Return Synchronicity and Insider Trading Profitability

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Abstract

We investigate the association between stock return synchronicity and insider trading profitability. Morck, Yeung and Yu (2000) suggest that greater stock return synchronicity (or R^2) reflects less firm-specific information in stock prices. Consistent with the view, we find significantly higher insider profitability in firms with greater return synchronicity. The results mainly reside in opportunistic trades rather than in routine trades, and are more pronounced for trades by key insiders such as officers and directors. Furthermore, our results are weaker for industry bellwether firms, and stronger for firms with more opaque earnings or lower institutional ownership. We also document significantly more insider purchasing activity in firms with greater return synchronicity. Overall, our results support the view that greater return synchronicity means less firm-specific information in stock prices, and suggest that insiders take advantage of this by trading and profiting more from firms with greater return synchronicity.

Keywords: return synchronicity; firm-specific return variation; insider trading; information asymmetry; market efficiency.

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A stock's return variation can come from three sources: market, industry, and firm. In an attempt to quantify the relative importance of these three components, Roll (1988) documents that stock return synchronicity (or R^2) is surprisingly low in the US, suggesting that most of the stock return variation is firm-specific and cannot be explained by market-wide or industry factors. Using an international sample, Morck et al. (2000) show that return synchronicity is higher in emerging markets and in markets with poorer property rights. The authors posit that greater return synchronicity reflects less informative stock pricing: when prices incorporate less firm-level information relative to other sources, firm-specific return variation would be lower, resulting in greater return synchronicity. While many subsequent studies document findings consistent with Morck et al. (2000), a number of recent studies support the opposite view that greater return synchronicity may mean more informative stock pricing (Teoh et al. 2009; Dasgupta et al. 2010; Hou et al. 2013; Chan and Chan 2014; Kelly 2014; Li et al. 2014). To reconcile the seemingly contradictory findings, Morck et al. (2013) emphasize that return synchronicity measures the intensity of *firm-specific* information, as opposed to a firm's *overall* information environment (which may be influenced by market/industry information). The distinction between firm-specific versus industry/market information or the overall information environment is important and it can accommodate the findings from both camps: more firm-specific information incorporated in stock prices enhances price informativeness and lowers return synchronicity, but price informativeness may also come from industry-/market-level information embedded in prices, which tends to increase return synchronicity. These two different sources of information both contribute to price informativeness but have opposing effects on synchronicity. Hence, the documented relation between synchronicity and an information measure may vary with the type of information measure chosen in a study.

Following the suggestion of Morck et al. (2013), in this study we shift the focus back to *firm-specific* information from the debate on price informativeness regarding stock return synchronicity by investigating the relation between synchronicity and insider trading profitability. Corporate insiders' deep involvement in corporate decisions grants them superior access to private information of their firms. Consequently, transactions by corporate insiders contain valuable information (Seyhun 1986), and that the information is primarily firm-specific (Demsetz 1986; Piotroski and Roulstone 2004). If greater return synchronicity reflects less firm-specific information in prices, everything else being equal, it would be easier for insiders to profit from trading. Hence, we should expect greater insider trading profitability in firms with greater return synchronicity, especially with purchases which are more likely to be information-driven than sales (Lakonishok and Lee 2001; Jeng et al. 2003; Gider and Westheide 2016).

Using a sample of insider transactions in the US between 1990 and 2013, we find that insider profits, measured by cumulative abnormal returns (CARs) following insider purchases, are significantly higher in firms with greater return synchronicity. When insiders buy shares in the top quintile of firms ranked by return synchronicity, the 3-day cumulative abnormal return (CAR[0,3]) is 0.3%[1] greater than that in the bottom quintile. The positive association between insider trading profitability and return synchronicity remains statistically and economically significant over different event windows (ranging from three days to three months) and in different models after controlling for various explanatory variables, and it cannot be explained by contemporaneous industry or market price movements. In addition, we examine if the positive association differs for insiders with different information sets and across firms with different information environments.

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[1] The 0.3% difference is estimated using the Fama-French 3-factor model; when the market model is used, the difference in 3-day CAR is up to 0.414%.

We find that our results mainly reside in opportunistic insider trades, and largely disappear when routine trades are analyzed. The results are stronger for trades by key insiders such as top managers and officer-directors, who are more likely to have access to high-quality, firm-specific information. We also document weaker results for industry bellwether firms whose fundamentals correlate more with their industries, and stronger results for firms with more opaque earnings or less institutional holdings. Finally, we find that insiders exhibit more purchasing activity in firms with greater return synchronicity. Taken together, our results support the view that greater return synchronicity means less firm-specific information embedded in stock prices.

