012)). This earning possibility increases due to some exogenous events, such as the financial crisis (e.g., (Jagolinzer et al., 2020; Cziraki, 2018)). The trade war is also an exogenous event that may create uncertainty in the economy. The trade war or economic policy uncertainty increases information advantage and significantly impacts financial markets (El Ghouli et al., 2022). Consequently, opportunistic insiders can take advantage of information during the trade war because regular or routine insiders are more distracted at that time. Generally, routine insiders may trade for a piece of reasons such as liquidity demand or diversification reasons (e.g., they sell their shares to fulfill their liquidity needs (Cohen et al., 2012)) which signal that the routine insider is not trading on information (e.g., Drummond David of Alphabet Inc). Additionally, routine insiders buy the shares after receiving the bonus from the firms since bonuses are generally paid in the same month each year, and

they often get discount plans on their firm's stock. The routine insiders buy in the same calendar month of each year which is common and often uninformative. In this research, we investigate whether opportunistic insiders are truly informative and more profitable by a particular form of opportunism-informed trading during the trade war of 2018. We expect that opportunistic insiders use the information advantage and make higher holding returns during that time. The uniqueness of this study is to focus on opportunistic and routine insider trades during an exogenous event like a trade war. By considering the information advantage, we measure the informativeness of insiders' trades based on the predictive ability for future performance in this study.

Notably, there was no other major event (e.g., economic uncertainty) during the trade war period in 2018. Thus, the consideration of trade war time is free from other exogenous events such as the financial crisis, the interim election or a pandemic like COVID-19. Considering all the factors, the findings of this study are robust. Overall, these findings suggest that opportunistic have the information advantage that insiders generate larger returns. To strengthen this finding, we consider the insider trades which are reported to US SEC timely. The findings from this study are remarkable in the current stock market environment, where the government plays an active role in USA capital markets. However, insider trades are less informative in the presence of stronger incentives to monitor (Fidrmuc, J.P. et al., 2006), while poor external governance is associated with more profitable trades (Ravina and Sapienza, 2010). Therefore, we encourage other investors and capital market regulators to monitor opportunistic insider trades.

Precisely, this paper examines whether opportunistic insiders participate in informed trading – opportunistic behaviour during the trade war and generate higher holding returns.

## **2. Literature Review**

Insiders possess privileged information about their firms. Prior studies show that insiders earn abnormal returns by this information advantage about their own firms (Jagolinzer et al., 2020; Cline et al., 2017; He and Rui, 2016; Rogers et al., 2016; Cohen et al., 2012; Tavakoli et al., 2012; Ravina and Sapienza, 2010; Fidrmuc, J. et al., 2008; Marin and Olivier, 2008; Fidrmuc, J.P. et al., 2006). In addition, insider trades are positively associated with stock price changes (Chakravarty and McConnell, 1999). Few studies explore insider trades by exploiting their information advantage around specific corporate events, such as earnings (Ke et al., 2003), equity offerings (Lee, I., 1997), stock buybacks (Lee, D.S. et al., 1992), dividend initiations (John and Lang, 1991) and mergers and acquisitions (M&A) (Seyhun, 1990).

In this paper, we focus on opportunistic and routine insider trading profitability. The opportunistic insiders may have prior information regarding the declaration of the trade war and their own firm performance during that period, and they may behave opportunistically to exploit the information advantages. Opportunistic trading is more likely profitable when government plays an active role in the

economy during a trade war or financial crisis. According to Ali and Hirshleifer (2017); Cohen et al. (2012), opportunistic insiders had a significant information advantage in insider trading – opportunistically. During the financial crisis, opportunistic corporate insiders engaged in abnormal share trading before publicly announcing the corporate information, which created a vulnerability in the stock market (Jagolinzer et al., 2020). Bank insiders also sold many shares just before starting the financial crisis of 2008 (Cziraki, 2018). Osborne (2004) states that an individual competes for personal interest in any country's economic condition. Following Cohen et al. (2012); Ali and Hirshleifer (2017), we examine whether opportunistic insiders of the USA firms are profitable in informed trading - opportunistic behaviour.

Opportunistic insiders may behave opportunistically during the trade war. They may earn more holding returns than the routine insiders during the same period of the trade war since opportunistic insiders traded to exploit their information advantages (Cohen et al., 2012; Ali and Hirshleifer, 2017). It is expected that opportunistic insiders may also earn more holding period returns to exploit their information advantages during the trade war period. In this research, it is considered that opportunistic insiders are more opportunistic than routine insiders because opportunistic insiders have more chances to observe the firm's future before holding the shares. Opportunistic insider may generate higher holding returns than routine insider if they take buying or selling decisions. We expect the opportunistic insider trading to have an information advantage and generate more holding returns during the trade war. These discussions lead to the following hypotheses:

**Hypothesis 1: Opportunistic insider buys generate higher holding period returns than routine insider buys in the post trade war (six-month) period compared to pre-trade war (six-month) period.**

**Hypothesis 2: Opportunistic insider sells generate higher returns by selling than holding these shares than routine insider sells in the post trade war (six-month) period compared to pre-trade war (six-month) period.**

**Hypothesis 3: Opportunistic insider buys (sells) generate higher holding period returns than routine insider buys (sells) in the first three-month of trade war period compared to the last three-month of trade war period.**

**Hypothesis 4: Opportunistic insiders (based on political connection, gender, age, board position, compensation and sectors) generate higher holding period returns than others (e.g., routine insiders) during the first three-month of trade war.**

**Hypothesis 5: Opportunistic buys (sells) generate higher holding period returns than routine buys (sells) in the first three-month of trade war period compared to the last three-month of trade war period.**

### 3. Data and Method

#### 3.1 Data Sources and Sample Selection

##### 3.1.1 Insider trading

This paper focuses on insider trading between 22 July 2017 to 21 July 2018, inclusive. This range provides a balanced six-month window before and during the trade war period. For this study, we collect the insider trading data from the Thomson/Refinitiv (Table 1 from insider data) database. Consistent with a prior study (Jagolinzer et al., 2020; Cohen et al., 2012), this empirical analysis is restricted to open market transactions (purchases and sales) of common stocks and ignores option exercises, grants, and gifts. This study looks closely at daily transactions aggregated monthly by each insider of 2,843 US firms as consistent with Jagolinzer et al. (2020), given the monthly transactions. It refers to the six months from 22 July 2017 to 21 January 2018 as the ‘pre-trade war period’ and from 22 January 2018 to 21 July 2018 as the ‘trade war period’. Although we classify the trade war period into two periods, from 22 January 2018 to 21 April 2018 as the ‘first three months of trade war (TradewarF3M) period’, from 22 April 2018 to 21 July 2018 as the ‘last three months of trade war (TradewarL3M) period’. In the total time horizon, there were 75,761 daily insider transactions (buy and sell). After collapsing from daily transactions to monthly transactions, the number of transactions reduced to 24,116.

##### 3.1.2 Opportunistic and Routine insiders (trades)

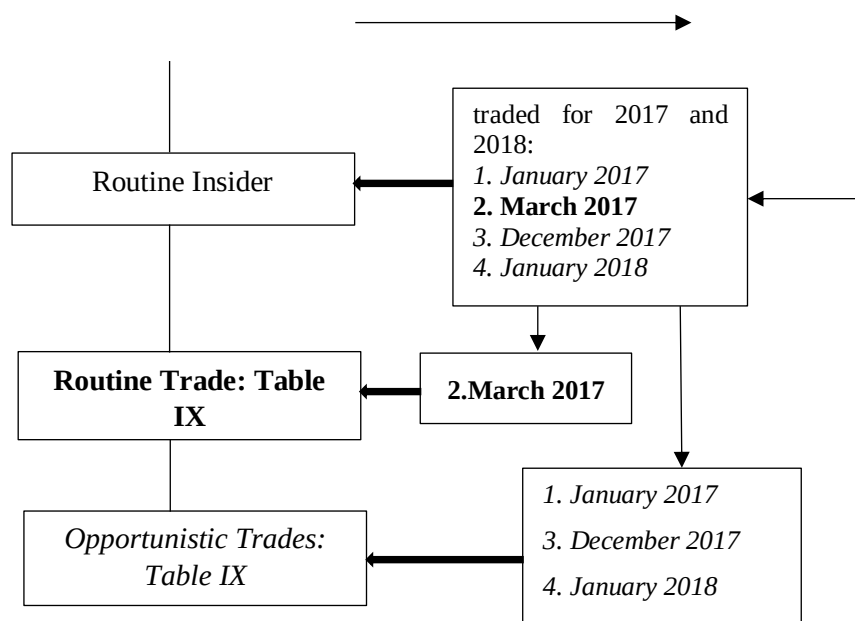
Following Cohen et al. (2012), in Figure 1, we assume that Sam was an insider who traded in March of 2014, 2015, and 2016 (and no other trades in those years). Here are his trades for 2017 and 2018:

1. January 2017
2. March 2017
3. December 2017
4. January 2018

“In all tables of the analysis (i.e., except Table IX), the “routine” trades are trades made by an insider who has had three consecutive calendar years with trades in the same month in the past. In the example above, insider Sam is routine. We would classify all his trades (1 through 4) as those made by a routine insider, and they would enter the tests as routine. In Table IX, we took a slightly different approach in the trade-level analysis. We wanted to differentiate trades that are made in the same month as the month that established an insider as routine from trades that the insider made in other (non-routine) months. In the example above, Sam is routine because he traded for three consecutive years in March. In Table IX, all his subsequent March trades (i.e., trade 2) would be classified as routine. However, trades that Sam makes in months other than March (i.e., trades 1, 3, and 4) would be opportunistic in the context of Table IX.