This study contributes to the literature by documenting a positive relation between return synchronicity and insider trading profit. The implications are two-fold. First, our study adds to the literature on insider trading by showing that insiders take advantage of their private information in firms with greater return synchronicity. We further demonstrate that such an advantage is magnified by a range of factors, including personal characteristics such as insider roles and trading patterns, and firm characteristics such as earnings opacity, fundamental correlations with industry peers, and institutional ownership. In addition, we provide some evidence that insiders trade more when return synchronicity is higher.

Second, this study helps shed light on the ongoing debate over whether greater stock return synchronicity means more or less informative pricing by abstracting from the informativeness debate and refocusing on *firm-specific* information incorporated in prices as suggested by Morck et al. (2013). Since Morck et al. (2000), a number of studies have examined the relation between return synchronicity and various information measures, but the conclusions are mixed. Some studies suggest that when more firm-specific information is incorporated in stock prices, return synchronicity is lower and prices are more informative. For example, Durnev et al. (2003) find

that stock returns better predict future earnings when return synchronicity is lower. Durnev et al. (2004) document higher investment efficiency in firms with lower return synchronicity. Wurgler (2000) and Chen et al. (2007) associate lower return synchronicity with higher sensitivity of investment to firm value. However, a growing number of recent studies suggest otherwise, i.e. greater return synchronicity reflects a better information environment. Dasgupta et al. (2010) argue that when future information is quickly incorporated into stock prices, there should be less firm-specific "surprise" to investors in the future; as a result, stock return synchronicity should be higher. Hou et al. (2013) posit that when stock price fluctuations are caused by investor sentiment, greater return synchronicity should mean more, rather than less, informative stock pricing. Empirically, more informative stock pricing implies lower information asymmetry between insiders and outside investors. Consistent with this view, Chan and Chan (2014) document smaller SEO discounts in firms with greater return synchronicity. Teoh et al. (2009), Kelly (2014), and Li et al. (2014) also find positive relations between various information efficiency measures and return synchronicity.

As briefly discussed previously, the seemingly puzzling discrepancy between these two strands of research may be attributed to the selection of information measures. By definition, return synchronicity is negatively associated with firm-specific information and positively associated with market or industry information. In other words, it measures the *relative* amount of firm-specific information to that of market and industry, rather than the quality of a firm's *overall* information environment. Both firm-specific and industry/market-level information, once incorporated in prices, would make prices more informative, but their respective effects on return synchronicity are opposite. Hence, the association between an information measure and return synchronicity may vary depending on which type of information content, firm or industry/market, dominates. For example, some information providers, such as financial analysts, are biased

towards producing market- or industry-level information (Veldkamp 2006; Piotroski and Roulstone 2004; Crawford et al. 2012) and follow a disproportionally small number of industry bellwether firms (Hameed et al. 2015). Consequently, it is likely to observe a positive relation between an information measure, such as analyst following, and return synchronicity.

Morck et al. (2013) attempt to clarify this confusion that muddies the debate by reminding researchers that return synchronicity measures the relative amount of firm-specific information in prices: everything else being equal, more firm-specific information incorporated in prices would make prices more informative, and lead to lower synchronicity. Therefore, it is important to use an information measure that is primarily firm-specific in an empirical test and at the same time control for the overall information environment. While it is difficult to empirically separate firm-specific information from industry or market information, a number of studies suggest that insider trading may be influenced by firm-specific information to a greater extent, compared to other measures used in previous studies.[2] Corporate insiders have long been considered to have access to firm-specific information about future earnings, cash flows, or other fundamental changes (Seyhun 1992; Piotroski and Roulstone 2005; Jiang and Zaman 2010; Cziraki et al. 2017). They may also have control over, or at least knowledge about, firm-specific events which may not have been publicly announced (Arshadi and Eyssell 1991; John and Lang 1991; Seyhun 1992; Harlow and Howe 1993; Agrawal and Jaffe 1995; Seyhun and Bradley 1997; Huddart and Ke 2007; Agrawal and Nasser 2012). Unlike information providers who follow multiple firms and thus prioritize industry or market information (Veldkamp 2006; Hameed et al 2015), corporate insiders are typically affiliated with only one firm and have little private information about other firms.

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[2] Examples include but are not limited to firm size, age, number of analysts following, liquidity, earnings quality and SEO discounts.

Demsetz (1986) thus argues insiders' profits primarily come from firm-specific information, because their knowledge about the industry or the market is likely to be known to outsiders that stay in contact with capital markets. Piotroski and Roulstone (2004) also find that insider trading is associated with the relative amount of firm-specific information impounded into prices.

By documenting a positive relation between return synchronicity and insider trading profitability – a measure closely related to firm-specific information, while controlling for a firm's overall information environment, we provide further empirical support to the view that greater stock return synchronicity reflects less *firm-specific* information impounded in stock prices as originally argued by Morck et al. (2000). To the extent that insiders may also trade on market- or industry-level information, we find that the results are quite similar if we remove market/industry components from insider profits in our robustness checks. Our study design of using a measure that reflects primarily firm-specific information, rather than the overall information environment, together with appropriate controls for the overall information environment such as size, liquidity, and analyst coverage, differentiates our study from the prior literature.

The rest of the paper is organized as follows. Section I reviews the literature and develops the hypotheses. Section II describes the data and defines important variables used in this study. Section III presents the results. Section IV concludes.

I. Literature Review and Hypotheses Development

I.A. Literature Review

I.A.1. Return Synchronicity

Roll (1988) finds that the majority of stock return variation could not be explained by market-wide or industry factors (i.e. low R^2). This raises an important question: why is the majority

of return variation firm-specific? One view is that the firm-specific return variation reflects firm-specific information on fundamentals. Morck et al. (2000) compare stock return synchronicity in different countries and posit that when the stock market is efficient, firm-specific information is quickly incorporated into stock prices, and thus reduces stock price synchronicity and the R^2. Several empirical findings support this view: firms with lower return synchronicity are found to have a stronger association between current returns and future earnings (Durnev et al. 2003), more transparency and lower crash risk (Jin and Myers 2006), more efficient capital allocations (Wurgler 2000; Durnev et al. 2004; Chen et al. 2007), more open capital markets (Li et al. 2004), more innovation outcomes (Mathers et al. 2017), closer ties with local institutional investors (Bae et al. 2013), faster incorporation of new information into stock prices (Cheng et al. 2014), and less excessive control from controlling shareholders (Boubaker et al. 2014). In addition, Bris et al. (2007) find that when short-selling is not allowed, the downside return synchronicity (R^2 estimated using negative market returns only) increases because negative firm-specific information is not incorporated into prices.

The other view argues that firm-specific return variation arises from noise. In Dasgupta et al. (2010) model, return synchronicity increases when stock prices better reflect future information; they also present empirical evidence showing that return synchronicity is higher for older firms, and after information events such as SEOs and cross-listings. Consistent with the view, firms with greater return synchronicity are documented to have higher analyst coverage (Chan and Hameed 2006), better earnings quality (Teoh et al. 2009), less return momentum and reversal (Hou et al. 2013), and lower SEO discounts (Chan and Chan 2014). Li et al. (2014) conclude that firm-specific return variation reflects noise and cannot be used interchangeably as idiosyncratic risk.

An interesting observations is that most studies supporting Morck et al. (2000) are at the country- or industry-level, while studies suggesting greater return synchronicity means a better information environment are primarily firm-level studies. The difference could arise from the fact that low-synchronicity firms tend to be small and less liquid. Without controlling for the overall information environment, the latter may simply capture the positive association between return synchronicity and market/industry information embedded in stock prices. For example, the results in Hameed et al. (2015) indicate that the positive relation between return synchronicity and analyst coverage (which is highly correlated with size, liquidity, etc.) may arise from analysts strategically choosing to cover bellwether firms whose stock returns comove more with the market and their industry peers. In a recent review, Morck et al. (2013) suggest that although existent studies have yielded conflicting conclusions on the association between return synchronicity and price informativeness, these seemingly inconsistent findings can still be reconciled with the view that greater return synchronicity means lower intensity of firm-specific events in prices, everything else being equal.

I.A.2. Insider Trading Profitability

Previous studies find that insider trades, especially insider purchases, contain valuable information, despite the fact that the SEC forbids corporate insiders to trade on "non-public, material information". Seyhun (1986) finds that insider purchases usually predict significantly positive abnormal returns. This is later confirmed by Jeng et al. (2003) who document an average 6% annual abnormal return following insider purchases and insignificant abnormal returns following insider sales. In addition, insider trading profitability depends on a firm's information environment. Many studies document negative associations between insider trading profitability and various information environment measures, such as R&D expenses (Aboody and Lev 2000),

size (Lakonishok and Lee 2001), number of analysts (Frankel and Li 2004), discretionary accruals (Aboody et al. 2005), and earnings response coefficient (Huddart and Ke 2007).