Sam is an insider

traded in **March** of  
2014, 2015, and 2016



**Figure 1: Identifying Opportunistic and Routine Insider (Trades)**

Some other notes about the classification scheme are as follows. In the results we report in the main tables (e.g., Table V), once a trader becomes routine, he is classified as routine for all of his subsequent trades, regardless of what trading behaviour (or lack of trading behaviour) takes place after his initial three-year classification period. We have experimented with different permutations here, e.g., only using the most recent three-year lagged trading behaviour to define routine traders each year. Finally, in all of the main results, we do check the past three years of trading for all opportunistic traders each year, so they can “become” routine traders at any point. In which case, the opportunistic trader would become a routine trader if he traded in the same calendar month in the past three years and then stay as a routine trader from that point onward as mentioned above.”

### 3.1.3 Security and Financials

We collect the holding period return data from CRSP (WRDS) and accounting data such as market value and common equity from Compustat – Capital IQ (WRDS). To appear in the sample, we require the holding period return at the end of the month and market value and equity (common) at the end of the fiscal quarter.

### 3.2 Variable definitions

We include one dependent variable, two independent, two control, and two instrumental variables in the dataset.

**Table I**  
Definitions of dependent, independent, control and other variables.

| Variable | Abbreviation | Definition and construction | Data source |
|----------|--------------|-----------------------------|-------------|
|----------|--------------|-----------------------------|-------------|

|                                                       |                                      |                                                                                                                                                                                                                                                                    |                                      |
|-------------------------------------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| One-month<br>Holding Period<br>Returns( $HPR_{t+1}$ ) | One-month<br>Buy and Hold<br>Returns | Holding period returns of firms on a monthly basis. Jagolinzer et al. (2020); Harvison (2019); Akin et al. (2019); Cohen et al. (2012) find that the return is associated with the profitability from insider trading during the last financial crisis and others. | CRSP (WRDS)                          |
| Opportunistic<br>Insider Buy(Sell)                    | Opportunistic<br>Insider Trades      | Following Ali and Hirshleifer (2017); Cohen et al. (2012), we use a dummy taking value 1 if the transaction type is opportunistic insider buy(sell) defined by historical transactions, 0 otherwise.                                                               | Thomson/Refinitiv<br>(WRDS) database |
| Routine Insider<br>Buy(Sell)                          | Routine<br>Insider Trades            | Following Ali and Hirshleifer (2017); Cohen et al. (2012), we use a dummy taking value 1 if the transaction type is routine insider buy(sell) defined by historical transactions, 0 otherwise.                                                                     | Thomson/Refinitiv<br>(WRDS) database |
| BM                                                    | Book-to-Market                       | The book-to-market ratio at the end of quarter $t$ where book value is from the prior quarter-end.                                                                                                                                                                 | Compustat – Capital IQ<br>(WRDS)     |
| Past-month<br>Holding<br>Returns( $HPR_{t-1}$ )       | Buy and Hold<br>Returns              | Holding period returns of firms on a monthly basis.                                                                                                                                                                                                                | CRSP (WRDS)                          |

### 3.3. Method

We use the event study methodology to examine the stock performance for opportunistic and routine insiders around the trade war announcement (day 0). We find the Cumulative Abnormal Return (CAR) from the Event Study by WRDS.

$$CAR_{t_1, t_2} = \alpha + \delta_1 Opportunistic\ Insider\ Buy\ (Sell)_t + \delta_2 Routine\ Insider\ Buy\ (Sell)_t + \vartheta Controls_t + \varepsilon_{t+1} \quad (1)$$

where  $CAR_{t_1, t_2}$  is Cumulative Abnormal Return for firm  $i$  over days  $(t_1, t_2)$ , *Opportunistic Insider Buy <sub>$i$</sub>  (Sell <sub>$i$</sub> )* is the indicator variable equal to 1 if the shares bought (sold) amount by opportunistic insider  $i$  in firm  $j$  and month  $t$ , *Routine Insider Buy <sub>$i$</sub>  (Sell <sub>$i$</sub> )* is an indicator variable equal to 1 if the shares bought (sold) amount by routine insider  $i$  in firm  $j$  and month  $t$  (insider trades are aggregated to the insider-

month level) and  $Controls_t$  is a vector of control variables that includes firm book-to-market ratio ( $BM_t$ ), and returns over the past month ( $PastMoRet_t$ ). In this specification,  $\delta_1$  and  $\delta_2$  represent the holding period returns for opportunistic insider buys (sells) and routine insider buys (sells) after controlling for BM, and  $PastMoRet_t$ .

Following the prior studies (e.g., (Jagolinzer et al., 2020; Akin et al., 2019; Cohen et al., 2012)), we estimate the cross-section regression form to assess how the insiders behave opportunistically – informed trading – during the trade war.

$$HPR_{t+1} = \alpha + \delta_1 Opportunistic Insider Buy (Sell)_t + \delta_2 Routine Insider Buy (Sell)_t + \vartheta Controls_t + \varepsilon_{t+1} \quad (2)$$

Where  $HPR_{t+s}$  is holding returns for the next month ( $s=1$ ),  $Opportunistic Insider Buy (Sell)_t$  is the indicator variable equal to 1 if the shares bought (sold) amount by opportunistic insider  $i$  in firm  $j$  and month  $t$ ,  $Routine Insider Buys_t (Sells_t)$  are the indicator variable equal to 1 if the shares bought (sold) amount by routine insider  $i$  in firm  $j$  and month  $t$  (insider trades are aggregated to the insider-month level) and  $Controls_t$  are vector of control variables that includes firm book-to-market ratio ( $BM_t$ ), and returns over the past month ( $PastMoRet_t$ ). In this specification,  $\delta_1$  and  $\delta_2$  represent the holding period returns for opportunistic insider buys (sells) and routine insider buys (sells) after controlling for BM, and  $PastMoRet_t$ .

$$HPR_{t_1, t_2} = \alpha + \delta_1 Insider Buy (Sell)_t + \delta_2 Insider Buy (Sell)_t * opportunistic_t * Post_t + \beta_1 Opportunistic_t + \beta_2 Post_t + \vartheta Controls_t + \varepsilon_{t+1} \quad (3)$$

where  $HPR_{t_1, t_2}$  is Holding Period Returns for firm  $i$  over days  $(t_1, t_2)$ ,  $Insider Buy_t (Sell_t)$  is an indicator variable equal to 1 if the shares bought (sold) amount by opportunistic insider  $i$  in firm  $j$  and month  $t$ , and  $Controls_t$  is a vector of control variables that includes book-to-market ratio ( $BM_t$ ), and the past month returns ( $PastMoRet_t$ ). In this specification,  $\delta_2$  represents the difference in holding period returns between opportunistic and routine insiders after controlling for BM, and  $PastMoRet_t$ .  $\delta_2$  measures the incremental informativeness of insider trades by comparing the pre and post-trade war periods.

## 4. Summary Statistics and Findings

### 4.1 Summary Statistics

Panel A of Table II presents the firm-level characteristics such as one-month holding returns (HPR), routine insider buy (sell), opportunistic insider buy (sell), BM and past-month returns (past1ret). Panel B of Table II presents the trade-level characteristics such as routine and opportunistic buy (sell), and the number of unique firms and insiders before and during the trade war. This report indicates that the dollar volume of sales is substantially larger than purchases. It means that the dollar volume of insider

sales is much larger than that of purchases. These statistics suggest that opportunistic insiders are more likely to buy and sell shares in greater volume than routine insiders.

**Table II**  
**Summary Statistics**

This table presents the summary statistics. Panel A presents descriptive statistics for firm-level characteristics. Panel B presents descriptive statistics for trade-level characteristics.  $HPR_{t1,t2}$  is the one-month holding period returns (buy-and-hold) for firm  $i$  over days  $(t_1, t_2)$ , Routine Insider Buy <sub>$t$</sub>  (Sell <sub>$t$</sub> ) is an indicator variable equal to 1 if the shares bought (sold) amount by routine insider  $i$  in firm  $j$  and month  $t$  (insider trades are aggregated to the insider-month level) and Opportunistic Insider Buy <sub>$t$</sub>  (Sell <sub>$t$</sub> ) is an indicator variable equal to 1 if the shares bought (sold) amount by opportunistic insider  $i$  in firm  $j$  and month  $t$ .  $BM$  is the book-to-market ratio at the end of quarter  $t$ .  $PastMoRet_t$  is the return in month  $t-1$ . Unique companies (unique insiders) are the number of unique companies (insiders) in the respective sample. Purchases (Sales) are the total dollar value of insider purchases (sales) in the respective sample.