Demsetz (1986) argues that insiders' profits should primary come from the firm-specific part of their information, because the market- and industry-level information is likely to be known to investors who stay in close contact with capital markets and thus priced in very quickly. Indeed, compared to other information providers, insiders typically only have advantage in their own firms' information. In contrast, other information providers such as financial analysts can cover multiple firms, and are more likely to focus on market or industry information (Veldkamp 2006; Hameed et al. 2015). This is confirmed by Piotroski and Roulstone (2004) who investigate activities by three groups of information providers and show that insiders primarily produce firm-specific information. Consistent with this, a number of studies show that insiders base their trades on their firm-specific knowledge of earnings news, cash flow news, or changes in firm fundamentals (Seyhun 1992; Piotroski and Roulstone 2004; Jiang and Zaman 2010; Cziraki et al. 2017). Insiders may also have control over, or at least knowledge about, firm-specific events which may not have been publicly announced, such as bankruptcy (Seyhun and Bradley 1997) and takeovers (Arshadi and Eyssell 1991; Harlow and Howe 1993; Agrawal and Jaffe 1995; Agrawal and Nasser 2012). These studies suggest a close link between insider trading profitability and firm-specific information.

I.B. Hypotheses Development

We base our first hypothesis, H1, on the information content of insider trades and Morck et al. (2000): if greater return synchronicity means less firm-specific information incorporated in prices, it should be easier for insiders to profit from their trades, everything else being equal.

H1: Insider trading profitability is higher in firms with greater return synchronicity.

We further investigate H1 across different types of insider trades. Previous studies on insider trading suggest that certain insider trades, such as routine trades (Cohen et al. 2012) and sales (Seyhun 1986; Lakonishok and Lee 2001; Jeng et al. 2003; Gider and Westheide 2016), are likely driven by non-information factors and contain much less information. Consequently, we also hypothesize that our findings should mainly reside in opportunistic trades or insider purchases, and expect weaker results for routine insider trades and insider sales.

I.B.1. Insider Groups

Other than trade types, insider role also affects the information content in insider trades. For a corporate insider to profit from firm-specific information, the insider must have access to high-quality, firm-specific information. For example, officers and directors are considered better-informed insiders compared to others (Lakonishok and Lee 2001; Frankel and Li 2004). Seyhun (1986) and Agrawal and Jaffe (1995) show that insiders who are both firm officers and directors possess more information about firm decisions and make more profitable trades. Cline et al. (2017) find that trades by managers better predict abnormal performance compared to trades by large shareholders or unaffiliated insiders. Agrawal and Nasser (2012) show that trades by "top managers", namely Chairman, CEO, COO and President, contain more firm-specific information. Consistent with the view, Ravina and Sapienza (2010) also show that independent directors make less profitable trades compared to executives, although the gap narrows when corporate governance improves. To identify insiders' different information sets, we consider their roles in a firm, such as top manager or officer-director roles. We next hypothesize that the association between insider trading profitability and return synchronicity would be more pronounced for trades

by top managers and officer-directors, and less pronounced for trades by non-officer or non-director insiders, such as beneficial owners and other affiliated persons.

H2: The positive association between return synchronicity and insider trading profitability is more pronounced for trades by key insiders.

We use two ways to define key insiders. The *Top Managers* group consists of all insiders with titles such as Chairman, CEO, COO and President, following Agrawal and Nasser (2012). The *Officer-Directors* group consists of corporate directors who are also officers, following Agrawal and Jaffe (1995). Note that these two groups are not mutually exclusive. We also report the profitability of trades by all officers (the *All Officers* group consists of insiders who are flagged as officers in the database), by all non-officers (the *Non-Officers* group consists of insiders who are not flagged as officers), by beneficial owners, and by all others who are not directors, officers or beneficial owners.

I.B.2. Firm Characteristics and Information Environment

We also consider how a firm's information environment could affect the association between return synchronicity and insider trading profitability. Specifically, we consider three firm characteristics that affect the amount of firm-specific information available to outside investors: industry bellwether status, earnings opacity, and institutional ownership.