| <b>Panel A. Firm-Level Characteristics</b>  |                       |               |                           |               |        |
|---------------------------------------------|-----------------------|---------------|---------------------------|---------------|--------|
| Variables                                   | Mean                  | Std. Dev.     | max                       | p25           | Median |
| $HPR_{t+1}$                                 | .022                  | .108          | 2.164                     | -.026         | .015   |
| Opportunistic Insider Buy                   | .141                  | .348          | 1.000                     | 0             | 0      |
| Routine Insider Buy                         | .016                  | .124          | 1.000                     | 0             | 0      |
| Opportunistic Insider Sell                  | .667                  | .471          | 1.000                     | 0             | 1      |
| Routine Insider Sell                        | .047                  | .211          | 1.000                     | 0             | 0      |
| BM                                          | .383                  | .535          | 12.823                    | .132          | .29    |
| Past1ret                                    | .02                   | .125          | 2.577                     | -.044         | .011   |
| <b>Panel B. Trade-Level Characteristics</b> |                       |               |                           |               |        |
| Variable                                    | Trade War (Trade War) |               | Trade War (Pre-Trade War) |               |        |
|                                             | Routine               | Opportunistic | Routine                   | Opportunistic |        |
| Buy (\$ millions)                           | 31.073                | 1,111.815     | 52.384                    | 1,820.524     |        |
| Sell (\$ millions)                          | 899.984               | 10,995.240    | 1,081.053                 | 18,589.44     |        |
| Total (\$ millions)                         | 932.460               | 12,162.760    | 1133.437                  | 20,409.960    |        |
| Number of Firms                             | 2,061                 |               | 2,504                     |               |        |
| Number of Insiders                          | 6,361                 |               | 8,983                     |               |        |

## 4.2 Correlation Matrix

**Table III**  
**Pairwise correlations**

This table presents the Pearson correlation matrix.  $t$ -Statistics (two-tailed  $p$ -values) based on standard errors clustered by firm appear in parentheses (brackets). \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively.

| Variables                      | (1)                | (2)                | (3)                | (4)                | (5)                | (6)   | (7) |
|--------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------|-----|
| (1) $HPR_{t+1}$                | 1.000              |                    |                    |                    |                    |       |     |
| (2) Opportunistic Insider Buy  | 0.025<br>(0.023)   | 1.000              |                    |                    |                    |       |     |
| (3) Routine Insider Buy        | 0.006<br>(0.597)   | -0.051*<br>(0.000) | 1.000              |                    |                    |       |     |
| (4) Opportunistic Insider Sell | -0.045*<br>(0.000) | -0.559*<br>(0.000) | -0.178*<br>(0.000) | 1.000              |                    |       |     |
| (5) Routine Insider Sell       | 0.021<br>(0.053)   | -0.090*<br>(0.000) | -0.019<br>(0.085)  | -0.314*<br>(0.000) | 1.000              |       |     |
| (6) BM                         | -0.055*<br>(0.000) | 0.226*<br>(0.000)  | 0.044*<br>(0.000)  | -0.185*<br>(0.000) | -0.048*<br>(0.000) | 1.000 |     |

|              |         |         |         |         |         |         |       |
|--------------|---------|---------|---------|---------|---------|---------|-------|
| (7) Past1ret | -0.029* | -0.074* | -0.007  | 0.080*  | 0.003   | -0.090* | 1.000 |
|              | (0.009) | (0.000) | (0.532) | (0.000) | (0.766) | (0.000) |       |

From the above Pearson correlation matrix, we find a positive correlation (0.025) between one-month holding period returns (HPR) and opportunistic insider buys. We also find a negative correlation (-0.045) between one-month holding period returns (HPR) and opportunistic insider sell. This correlation value is statistically significant at the 10% level. Alternatively, the routine insider buy (sell) is positively correlated (0.006 (0.021)) with one-month holding period returns (HPR), and the correlation value is lower than opportunistic trades. It indicates the larger benefits for opportunistic insiders during the trade war. Notably, these findings are consistent with the previous literature (Cohen et al., 2012).

### 4.3 Event Study

**Table IV**  
**Performance of Opportunistic and Routine Insiders: Cumulative Abnormal Returns**

This table presents results from cross-sectional regressions of the Cumulative Abnormal Returns (CAR) before and during the trade war. *t*-Statistics (two-tailed *p*-values) based on robust standard errors appear in parentheses (brackets). \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively.

| Variables                  | Dependent Variable: CAR (0, 30) & (-30, -1) |                      |                   |                    |
|----------------------------|---------------------------------------------|----------------------|-------------------|--------------------|
|                            | (1)                                         | (2)                  | (3)               | (4)                |
|                            | CAR (0 30)                                  | CAR (0 30)           | CAR (-30 -1)      | CAR (-30 -1)       |
| Opportunistic Insider Buy  | 0.017***<br>(0.006)                         |                      | -0.233<br>(0.341) |                    |
| Routine Insider Buy        | -0.010<br>(0.034)                           |                      | 1.100*<br>(0.604) |                    |
| Opportunistic Insider Sell |                                             | -0.016***<br>(0.006) |                   | 0.415<br>(0.263)   |
| Routine Insider Sell       |                                             | -0.013<br>(0.008)    |                   | 1.356**<br>(0.585) |
| Observations (Insider-Day) | 2,958                                       | 2,958                | 1,516             | 1,516              |
| ControlVariables           | Yes                                         | Yes                  | Yes               | Yes                |

Table IV reports results from estimating equation (1). We partition this table into two windows, i.e., (0, +30) and (-30, -1). In column 1, the coefficient of opportunistic insider buy is higher than routine insider buy, which is economically and statistically significant (0.01) after using control variables. In column 2 the coefficient of opportunistic insider sell is more beneficial than routine insider sell, which is economically and statistically significant (0.01) after using control variables. It indicates insider sells were a better decision than holding that shares.

In column 3, the coefficient of routine insider buy is higher than opportunistic insider buy, which is economically and statistically significant (0.01) after using control variables. Column 4 indicates insider sells were not a better decision.

Finally, we find that opportunistic insiders earn higher abnormal returns from sells during the first 31 days of the trade war period than the pre-trade war period, which is also truly informative.

#### 4.4 Performance of Opportunistic and Routine Insiders

We also examine whether the predictive ability of insider trading activity increases during the trade war; we include the indicator variables for Trade war of First-3M<sub>t</sub> and Last-3M<sub>t</sub> for the first three months of the trade war (22 January 2018 to 21 April 2018) and the last three months of a trade war (22 April 2018 to 21 July 2018), respectively, and interact these variables with Opportunistic Insider Buy<sub>t</sub> (Sell<sub>t</sub>) and Routine Insider Buy<sub>t</sub> (Sell<sub>t</sub>).

**Table V**  
**Performance of Opportunistic and Routine Insiders: Baseline Regressions**

| One-Month Future Returns         |                                   |                      |                      |                      |                      |                      |                      |                      |
|----------------------------------|-----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Variables                        | Dependent Variable: $HPR_{i,t+1}$ |                      |                      |                      |                      |                      |                      |                      |
|                                  | (1)<br>Trade War                  | (2)<br>Pre-Trade War | (3)<br>Trade War     | (4)<br>Pre-Trade War | (5)<br>Trade War     | (6)<br>Pre-Trade War | (7)<br>Trade War     | (8)<br>Pre-Trade War |
| Opportunistic Insider Buy        | 0.012***<br>(0.003)               | 0.007***<br>(0.003)  | 0.013***<br>(0.005)  | 0.005<br>(0.004)     |                      |                      |                      |                      |
| Routine Insider Buy              | 0.009<br>(0.010)                  | 0.008<br>(0.007)     | -0.002<br>(0.009)    | 0.007<br>(0.005)     |                      |                      |                      |                      |
| Opportunistic Insider Sell       |                                   |                      |                      |                      | -0.012***<br>(0.003) | -0.006***<br>(0.002) | -0.014***<br>(0.005) | -0.004<br>(0.003)    |
| Routine Insider Sell             |                                   |                      |                      |                      | 0.000<br>(0.006)     | -0.010**<br>(0.005)  | 0.000<br>(0.008)     | -0.011*<br>(0.006)   |
| BM                               | -0.013***<br>(0.002)              | -0.011***<br>(0.002) | -0.013***<br>(0.003) | -0.010**<br>(0.005)  | -0.014***<br>(0.002) | -0.011***<br>(0.002) | -0.013***<br>(0.003) | -0.010**<br>(0.005)  |
| PastMoret                        | -0.027***<br>(0.009)              | -0.016**<br>(0.008)  | -0.037<br>(0.029)    | -0.018<br>(0.023)    | -0.026***<br>(0.009) | -0.016**<br>(0.008)  | -0.036<br>(0.029)    | -0.018<br>(0.023)    |
| Observations(Insider-Month)      | 8,353                             | 13,439               | 8,353                | 13,439               | 8,353                | 13,439               | 8,353                | 13,439               |
| Month Fixed Effects <sup>1</sup> | No                                | No                   | Yes                  | Yes                  | No                   | No                   | Yes                  | Yes                  |

Table V reports results from estimating equation (2). Columns (1), (3), (5), and (7) estimate the results for the trade war period, and columns (2), (4), (6) and (8) estimate the results for the pre-trade war period. In addition, columns (1) to (4) indicate the results for insiders' buys, and columns (5) to (8) indicate the results for insiders' sells.

In column (1), the coefficient on opportunistic insider buy (0.012) is positive and higher than routine

<sup>1</sup> I do not estimate a firm fixed-effects model given that a few insiders trade in the stock of more than one firm (Goergen et al., 2019).

insider buy (0.009), which is economically and statistically significant (0.01) after using the control variables. In column (2), the coefficient on opportunistic insider buy (0.007) is positive and higher than routine insider buy (0.008), which is economically and statistically significant (0.01) after using the control variables.