We first examine industry bellwether firms, defined as highly followed firms whose fundamentals best predict those of peer firms in the same industry (Hameed et al. 2015). Veldkamp (2006) shows that the fixed costs of information motivate analysts to focus on the production of common, as opposed to firm-specific, information and disproportionally follow a small number of stocks. Consistent with the argument, a number of studies find that the returns of industry

bellwethers help predict other firms' returns and comove more with the market and industry peers (Piotroski and Roulstone 2004; Chan and Hameed 2006; Hameed et al. 2015). Overall, these studies suggest that the stock returns of bellwether firms are influenced by industry and market factors to a greater extent. Thus, it is harder for insiders to exploit private firm-specific information to their advantage in these bellwether firms (Seyhun 1988). If the relationship between return synchronicity and insider trading profitability channels through firm-specific information, we should expect weaker results for industry bellwethers.

H3: The positive association between return synchronicity and insider trading profitability is less pronounced in industry bellwether firms.

Next, we examine earnings opacity, defined as the three-year average of the absolute value of annual discretionary accruals estimated from the modified Jones model (Hutton et al. 2009). Opaque earnings information reduces the amount of firm-specific information available to investors and increases information asymmetry (Francis et al. 2005; Francis et al. 2008; Gul et al. 2011; Rajgopal and Venkatachalam 2011), which also makes it easier for insiders to conduct profitable trades. Consequently, we hypothesize that the positive association between return synchronicity and insider trading profitability increases with earnings opacity.

H4: The positive association between return synchronicity and insider trading profitability is more pronounced in firms with more opaque earnings.

Finally, we consider how institutional ownership affects our results. A large number of studies show that institutional investors can produce and impound firm-specific information (Durnev et al. 2003; Ali et al. 2004; Ke and Petroni 2004; Piotroski and Roulstone 2004; Ke et al. 2006; Cohen et al. 2008; Brockman and Yan 2009), either by direct trading (Boehmer and Kelley

2009) or by encouraging short selling (Nagel 2005). In addition, high institutional ownership may lower insiders' ability to profit from their private information (Fidrmuc et al. 2006). We thus hypothesize that the relationship between return synchronicity and insider trading profitability decreases with institutional ownership.

H5: The positive association between return synchronicity and insider trading profitability is more pronounced in firms with lower institutional ownership.

II. Data

II.A. Sample Overview

In this study, we use insider transactions in the US between 1990 and 2013 sourced from Thomson Reuters Insiders Data. The Thomson data begins in 1986, but we start our analysis from 1990 because it is the first year for which we are able to estimate all key variables.[3] We keep open-market transactions only and exclude records that are coded otherwise, including stock grants, stock gifts and options-related transactions. If an insider has multiple transactions in a day, we combine the transactions into one and replace the trade volume with the total signed volume.[4] Because insider sales are documented to be driven by diversification or liquidity needs, rather than profit-seeking considerations (see Lakonishok and Lee 2001; Jeng et al. 2003; Gider and Westheide 2016), we focus our analysis on insider purchases only.[5] This results in an initial sample of 823,606 insider purchases. After merging the sample with CRSP and Compustat, we exclude

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[3] Specifically, in our empirical results we interact return synchronicity with earnings opacity, which is estimated using the Statement of Cash Flow method following Hutton et al. (2009). Year 1990 is the first year for which we can estimate earnings opacity using three annual lags of discretionary accruals.

[4] This is because most same-day trades by the same insiders appear to be split orders, and many insiders report them separately.

[5] In Internet Appendix A, we also analyze the association between return synchronicity and the negative CAR following insider sales. The results are largely insignificant, consistent with the previous findings that insider sales do not contain as much information as purchases.

firms that cannot be matched to CRSP or Compustat, financial and utility firms, firms with negative book values, or firms with less than \$10 million total assets from our sample. Applying these filters reduces our sample by 255,792, 216,095, 19,490 and 17,703, respectively. We further delete 100,309 trades that are smaller than \$1,000 in trade value. These steps lead to a sample of 214,217 trades by 47,257 corporate insiders. The number of unique firm-year observations is 43,042. In the final step, we drop observations with missing return synchronicity estimates. Our final sample size is 178,416.

We use Eventus to estimate abnormal returns around insider trades. Analyst coverage data are from I/B/E/S. Institutional ownership data are from Thomson Reuters. Market capitalization and financial data come from CRSP and Compustat respectively.

II.B. Return synchronicity

We define return synchronicity (*SYNCH*) in a way similar to Morck et al. (2000) and Piotroski and Roulstone (2004). Specifically, we first regress daily returns on equal-weighted market and industry returns for every firm-year:

$$r_{i,j,t} = \alpha_i + \beta_{i,M} * r_{M,t} + \beta_{i,j} * r_{j,t} + \varepsilon_{i,t} \quad \text{-- (a)}$$

where $r_{i,j,t}$ is the daily return of Stock i in industry j on day t, $r_{M,t}$ is the equal-weighted market return on day t, and $r_{j,t}$ is the equal-weighted Fama-French 48 industry return on day t. R^2 of the regressions are then log-transformed so that it is not bounded between 0 and 1:

$$\Psi_{i,y} = log\left(\frac{R_{i,y}^2}{1-R_{i,y}^2}\right) \quad \text{-- (b)}$$

where $R_{i,y}^2$ is the coefficient of determination (R^2) of equation (a) for Stock i in year y. $\Psi_{i,y}$ is our one-year measure of return synchronicity.

Using $\Psi_{i,y}$ directly in our study may potentially lead to an endogeneity problem. Insiders are more likely to trade in periods of high volatility (Gider and Westheide 2016). This means a positive association between Ψ and insider trading profitability may merely reflect insiders timing the market. As a remedy, we use the lagged three-year average synchronicity instead of $\Psi_{i,y}$:

$$SYNCH_{i,y} = (\Psi_{i,y-1} + \Psi_{i,y-2} + \Psi_{i,y-3})/3$$

$SYNCH_{i,y}$ is our main measure of return synchronicity for firm i in year y. This is similar to the idea of Hutton et al. (2009) who use a three-year average of earnings opacity to reduce noise in the measure. In robustness tests, we replicate all results using the one-year synchronicity measure of $\Psi_{i,y}$, and the results are largely the same.

II.C. Insider Trading Profitability

We measure insider trading profitability using cumulative abnormal returns (CAR). Specifically, for every insider purchase we use the Fama-French 3-factor model to estimate coefficients in the [-300, -46] window, and calculate daily abnormal returns starting from insider trading dates. In our reported results, we use equal-weighted market returns, but using value-weighted market returns yields similar results.

One empirical question with using cumulative abnormal returns is how long the event window should be. Some of the previous studies use a 6-month window because the short swing rule limits the profitability of insider purchases for the following six months (Huddart and Ke 2007). However, long-window CARs may be less accurate because of confounding events following insider purchases. Some insider trades precede major corporate events, such as earnings announcements (Ke et al. 2003), dividend announcements (John and Lang 1991), bankruptcy (Seyhun and Bradley 1997), and to some extent, mergers and takeovers (Arshadi and Eyssell 1991;

Harlow and Howe 1993; Agrawal and Jaffe 1995; Agrawal and Nasser 2012). With a large sample like ours, it is difficult to exclude transactions prior to these events. Using long event windows also incurs an overlapping problem because many insiders make multiple purchases in a single year. In this study, we perform most of our tests using four event windows: 3D (from day 0 to day 3), 2W (from day 0 to day 10), 1M (from day 0 to day 20) and 3M (from day 0 to day 60). We also examine the 5D window and obtain results very similar to those using the 3D window.

II.D. Other Variables

Prior literature finds that the following variables affect insider trading profitability. We include them as controls in our analysis.

SIZE: log of market capitalization at the beginning of the year. Smaller firms tend to have greater return synchronicity (Roll 1988); furthermore, size correlates with many measures of a firm's overall information environment. We expect insider profitability to have a negative loading on *SIZE* because firm-specific information should be more valuable in small firms.

LOG_BM: log of book-to-market ratio at the beginning of year. Similar to *SIZE*, book-to-market ratio is also shown to affect stock return (Fama and French 1992) and should be controlled for.

OP: operating profitability at the beginning of year. Operating profitability could affect both stock returns (Fama and French 2016) and return synchronicity (Dasgupta et al. 2010).

INV: a firm's investment defined as change in total assets from year t-2 to year t-1, divided by total assets in year t-2. Investment could affect both stock returns (Fama and French 2016) and return synchronicity (Chen et al. 2007).

R&D: research and development expense divided by total assets at the beginning of year. The intensity of R&D serves as an additional control of a firm's overall information transparency, and can positively affect the profitability of insider trading (Aboody and Lev 2000; Huddart and Ke 2007).