In column (3), the coefficient on opportunistic insider buy (0.013) is positive and higher than routine insider buy (-0.002), which is economically and statistically significant (0.01) after using the fixed effects clustered by the firm. In column (4), the coefficient on opportunistic insider buy (0.005) is positive and higher than routine insider buy (0.007), which is statistically insignificant after using the fixed effects clustered by the firm.

In column (5), the coefficient on opportunistic insider sell (-0.012) is negative and more beneficial than routine insider sell (0.000), which is economically and statistically significant (0.01) after using the control variables. In column (6), the coefficient on routine insider sell (-0.010) is negative and more beneficial than opportunistic insider sell (-0.006), which is statistically significant.

In column (7), the coefficient on opportunistic insider sell (-0.014) is negative and more beneficial than routine insider sell (0.000), which is economically and statistically significant (0.01) after using the fixed effects. In column (8), the coefficient on routine insider sell (-0.011) is negative and more beneficial than opportunistic insider sell (-0.004), which is statistically significant (0.10).

Overall, these findings suggest that opportunistic insider transactions are more beneficial and truly informative during the trade war.

We next experiment whether the predictive ability of insider trading activity increases during the trade war; we include the indicator variables for the Trade war of First-3M<sub>t</sub> and Last-3M<sub>t</sub> for the first three months of the trade war (22 January 2018 to 21 April 2018) and the last three months of a trade war (22 April 2018 to 21 July 2018), respectively, and interact these variables with Opportunistic Insider Buy<sub>t</sub> (Sell<sub>t</sub>) and Routine Insider Buy<sub>t</sub> (Sell<sub>t</sub>).

**Table VI**  
**Performance of Opportunistic and Routine Insiders: Trade War**

This table presents results from estimating equation (2). *t*-Statistics (two-tailed *p*-values) based on robust standard errors clustered by firm appear in parentheses (brackets). \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively.

| Variables                 | One-Month Future Returns          |         |          |         |          |         |          |         |
|---------------------------|-----------------------------------|---------|----------|---------|----------|---------|----------|---------|
|                           | Dependent Variable: $HPR_{i,t+1}$ |         |          |         |          |         |          |         |
|                           | (1)                               | (2)     | (3)      | (4)     | (5)      | (6)     | (7)      | (8)     |
|                           | First-3M                          | Last-3M | First-3M | Last-3M | First-3M | Last-3M | First-3M | Last-3M |
| Opportunistic Insider Buy | 0.015***                          | -0.016  | 0.017*** | -0.016  |          |         |          |         |

|                             |           |           |           |           |           |           |           |           |
|-----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                             | (0.004)   | (0.014)   | (0.005)   | (0.016)   |           |           |           |           |
| Routine Insider Buy         | 0.007     | 0.007     | -0.005    | -0.007    |           |           |           |           |
|                             | (0.009)   | (0.048)   | (0.009)   | (0.078)   |           |           |           |           |
| Opportunistic Insider Sell  |           |           |           |           | -0.015*** | 0.022*    | -0.017*** | 0.016     |
|                             |           |           |           |           | (0.003)   | (0.012)   | (0.005)   | (0.015)   |
| Routine Insider Sell        |           |           |           |           | -0.000    | 0.015     | -0.001    | 0.008     |
|                             |           |           |           |           | (0.006)   | (0.048)   | (0.009)   | (0.023)   |
| BM                          | -0.012*** | -0.076*** | -0.012*** | -0.074*** | -0.012*** | -0.070*** | -0.012*** | -0.071*** |
|                             | (0.002)   | (0.019)   | (0.003)   | (0.024)   | (0.002)   | (0.020)   | (0.003)   | (0.025)   |
| PastMoret                   | -0.023**  | -0.062**  | -0.035    | -0.035    | -0.021**  | -0.060**  | -0.033    | -0.034    |
|                             | (0.011)   | (0.025)   | (0.032)   | (0.062)   | (0.011)   | (0.025)   | (0.032)   | (0.062)   |
| Observations(Insider-Month) | 7,761     | 640       | 7,761     | 640       | 7,761     | 640       | 7,761     | 640       |
| Month Fixed Effects         | No        | No        | Yes       | Yes       | No        | No        | Yes       | Yes       |

Columns (1), (3), (5), and (7) estimate the results for the first three months (First-3M), and columns (2), (4), (6) and (8) estimate the results for the last three months (Last-3M). In addition, columns (1) to (4) indicate the results for insiders' buys, and columns (5) to (8) indicate the results for insiders' sells.

In column (1), the coefficient on opportunistic insider buy (0.015) is positive and higher than routine insider buy (0.007), which is economically and statistically significant (0.01) after using the control variables. In column (2), the coefficient on routine insider buy (0.007) is positive and higher than opportunistic insider buy (-0.016), which is economically and statistically insignificant after using the control variables.

In column (3), the coefficient on opportunistic insider buy (0.017) is positive and higher than routine insider buy (-0.005), which is economically and statistically significant (0.01) after using the fixed effects clustered by the firm. In column (4), the coefficient on routine insider buy (-0.007) is negative and higher than opportunistic insider buy (-0.016), which is statistically insignificant after using the fixed effects clustered by firm.

In column (5), the coefficient on opportunistic insider sell (-0.015) is negative and more beneficial than routine insider sell (-0.000), which is economically and statistically significant (0.01) after using the control variables. In column (6), the coefficients on opportunistic (0.022) and routine insider sell (0.015) are positive but not beneficial.

In column (7), the coefficient on opportunistic insider sell (-0.017) is negative and more beneficial than routine insider sell (-0.001), which is economically and statistically significant (0.01) after using the fixed effects. In column (8), the coefficient on opportunistic (0.016) and routine insider sell (0.008) is positive and is not beneficial.

Overall, these findings suggest that opportunistic insider transactions are more beneficial and truly informative during the first three-month of the trade war. These findings support the prior literature

(e.g., (Ali and Hirshleifer, 2017; Cohen et al., 2012)), which mainly focuses on opportunistic and routine insider transactions but not on this war.

At the difference-in-difference specification, we consider the insiders who traded four-month before and two-month after starting the trade war period. This specification fulfils the requirement of parallel trend assumption for that time. Table VII reports results from estimating equation (3). It presents the difference-in-difference specification results during the trade war compared to the pre-trade war period by opportunistic insiders (buys) compared to the routine insiders (buys).

**Table VII**  
**Performance of Opportunistic versus Routine Insiders: Difference-in-Difference Specifications (Buy)**

This table presents results from estimating equation (3). *t*-Statistics (two-tailed *p*-values) based on robust standard errors clustered by firm appear in parentheses (brackets). \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively.

| One-Month Future Returns          |                       |                       |                       |
|-----------------------------------|-----------------------|-----------------------|-----------------------|
| Dependent Variable: $HPR_{i,t+1}$ |                       |                       |                       |
| Variables                         | Model 1               | Model 2               | Model 3               |
| Insider Buy_Opportunistic_Post    | 0.01895***<br>(0.004) | 0.01891***<br>(0.004) | 0.01929***<br>(0.007) |
| Post                              | -0.023***<br>(0.002)  | -0.023***<br>(0.002)  | 0.000<br>(0.000)      |
| Insider Buy                       | 0.001<br>(0.002)      | 0.003<br>(0.002)      | 0.003<br>(0.004)      |
| BM                                |                       | -0.010***<br>(0.001)  | -0.010***<br>(0.003)  |
| PastMoret                         |                       | -0.019***<br>(0.006)  | -0.019<br>(0.018)     |
| Observations(Insider-Month)       | 22,812                | 22,812                | 22,812                |
| Fixed Effects                     | No                    | No                    | Yes                   |

We find the positive and statistically significant coefficient in the model (1) for opportunistic insider buys during the trade war (difference-in-differences *p*-value < 0.01) without control variables. We also find the positive and statistically significant coefficient in the model (2) for opportunistic insider buys during the trade war (difference-in-differences *p*-value < 0.01) with control variables. We also find the positive and statistically significant coefficient in the model (3) for opportunistic insider buys during the trade war (difference-in-differences *p*-value < 0.01) with month-fixed effects.

All findings suggest that opportunistic insider buys hold larger returns than routine insider buys by using asymmetry information, and it is truly informative. These results support the baseline regressions results and prior literature (Cohen et al., 2012).

Table VIII also reports results from estimating equation (3). It presents the difference-in-difference specification results during the trade war compared to the pre-trade war period by opportunistic insiders

(sells) compared to the routine insiders (sells).

**Table VIII**  
**Performance of Opportunistic versus Routine Insiders: Difference-in-Difference Specifications (Sell)**

This table presents results from estimating equation (3).  $t$ -Statistics (two-tailed  $p$ -values) based on robust standard errors clustered by firm appear in parentheses (brackets). \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively.

| One-Month Future Returns          |                      |                      |                      |
|-----------------------------------|----------------------|----------------------|----------------------|
| Dependent Variable: $HPR_{i,t+1}$ |                      |                      |                      |
| Variables                         | Model 1              | Model 2              | Model 3              |
| Insider Sell_Opportunistic_Post   | -0.017***<br>(0.003) | -0.016***<br>(0.003) | -0.018***<br>(0.005) |
| Post                              | -0.010***<br>(0.003) | -0.010***<br>(0.003) | 0.000<br>(0.000)     |
| Insider Sell                      | -0.002<br>(0.002)    | -0.004**<br>(0.002)  | -0.002<br>(0.003)    |
| BM                                |                      | -0.010***<br>(0.001) | -0.010***<br>(0.003) |
| PastMoret                         |                      | -0.017***<br>(0.006) | -0.018<br>(0.018)    |
| Observations(Insider-Month)       | 22,812               | 22,812               | 22,812               |
| Fixed Effects                     | No                   | No                   | Yes                  |

We find the negative and statistically significant coefficient in the model (1) for opportunistic insider sells during the trade war (difference-in-differences  $p$ -value < 0.01) without control variables. We also find the negative and statistically significant coefficient in the model (2) for opportunistic insider sells during the pandemic (difference-in-differences  $p$ -value < 0.01) with control variables. We also find the negative and statistically significant coefficient in the model (3) for opportunistic insider sells during the trade war (difference-in-differences  $p$ -value < 0.01) with month-fixed effects.