ILLIQ: illiquidity measure defined following Amihud (2002). Specifically, *ILLIQ* is the average ratio of the daily absolute return to the dollar trading volume on that day. Illiquid stocks tend to move less with the market (Chan et al. 2013; Kelly 2014); Gassen et al. (2016) show that failing to control for illiquidity can lead to biased conclusions.

TRDSIZE: the size of insider purchases as a percentage of the total number of outstanding shares at the beginning of year. A larger trade size may indicate greater price pressure or a stronger signal to outside investors, and may increase abnormal returns following the trade.

ANALYSTS: log of (the number of analysts following + 1). The number of analysts following is defined as the number of unique analysts issuing 1-year earnings forecasts in I/B/E/S. Analyst coverage is an important proxy for a firm's overall information quality and thus should have a negative coefficient in regressions.

In addition, we identify three variables that may affect the association between insider trading profitability and return synchronicity.

BW: a dummy variable which equals one (zero otherwise) if a firm is a bellwether firm in its industry. We identify bellwether firms in a way similar to Hameed et al. (2015). That is, we define a firm as a bellwether firm if it has above-median analyst coverage and above-median partial correlation in fundamentals with industry peers. We report more details in Section III.

18

OPAQUE and *HIGH_OPAQUE*: continuous and dummy measures of earnings opacity as defined in Hutton et al. (2009). Specifically, *OPAQUE* is the three-year moving average of the absolute value of annual discretionary accruals estimated from the modified Jones model (Dechow et al. 1995). *HIGH_OPAQUE* is a dummy variable which equals one (zero otherwise) if *OPAQUE* is greater than the sample median.

INST and *LOW_INST*: continuous and dummy measures of institutional ownership. Specifically, *INST* is the number of shares owned by institutional investors divided by the total number of outstanding shares at the beginning of year. *LOW_INST* is a dummy variable that equals one if *INST* is below the sample median and zero otherwise.

II.E. Descriptive Statistics

Table 1 provides an overview of the sample. Panel A reports the descriptive statistics of key variables used in this study, with all continuous variables winsored at the 1% level. The size of insider transactions is skewed: an average insider purchase has a size of 0.144% of total number of outstanding shares, but the median is only 0.023% of outstanding shares. When we analyze trades by insider role in untabulated results, we notice that trades by officers, directors and beneficial owners make up most of the insider transactions.

[Insert Table 1 here]

The means of the four CAR measures are all positive and sizable, ranging from 1.207% to 5.269%; all of them are also statistically significant at the 1% level as shown in the first row of Table 2. Panel B of Table 1 reports correlation coefficients among key variables. Bold numbers indicate correlation coefficients that are statistically significant at the 5% level. As expected, we

observe positive correlations between *SIZE, SYNCH,* and *ANALYSTS*, while *ILLIQ* has negative correlations with these three variables.

Before moving on to formal analysis, we examine the changes in insider trading and return synchronicity over time. In Figure 1, we plot the average 3-day CAR following insider purchases, and average return synchronicity for each year from 1990 to 2013. We first confirm the observation made in prior studies that the average R^2 decreases before 2000, but rises after 2000 in the U.S. (Campbell et al. 2001; Morck et al. 2000; Morck et al. 2013). Similarly, the average 3-day CAR following insider purchases also exhibits a positive time trend in our sample period, indicating that firm-specific information becomes steadily more valuable over time.[6] This is in clear contrast with the more stringent insider trading regulations over time, and suggests that the intensity of firm-specific information reflected in stock prices relative to industry/market-level information may have deteriorated in recent years.

[Insert Figure 1 here]

III. Empirical Results

III.A. Baseline results

In this section, we present empirical test results on the association between insider trading profitability and stock return synchronicity. We first sort our sample into quintiles by return synchronicity, and report average CARs following insider purchases in Table 2. We find that in firms with greater return synchronicity, insider purchases are significantly more profitable. The 3-day CAR after insider purchases is 1.344% in the top quintile versus 1.044% in the bottom quintile.

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[6] These two series have a significantly positive correlation of 0.509 (p-value: 0.000).

The 0.3% difference is statistically significant at the 1% level.[7] The results are similar for longer event windows: The differences between top and bottom quintiles are 0.294%, 0.182%, and 0.885% for event windows of 2W, 1M, and 3M, respectively.