All findings suggest that opportunistic insider sells are more beneficial than routine insider sells by using asymmetry information, and it is truly informative. These results support the baseline regressions results and prior literature (Cohen et al., 2012).

#### 4.5 Performance of Opportunistic and Routine Trades

Following the prior studies (e.g., (Jagolinzer et al., 2020; Akin et al., 2019; Cohen et al., 2012)), we estimate the cross-section regression form to assess how the insiders behave opportunistically – informed trading – during the trade war.

$$HPR_{t+1} = \alpha + \delta_1 \text{Opportunistic Buy (Sell)}_t + \delta_2 \text{Routine Buy (Sell)}_t + \vartheta \text{Controls}_t + \varepsilon_{t+1} \quad (4)$$

Where  $HPR_{t+s}$  is holding returns for the next month ( $s=1$ ),  $\text{Opportunistic Buy}_t(\text{Sell}_t)$  is the indicator

variable equal to 1 if the shares bought (sold) amount by opportunistic insider  $i$  in firm  $j$  and month  $t$ ,  $Routine\ Buy_t (Sell_t)$  is an indicator variable equal to 1 if the shares bought (sold) amount by routine insider  $i$  in firm  $j$  and month  $t$  (insider trades are aggregated to the insider-month level) and  $Controls_t$  is a vector of control variables that includes firm book-to-market ratio ( $BM_t$ ), and returns over the past month ( $PastMoRet_t$ ). In this specification,  $\delta_1$  and  $\delta_2$  represent the holding period returns for opportunistic buys (sells) and routine buys (sells) after controlling for  $BM$ , and  $PastMoRet_t$ .

In Table IX, we then investigate whether all opportunistic and routine trades instead of routine insiders impact holding returns measured at the one-month horizon.

**Table IX**  
Performance of Opportunistic and Routine Trades: Trade War

This table presents results from estimating equation (4).  $t$ -Statistics (two-tailed  $p$ -values) based on robust standard errors clustered by firm appear in parentheses (brackets). \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively.

| Variables                         | One-Month Future Returns          |                      |                      |                      |                      |                      |                      |                      |
|-----------------------------------|-----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                   | Dependent Variable: $HPR_{i,t+1}$ |                      |                      |                      |                      |                      |                      |                      |
|                                   | (1)                               | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  | (7)                  | (8)                  |
|                                   | First-3M                          | Last-3M              | First-3M             | Last-3M              | First-3M             | Last-3M              | First-3M             | Last-3M              |
| Opportunistic Buy                 | 0.016***<br>(0.004)               | -0.015<br>(0.014)    | 0.018***<br>(0.005)  | -0.014<br>(0.017)    |                      |                      |                      |                      |
| Routine Buy                       | 0.005<br>(0.008)                  | -0.016<br>(0.040)    | -0.005<br>(0.007)    | -0.026<br>(0.064)    |                      |                      |                      |                      |
| Opportunistic Sell                |                                   |                      |                      |                      | -0.017***<br>(0.003) | 0.024**<br>(0.012)   | -0.018***<br>(0.005) | 0.018<br>(0.015)     |
| Routine Sell                      |                                   |                      |                      |                      | -0.001<br>(0.004)    | -0.016<br>(0.031)    | -0.004<br>(0.007)    | -0.019<br>(0.025)    |
| BM                                | -0.012***<br>(0.002)              | -0.075***<br>(0.019) | -0.012***<br>(0.003) | -0.073***<br>(0.024) | -0.012***<br>(0.002) | -0.069***<br>(0.020) | -0.012***<br>(0.003) | -0.071***<br>(0.025) |
| PastMoret                         | -0.023**<br>(0.011)               | -0.061**<br>(0.025)  | -0.035<br>(0.032)    | -0.035<br>(0.062)    | -0.021**<br>(0.011)  | -0.060**<br>(0.025)  | -0.033<br>(0.032)    | -0.034<br>(0.062)    |
| Observations<br>(Insiders-Months) | 7,761                             | 640                  | 7,761                | 640                  | 7,761                | 640                  | 7,761                | 640                  |
| Month Fixed<br>Effects            | No                                | No                   | Yes                  | Yes                  | No                   | No                   | Yes                  | Yes                  |

In column (1), we find the coefficient on the opportunistic buy (0.016) is positive and higher than the routine buy (0.005), which is economically and statistically significant (0.01) after using the control variables. In column (2), we find the coefficients on opportunistic (-0.015) and routine (-0.016) buys are negative and statistically insignificant after using the control variables.

In column (3), we find the coefficient on the opportunistic buy (0.018) is positive and higher than routine insider buy (-0.005), which is economically and statistically significant (0.01) after using the fixed effects clustered by firm. In column (4), we find the coefficients on opportunistic (-0.014) and routine (-0.026) buys are negative and statistically insignificant after using the fixed effects clustered by firm.

In column (5), we find the coefficient on opportunistic sell (-0.017) is negative and more beneficial than routine insider sell (-0.001), which is economically and statistically significant (0.01) after using the control variables. In column (6), we find the coefficient on opportunistic sell (0.024) is positive, but routine sell (-0.016) is negative.

In column (7), we find the coefficients on opportunistic (-0.018) and routine (-0.004) sells are negative, but the opportunistic sells are more beneficial than routine sells, which is economically and statistically significant (0.01) after using the fixed effects. In column (8), we find the coefficient on opportunistic sell (0.018) is positive and routine sell (-0.019) is negative.

Overall, these findings suggest that opportunistic transactions are more beneficial and truly informative during the first three-month of the trade war. These findings support the prior results and literature (e.g., (Goergen et al., 2019; Ali and Hirshleifer, 2017; He and Rui, 2016; Rogers et al., 2016; Cohen et al., 2012; Tavakoli et al., 2012; Ravina and Sapienza, 2010; Marin and Olivier, 2008; Fidrmuc, J.P. et al., 2006)),.

#### **4.6 Politically Connected Opportunistic and Routine Insiders**

To examine how these attributes relate to the informativeness of insider trades, we estimate the cross-section regression form to assess how the politically connected insiders behave opportunistically – informed trading – during the trade war.

$$HPR_{t+1} = \alpha + \delta_1 \text{Opportunistic Buy (Sell)}_t + \delta_2 \text{Routine Buy (Sell)}_t + \delta_3 \text{Opportunistic Buy (Sell)}_t * \text{Connected} + \delta_4 \text{Routine Buy (Sell)}_t * \text{Connected} + \vartheta \text{Controls}_t + \varepsilon_{t+1} \quad (5)$$

Where  $HPR_{t+1}$  is the holding returns for the next month ( $s=1$ ),  $\text{Opportunistic Insider Buy}_t(\text{Sell}_t)$  is the indicator variable equal to 1 if the shares bought (sold) amount by opportunistic insider  $i$  in firm  $j$  and month  $t$ ,  $\text{Routine Insider Buys}_t(\text{Sells}_t)$  are the indicator variable equal to 1 if the shares bought (sold) amount by routine insider  $i$  in firm  $j$  and month  $t$  (insider trades are aggregated to the insider-month level) and  $\text{Controls}_t$  is a vector of control variables that includes firm book-to-market ratio ( $BM_t$ ), and returns over the past month ( $PastMoRet_t$ ). In this specification,  $\delta_1$  and  $\delta_2$  represent the holding period returns for opportunistic insider buys (sells) and routine insider buys (sells) after controlling for  $BM$ , and  $PastMoRet_t$ .

In this specification,  $\delta_3$  and  $\delta_4$  measure the incremental informativeness of insider buys and sells during the trade war. Throughout this analysis (for  $HPR_{i,t+1}$ ), we base inferences on robust standard errors clustered by firm. Political connection is the insider's attribute defined in the analysis.

In Table X, we then investigate whether all opportunistic and routine insiders impact holding returns measured at the one-month horizon.

**Table X**  
**Performance of Opportunistic and Routine Insiders: Political Connection**

| This table presents results from estimating equation (5). <i>t</i> -Statistics (two-tailed <i>p</i> -values) based on robust standard errors clustered by firm appear in parentheses (brackets). ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively. |                                                     |           |           |           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------|-----------|-----------|
| One-Month Future Returns                                                                                                                                                                                                                                                                                    |                                                     |           |           |           |
|                                                                                                                                                                                                                                                                                                             | <b>Dependent Variable: <math>HPR_{i,t+1}</math></b> |           |           |           |
| Variables                                                                                                                                                                                                                                                                                                   | Model (1)                                           | Model (2) | Model (3) | Model (4) |
| Opportunistic Insider Buy*Connected                                                                                                                                                                                                                                                                         | 0.017*                                              | 0.022*    |           |           |
|                                                                                                                                                                                                                                                                                                             | (0.009)                                             | (0.011)   |           |           |
| Routine Insider Buy*Connected                                                                                                                                                                                                                                                                               | -0.017                                              | -0.033**  |           |           |
|                                                                                                                                                                                                                                                                                                             | (0.033)                                             | (0.013)   |           |           |
| Routine Insider Buy                                                                                                                                                                                                                                                                                         | 0.008                                               | -0.002    |           |           |
|                                                                                                                                                                                                                                                                                                             | (0.010)                                             | (0.009)   |           |           |
| Opportunistic Insider Buy                                                                                                                                                                                                                                                                                   | 0.012***                                            | 0.014**   |           |           |
|                                                                                                                                                                                                                                                                                                             | (0.004)                                             | (0.006)   |           |           |
| Opportunistic Insider Sell*Connected                                                                                                                                                                                                                                                                        |                                                     |           | -0.008**  | -0.006    |
|                                                                                                                                                                                                                                                                                                             |                                                     |           | (0.004)   | (0.005)   |
| Routine Insider Sell*Connected                                                                                                                                                                                                                                                                              |                                                     |           | -0.006    | -0.002    |
|                                                                                                                                                                                                                                                                                                             |                                                     |           | (0.015)   | (0.023)   |
| Routine Insider Sell                                                                                                                                                                                                                                                                                        |                                                     |           | 0.000     | -0.001    |
|                                                                                                                                                                                                                                                                                                             |                                                     |           | (0.006)   | (0.009)   |
| Opportunistic Insider Sell                                                                                                                                                                                                                                                                                  |                                                     |           | -0.014*** | -0.016*** |
|                                                                                                                                                                                                                                                                                                             |                                                     |           | (0.003)   | (0.005)   |
| BM                                                                                                                                                                                                                                                                                                          | -0.012***                                           | -0.012*** | -0.012*** | -0.012*** |
|                                                                                                                                                                                                                                                                                                             | (0.002)                                             | (0.003)   | (0.002)   | (0.003)   |
| PastMoret                                                                                                                                                                                                                                                                                                   | -0.024**                                            | -0.035    | -0.022**  | -0.033    |
|                                                                                                                                                                                                                                                                                                             | (0.011)                                             | (0.032)   | (0.011)   | (0.032)   |
| Observations(Insider-Month)                                                                                                                                                                                                                                                                                 | 7,803                                               | 7,803     | 7,803     | 7,803     |
| Month Fixed Effects                                                                                                                                                                                                                                                                                         | No                                                  | Yes       | No        | Yes       |

In column (1), we find the coefficient on opportunistic insider buy\*connected (0.017) is positive and higher than routine insider buy\*connected (-0.017), which is economically and statistically significant (0.10) after using the control variables. In column (2), we find the coefficient on opportunistic insider buy\*connected (0.022) is positive and higher than routine insider buy\*connected (-0.033), which is economically and statistically significant (0.10) after using the fixed effect. In column (3), we find the coefficient on opportunistic insider sell\*connected (-0.008) is negative and more beneficial than routine

insider sell\*connected (-0.006), which is economically and statistically significant (0.05) after using the control variables. In column (4), we find the coefficient on opportunistic insider sell\*connected (-0.006) is negative and more beneficial than routine insider sell\*connected (-0.002), which is economically significant after using the fixed effect.

Overall, these findings suggest that politically connected insiders' opportunistic transactions are more beneficial and truly informative. The politically connected insiders get reliable information in advance regarding the declaration of trade war through their current and previously employed organizations before being available to the other insiders and outsiders.

#### 4.7 Opportunistic Insiders

In Table XI, we next investigate whether opportunistic and routine insiders (male or female) impact holding returns measured at the one-month horizon.

Table XI  
Attributes of the Connected Individual: Gender

| This table presents results from estimating equation (2). <i>t</i> -Statistics (two-tailed <i>p</i> -values) based on robust standard errors clustered by firm appear in parentheses (brackets). ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively. |                   |                    |                     |                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|---------------------|-------------------|
| One-Month Future Returns                                                                                                                                                                                                                                                                                    |                   |                    |                     |                   |
| Dependent Variable: $HPR_{i,t+1}$                                                                                                                                                                                                                                                                           |                   |                    |                     |                   |
|                                                                                                                                                                                                                                                                                                             | (1)               | (2)                | (3)                 | (4)               |
| Variables                                                                                                                                                                                                                                                                                                   | Male: Buy         | Female: Buy        | Male: Sell          | Female: Sell      |
| Opportunistic Insider Buy                                                                                                                                                                                                                                                                                   | 0.008<br>(0.011)  | 0.049**<br>(0.020) |                     |                   |
| Routine Insider Buy                                                                                                                                                                                                                                                                                         | 0.007<br>(0.010)  | 0.003<br>(0.009)   |                     |                   |
| Opportunistic Insider Sell                                                                                                                                                                                                                                                                                  |                   |                    | -0.013**<br>(0.006) | -0.019<br>(0.012) |
| Routine Insider Sell                                                                                                                                                                                                                                                                                        |                   |                    | -0.000<br>(0.013)   | -0.015<br>(0.015) |
| BM                                                                                                                                                                                                                                                                                                          | -0.006<br>(0.007) | -0.008<br>(0.019)  | -0.006<br>(0.006)   | -0.005<br>(0.020) |
| PastMoret                                                                                                                                                                                                                                                                                                   | -0.075<br>(0.050) | 0.051<br>(0.072)   | -0.072<br>(0.049)   | 0.047<br>(0.071)  |
| Observations(Insider-Month)                                                                                                                                                                                                                                                                                 | 2,181             | 260                | 2,181               | 260               |
| Fixed Effect                                                                                                                                                                                                                                                                                                | Yes               | Yes                | Yes                 | Yes               |

In column (1), we find the coefficient on opportunistic insider (male) buy (0.008) is positive and higher than routine insider (male) buy (0.007). In column (2), we also find the coefficient on opportunistic insider (female) buy (0.049) is positive and higher than routine insider (female) buy (0.003), which is

economically and statistically significant (0.05) after using the month fixed effect and clustered by firm.

In column (3), we find the coefficient on opportunistic insider (male) sell (-0.013) is negative and more beneficial than routine insider (male) sell (-0.000), which is economically and statistically significant (0.05) after using the month fixed effect and clustered by firm. In column (4), we also find the coefficient on opportunistic insider (female) sell (-0.019) is negative and more beneficial than routine insider (female) sell (-0.015) after using the month fixed effect and clustered by firm.

In Table XII, we next investigate whether opportunistic and routine insiders (old or young) impact holding returns measured at the one-month horizon.

Table XII  
Attributes of the Connected Individual: Age

|                                                                                                                                                                                                                                                                                                             |                   |                   |                    |                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|--------------------|-------------------|
| This table presents results from estimating equation (2). <i>t</i> -Statistics (two-tailed <i>p</i> -values) based on robust standard errors clustered by firm appear in parentheses (brackets). ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively. |                   |                   |                    |                   |
| One-Month Future Returns                                                                                                                                                                                                                                                                                    |                   |                   |                    |                   |
| <b>Dependent Variable: <math>HPR_{i,t+1}</math></b>                                                                                                                                                                                                                                                         |                   |                   |                    |                   |
|                                                                                                                                                                                                                                                                                                             | (1)               | (2)               | (3)                | (4)               |
| Variables                                                                                                                                                                                                                                                                                                   | Above 55years     | Below 55years     | Above 55years      | Below 55years     |
| Opportunistic Insider Buy                                                                                                                                                                                                                                                                                   | 0.018<br>(0.014)  | 0.008<br>(0.014)  |                    |                   |
| Routine Insider Buy                                                                                                                                                                                                                                                                                         | 0.018*<br>(0.010) | -0.002<br>(0.005) |                    |                   |
| Opportunistic Insider Sell                                                                                                                                                                                                                                                                                  |                   |                   | -0.016*<br>(0.008) | -0.012<br>(0.008) |
| Routine Insider Sell                                                                                                                                                                                                                                                                                        |                   |                   | -0.004<br>(0.019)  | 0.001<br>(0.011)  |
| BM                                                                                                                                                                                                                                                                                                          | -0.011<br>(0.012) | -0.004<br>(0.009) | -0.012<br>(0.012)  | -0.005<br>(0.007) |
| PastMoret                                                                                                                                                                                                                                                                                                   | -0.065<br>(0.065) | -0.057<br>(0.053) | -0.062<br>(0.064)  | -0.054<br>(0.051) |
| Observations(Insider-Month)                                                                                                                                                                                                                                                                                 | 1,159             | 1,280             | 1,159              | 1,280             |
| Fixed Effect                                                                                                                                                                                                                                                                                                | Yes               | Yes               | Yes                | Yes               |

In column (1), we find the coefficients on opportunistic and routine insider (old) buy (0.018) are positive and equal. In column (2), we also find the coefficient on opportunistic insider (young) buy (0.008) is positive and higher than routine insider (young) buy (-0.002) after using the month fixed effect and clustered by firm.

In column (3), we find the coefficient on opportunistic insider (old) sell (-0.016) is negative and more beneficial than routine insider (old) sell (-0.004), which is economically and statistically significant (0.10) after using the month fixed effect and clustered by firm. In column (4), we also find the

coefficient on opportunistic insider (young) sell (-0.012) is negative and more beneficial than routine insider (young) sell (0.001) after using the month fixed effect and clustered by firm.

In Table XIII, we then investigate whether opportunistic and routine insiders (CEO or directors) impact holding returns measured at the one-month horizon.

Table XIII  
Attributes of the Connected Individual: Within Board Position

This table presents results from estimating equation (2). *t*-Statistics (two-tailed *p*-values) based on robust standard errors clustered by firm appear in parentheses (brackets). \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively.

| One-Month Future Returns          |                    |                      |                      |                   |
|-----------------------------------|--------------------|----------------------|----------------------|-------------------|
| Dependent Variable: $HPR_{i,t+1}$ |                    |                      |                      |                   |
| Variables                         | (1)                | (2)                  | (3)                  | (4)               |
|                                   | CEO                | Directors            | CEO                  | Directors         |
| Opportunistic Insider Buy         | 0.025**<br>(0.011) | 0.022***<br>(0.005)  |                      |                   |
| Routine Insider Buy               | -0.018<br>(0.021)  | 0.007<br>(0.006)     |                      |                   |
| Opportunistic Insider Sell        |                    |                      | -0.022***<br>(0.005) | -0.015<br>(0.009) |
| Routine Insider Sell              |                    |                      | -0.019**<br>(0.008)  | 0.002<br>(0.014)  |
| BM                                | -0.004<br>(0.014)  | -0.012***<br>(0.002) | -0.012***<br>(0.002) | -0.001<br>(0.013) |
| PastMoret                         | -0.040<br>(0.041)  | -0.035<br>(0.033)    | -0.026<br>(0.035)    | -0.037<br>(0.041) |
| Observations(Insider-Month)       | 973                | 2,578                | 973                  | 2,578             |
| Fixed Effects                     | Yes                | Yes                  | Yes                  | Yes               |

In column (1), we find the coefficient on opportunistic insider (CEO) buy (0.025) is positive and higher than routine insider (CEO) buy (-0.018), which is economically and statistically significant (0.05) after using the month fixed effect and clustered by firm. In column (2), we also find the coefficient on opportunistic insider (directors) buy (0.022) is positive and higher than routine insider (directors) buy (0.007), which is economically and statistically significant (0.01) after using the month fixed effect and clustered by firm.

In column (3), we find the coefficient on opportunistic insider (CEO) sell (-0.022) is negative and more beneficial than routine insider (CEO) sell (-0.019), which is economically and statistically significant (0.01) after using the month fixed effect and clustered by firm. In column (4), we also find the coefficient on opportunistic insider (directors) sell (-0.015) is negative and more beneficial than routine insider (directors) sell (0.002) after using the month fixed effect and clustered by firm.

CEO are better informed about the firm as they are involved in the day-to-day operation of the business (e.g., (Goergen et al., 2019)) and they trade opportunistically for generating larger abnormal returns (e.g., (Seyhun, 1986)).

In Table XIV, we then investigate whether opportunistic and routine insiders (low or high compensation) impact on holding returns measured at the one-month horizon.

Table XIV  
Within Financial Benefits

This table presents results from estimating equation (2). *t*-Statistics (two-tailed *p*-values) based on robust standard errors clustered by firm appear in parentheses (brackets). \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively.

| Variables                   | One-Month Future Returns          |                   |                      |                    |
|-----------------------------|-----------------------------------|-------------------|----------------------|--------------------|
|                             | Dependent Variable: $HPR_{i,t+1}$ |                   |                      |                    |
|                             | (1)                               | (2)               | (3)                  | (4)                |
|                             | High Compensation                 | Low Compensation  | High Compensation    | Low Compensation   |
| Opportunistic Insider Buy   | 0.020**<br>(0.010)                | 0.004<br>(0.013)  |                      |                    |
| Routine Insider Buy         | 0.027**<br>(0.013)                | -0.009<br>(0.009) |                      |                    |
| Opportunistic Insider Sell  |                                   |                   | -0.007<br>(0.007)    | -0.013*<br>(0.008) |
| Routine Insider Sell        |                                   |                   | 0.000<br>(0.014)     | 0.012<br>(0.015)   |
| BM                          | -0.013***<br>(0.003)              | 0.014<br>(0.020)  | -0.012***<br>(0.003) | 0.012<br>(0.019)   |
| PastMoret                   | -0.022<br>(0.061)                 | -0.077<br>(0.059) | -0.024<br>(0.060)    | -0.074<br>(0.057)  |
| Observations(Insider-Month) | 1,291                             | 1,161             | 1,291                | 1,161              |
| Month Fixed Effect          | Yes                               | Yes               | Yes                  | Yes                |

In column (1), we find the coefficient on opportunistic insider (high compensation) buy (0.020) is positive and lower than routine insider (high compensation) buy (0.027), which is economically and statistically significant (0.05) after using the month fixed effect and clustered by firm. In column (2), we also find the coefficient on opportunistic insider (low compensation) buy (0.004) is positive and higher than routine insider (low compensation) buy (-0.009) after using the month fixed effect and clustered by firm.

In column (3), we find the coefficient on opportunistic insider (high compensation) sell (-0.007) is

negative and more beneficial than routine insider (high compensation) sell (0.000) after using the month fixed effect and clustered by firm. In column (4), we also find the coefficient on opportunistic insider (low compensation) sell (-0.013) is negative and more beneficial than routine insider (low compensation) sell (0.012), which is economically and statistically significant (0.10) after using the month fixed effect and clustered by firm.

In Table XV, we next investigate whether opportunistic and routine insiders (by sector classifications) impact on holding returns measured at the one-month horizon. This table presents results from estimating equation (2). Columns (1) to (4) estimate the results for insider buys from energy, manufacturing, technology and financial sectors for the first three-month of the trade war period. Columns (5) and (8) indicate the results for insider sells from the same sectors and for the same time period.

Table XV  
Sector Classifications

This table presents results from estimating equation (2). *t*-Statistics (two-tailed *p*-values) based on robust standard errors clustered by firm appear in parentheses (brackets). \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively.

| One-Month Future Returns          |                      |                   |                     |                      |                      |                   |                     |                      |
|-----------------------------------|----------------------|-------------------|---------------------|----------------------|----------------------|-------------------|---------------------|----------------------|
| Dependent Variable: $HPR_{i,t+1}$ |                      |                   |                     |                      |                      |                   |                     |                      |
| Variables                         | Energy               | Manufacturing     | Technology          | Financial            | Energy               | Manufacturing     | Technology          | Financial            |
| Opportunistic Insider Buy         | -0.004<br>(0.011)    | 0.008<br>(0.030)  | 0.031**<br>(0.013)  | 0.021***<br>(0.008)  |                      |                   |                     |                      |
| Routine Insider Buy               | -0.010<br>(0.009)    | 0.041<br>(0.037)  | -0.050<br>(0.032)   | 0.028***<br>(0.009)  |                      |                   |                     |                      |
| Opportunistic Insider Sell        |                      |                   |                     |                      | -0.006<br>(0.010)    | 0.003<br>(0.014)  | -0.016<br>(0.012)   | -0.033***<br>(0.010) |
| Routine Insider Sell              |                      |                   |                     |                      | 0.037<br>(0.026)     | 0.003<br>(0.024)  | 0.017<br>(0.021)    | -0.011<br>(0.016)    |
| BM                                | 0.017<br>(0.011)     | -0.009<br>(0.025) | -0.027<br>(0.017)   | -0.014***<br>(0.003) | 0.017*<br>(0.010)    | -0.005<br>(0.023) | -0.024<br>(0.018)   | -0.015***<br>(0.003) |
| PastMoret                         | -0.206***<br>(0.062) | -0.124<br>(0.098) | -0.146**<br>(0.058) | 0.026<br>(0.061)     | -0.195***<br>(0.058) | -0.123<br>(0.097) | -0.146**<br>(0.058) | 0.036<br>(0.064)     |
| Observations(Insider-Month)       | 995                  | 566               | 765                 | 2,738                | 995                  | 566               | 765                 | 2,738                |
| Month Fixed Effects               | Yes                  | Yes               | Yes                 | Yes                  | Yes                  | Yes               | Yes                 | Yes                  |

In column (1), we find the coefficients on opportunistic (-0.004) and routine (-0.010) insider buys are negative and are not profitable for the energy sector after using the month fixed effect and clustered by firm. In column (2), we also find the coefficient on routine insider buy (0.041) is positive and higher than opportunistic insider buy (0.008) after using the month fixed effect and clustered by firm. In column (3), we also find the coefficient on opportunistic insider buy (0.031) is positive and higher than routine insider buy (-0.050), which is economically and statistically significant (0.05) after using the month fixed effect and clustered by firm. In column (4), we also find the coefficient on routine insider

buy (0.028) is positive and higher than opportunistic insider buy (0.021), which is economically and statistically significant (0.01) after using the month fixed effect and clustered by firm.

In column (5), we find the coefficient on opportunistic insider sell (-0.006) is negative and more beneficial than routine insider sell (0.037) after using the month fixed effect and clustered by firm. In column (6), we also find the coefficients on opportunistic (0.003) and routine (0.003) insider sell are equal and positive after using the month-fixed effect and clustered by firm. In column (7), we also find the coefficient on opportunistic insider sell (-0.016) is negative and more beneficial than routine insider sell (0.017) after using the month fixed effect and clustered by firm. In column (8), we also find the coefficient on opportunistic insider sell (-0.033) is negative and more beneficial than routine insider sell (-0.011), which is economically and statistically significant (0.01) after using the month fixed effect and clustered by firm.

#### 4.8 Instrumental variables approach

Table XVI presents the instrumental variable approach's estimation. The results of this table are associated with endogeneity concerns that might influence the findings. To account for these concerns, we estimate equation (2) by using the instrumental variable-2SLS (Baum et al., 2007).

Table XVI  
Instrumental variables approach: Two-stage least squares (2SLS)

|                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                      |                      |                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|
| This table presents the estimation of the equation (2) of using the instrumental variable approach based on two-stage least squares (2SLS) cross-section regressions. <i>t</i> -Statistics (two-tailed <i>p</i> -values) based on robust standard errors clustered by firm appear in parentheses (brackets). ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 level (two-tail), respectively. |                      |                      |                      |                      |
| One-Month Future Returns                                                                                                                                                                                                                                                                                                                                                                                                |                      |                      |                      |                      |
| <b>Dependent Variable: <math>HPR_{i,t+1}</math></b>                                                                                                                                                                                                                                                                                                                                                                     |                      |                      |                      |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                         | (1)                  | (2)                  | (3)                  | (4)                  |
| Variables                                                                                                                                                                                                                                                                                                                                                                                                               | First-3M             | Last-3M              | First-3M             | Last-3M              |
| Opportunistic Insider Buy                                                                                                                                                                                                                                                                                                                                                                                               | 0.017***<br>(0.005)  | -0.016<br>(0.016)    |                      |                      |
| Routine Insider Buy                                                                                                                                                                                                                                                                                                                                                                                                     | -0.007<br>(0.009)    | -0.002<br>(0.077)    |                      |                      |
| Opportunistic Insider Sell                                                                                                                                                                                                                                                                                                                                                                                              |                      |                      | -0.017***<br>(0.004) | 0.015<br>(0.015)     |
| Routine Insider Sell                                                                                                                                                                                                                                                                                                                                                                                                    |                      |                      | -0.010***<br>(0.003) | 0.005<br>(0.022)     |
| BM                                                                                                                                                                                                                                                                                                                                                                                                                      | -0.010***<br>(0.003) | -0.079***<br>(0.024) | -0.010***<br>(0.003) | -0.079***<br>(0.025) |
| PastMoret                                                                                                                                                                                                                                                                                                                                                                                                               | -0.039<br>(0.032)    | -0.036<br>(0.063)    | -0.039<br>(0.032)    | -0.036<br>(0.063)    |
| Observations(Insider-Month)                                                                                                                                                                                                                                                                                                                                                                                             | 7,803                | 641                  | 7,803                | 641                  |
| Month Fixed Effects                                                                                                                                                                                                                                                                                                                                                                                                     | Yes                  | Yes                  | Yes                  | Yes                  |

|   |       |       |       |       |
|---|-------|-------|-------|-------|
| F | 4.417 | 3.552 | 6.599 | 3.931 |
|---|-------|-------|-------|-------|

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In column (1), we find the coefficient on opportunistic insider buys (0.017) is positive and higher than routine insider buys (-0.007), which is economically and statistically significant ( $<0.01$ ). In column (2), we find the coefficient on opportunistic (-0.016) and routine (-0.010) insider buys is negative and are not profitable.

In column (3), we find the coefficient on opportunistic insider sells (-0.017) is negative and higher beneficial than routine insider sells (-0.010), which is economically and statistically significant ( $<0.01$ ). In column (4), we find the coefficient on opportunistic (0.015) and routine (0.005) insider sells is positive and are not profitable.

This finding supports the baseline regression results by mitigating endogeneity concerns through instrumental variable approaches.

## 5. Conclusion

In this paper, we investigate whether opportunistic or routine insiders are beneficial during the trade war of 2018. We employ a simple empirical strategy to form opportunism-informed trading. We consider the different tests for opportunistic insider trading based on the information advantage. In this regard, we use alternative measurements of event studies, and we interact with the opportunistic and routine insider transactions with political connections to find the results for opportunism-informed trading. We also consider the several tests for opportunistic insiders, e.g., gender, age, board position, compensation, and sector classifications. Importantly, we find consistent results with the baseline results; the opportunistic transactions are true informative that insiders contain about a firm's future. Using the simple definition of routine insiders, we are able to systematically identify the traders as either opportunistic or routine throughout the sample. We show that routine insiders' transactions carry uninformative signals, and opportunistic insiders' transactions are powerful predictors of future firm returns during the trade war.

Collectively, all results suggest that opportunistic insider trades are profitable and truly informative during the trade war period. Notably, the findings are remarkable in the current economic climate, where the government plays an active role in U.S. capital markets. We expect opportunistic insiders to be an information advantage if the government plays more active roles in influencing firm-level outcomes. Therefore, we encourage other investors and capital market regulators to monitor opportunistic insider trades. Further research can proceed in two different directions. First, considering the insiders of Chinese firms, it is relevant to the trade war of 2018. It may find whether political connection exploits the information advantage to earn more holding returns at that time. Second, the insights provided in

the paper can be used to focus on opportunistic insider trades (Cohen et al., 2012) for Chinese firms instead of political connections. We leave these issues for further research.

## References

### Uncategorized References

- Akin, O., Coleman, N.S., Fons-Rosen, C. and Peydró, J.L. 2019. Political connections and informed trading: Evidence from TARP. *Financial Management*.
- Ali, U. and Hirshleifer, D. 2017. Opportunism as a firm and managerial trait: Predicting insider trading profits and misconduct. *Journal of Financial Economics*. **126**(3), pp.490-515.
- Baum, C.F., Schaffer, M.E. and Stillman, S. 2007. Enhanced routines for instrumental variables/generalized method of moments estimation and testing. *The Stata Journal*. **7**(4), pp.465-506.
- Chakravarty, S. and McConnell, J.J. 1999. Does insider trading really move stock prices? *Journal of Financial and Quantitative Analysis*. **34**(2), pp.191-209.
- Cline, B.N., Gokkaya, S. and Liu, X. 2017. The persistence of opportunistic insider trading. *Financial Management*. **46**(4), pp.919-964.
- Cohen, L., Malloy, C. and Pomorski, L. 2012. Decoding inside information. *The Journal of Finance*. **67**(3), pp.1009-1043.
- Cziraki, P. 2018. Trading by bank insiders before and during the 2007–2008 financial crisis. *Journal of Financial Intermediation*. **33**, pp.58-82.
- El Ghouli, S., Guedhami, O., Nash, R. and Wang, H. 2022. Economic policy uncertainty and insider trading. *Journal of Financial Research*.
- Fidrmuc, J., Goergen, M. and Renneboog, L. 2008. Insider trading, news releases, and ownership concentration. *Insider Trading*. CRC Press, pp.309-370.
- Fidrmuc, J.P., Goergen, M. and Renneboog, L. 2006. Insider trading, news releases, and ownership concentration. *The Journal of Finance*. **61**(6), pp.2931-2973.
- Goergen, M., Renneboog, L. and Zhao, Y. 2019. Insider trading and networked directors. *Journal of Corporate Finance*. **56**, pp.152-175.
- Harvison, T. 2019. Political connections and insider trading. *Available at SSRN 3387495*.
- He, Q. and Rui, O.M. 2016. Ownership structure and insider trading: Evidence from China. *Journal of Business Ethics*. **134**(4), pp.553-574.
- Jagolinzer, A.D., Larcker, D.F., Ormazabal, G. and Taylor, D.J. 2020. Political connections and the informativeness of insider trades. *The Journal of Finance*. **75**(4), pp.1833-1876.
- John, K. and Lang, L.H. 1991. Insider trading around dividend announcements: Theory and evidence. *The Journal of Finance*. **46**(4), pp.1361-1389.
- Ke, B., Huddart, S. and Petroni, K. 2003. What insiders know about future earnings and how they use it: Evidence from insider trades. *Journal of Accounting and Economics*. **35**(3), pp.315-346.
- Lee, D.S., Mikkelsen, W.H. and Partch, M.M. 1992. Managers' trading around stock repurchases. *The Journal of Finance*. **47**(5), pp.1947-1961.
- Lee, I. 1997. Do firms knowingly sell overvalued equity? *The Journal of Finance*. **52**(4), pp.1439-1466.
- Marin, J.M. and Olivier, J.P. 2008. The dog that did not bark: Insider trading and crashes. *The Journal of Finance*. **63**(5), pp.2429-2476.
- Osborne, M.J. 2004. *An introduction to game theory*. Oxford university press New York.
- Ravina, E. and Sapienza, P. 2010. What do independent directors know? Evidence from their trading. *The Review of Financial Studies*. **23**(3), pp.962-1003.

- Rogers, J.L., Skinner, D.J. and Zechman, S.L. 2016. The role of the media in disseminating insider-trading news. *Review of Accounting Studies*. **21**(3), pp.711-739.
- Seyhun, H.N. 1986. Insiders' profits, costs of trading, and market efficiency. *Journal of financial Economics*. **16**(2), pp.189-212.
- Seyhun, H.N. 1990. Do bidder managers knowingly pay too much for target firms? *Journal of Business*. pp.439-464.
- Tavakoli, M., McMillan, D. and McKnight, P.J. 2012. Insider trading and stock prices. *International Review of Economics & Finance*. **22**(1), pp.254-266.