[Insert Table 2 here]

In Table 3, we regress cumulative abnormal returns on return synchronicity with other controls and year fixed effects, and report the coefficient estimates. We also include industry (firm) fixed effects in columns 1-4 (5-8) and cluster standard errors at the firm level. Consistent with *H1*, the coefficient estimates of our return synchronicity measure, *SYNCH*, are positive and statistically significant in all columns. When firm fixed effects are included (columns 5-8), a one-standard-deviation increase in *SYNCH* corresponds to increases of approximately 0.14% in CAR_3D, 0.22% in CAR_2W, 0.52% in CAR_1M, and 2.39% in CAR_3M, respectively, suggesting the results are economically significant. Other control variables have signs similar to those reported in previous studies in most cases.

[Insert Table 3 here]

We further consider the possibility that insider trading CARs may also reflect market and industry information, in addition to firm-specific information. Although market- or industry-level factors are likely to be known to more investors and thus priced in before insider trading occurs (Demsetz 1986), private signals received by insiders may still contain a small market or industry component (Seyhun 1988; Lakonishok and Lee 2001). In Table 4, we report results with the industry/market components removed from the dependent variables (orthogonalized CARs). Specifically, we first regress CARs on cumulative contemporaneous industry and market returns

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[7] Standard errors are clustered at the firm level.

over the corresponding event windows (3D, 2W, 1M or 3M) to remove the effects of market and industry information, and then regress the residuals obtained in the previous step on return synchronicity and other controls. If the market or industry components embedded in CARs drive our results, using CARs orthogonalized with respect to industry and market cumulative returns should render our main results insignificant.

[Insert Table 4 here]

Table 4 shows that our results are little affected by market/industry movements: the coefficient of *SYNCH* remains significant at the 1% level across different specifications, and the coefficient estimates of *SYNCH* only change slightly in magnitude from those reported in Table 3.[8] These results suggest that the positive association between synchronicity and insider profit primarily channels through firm-specific information rather than market or industry movements.

III.B. Opportunistic vs. Routine Trades

Findings in Table 3 and Table 4 suggest that a positive relationship exists between return synchronicity and insider trading profitability, and it likely stems from the firm-specific information embedded in insider trades. If so, this positive association should be more pronounced for opportunistic insider trades which contain more firm-specific information than routine trades (Cohen et al. 2012). Following Cohen et al. (2012), we divide our sample into routine and opportunistic (non-routine) trades. A total of 38,105 purchases come from insiders who are identified as "routine" traders (who have traded in the same month for three consecutive years), and the rest are categorized as from opportunistic traders. In Table 5, we replicate our baseline

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[8] The finding is consistent with the low explanatory power of industry and market returns on the CARs. The R-squared of the first step regression is approximately 2-5%, indicating that the CARs following insider purchases contain primarily firm-specific information.

results with the subsample of opportunistic (routine) trades in columns 1 – 4 (5 – 8), including the same control variables and firm and year fixed effects. For brevity, we show regression estimates with firm fixed effects only since the results with industry fixed effects are similar. We find that our baseline results remain statistically significant for the subsample of opportunistic insider buys, but become much weaker (statistically insignificant in columns 1 – 3, marginally significant in column 4) for the subsample of routine insider buys.

[Insert Table 5 here]

III.C. Insider Roles

We next consider whether the baseline results reported in Table 3 are driven by other non-information firm-specific factors. For example, one may argue that our results are driven by self-imposed insider trading restrictions (Bettis et al. 2000), which may be correlated with return synchronicity (although we are not aware of any evidence from the prior literature that it is the case). In addition to employing firm fixed effects, we conduct two additional tests (results untabulated) to rule out this alternative explanation. First, the most widely used insider trading restriction is the blackout period around earnings announcements. We exclude insider transactions 10-days before or after earnings announcements (practically imposing the same blackout window on all firms), and obtain similar results. Second, insider trading restrictions usually apply to transactions by officers and directors only, but we are able to get qualitatively similar results after removing trades by officers and directors.

Besides trading restrictions, other unobserved firm-level characteristics may affect both insider trading profitability and return synchronicity through a non-information channel. Fortunately, our setting of insider trading allows us to examine transactions by insiders of different

roles. Since insider trading profits come from insiders' firm-specific information, we anticipate our baseline results to be more pronounced for trades executed by key insiders. If any firm characteristic drives our results through a channel other than information, there is no obvious reason for our results to be stronger for key insiders.

Table 6 reports how the association between insider trading profitability and return synchronicity varies across insider groups. We report regression results with *CAR_1M* as the dependent variable, but the results are similar with other event windows. In Panel A, we regress *CAR_1M* on return synchronicity, in sub-samples divided by insider role. We define key insiders in two ways: *top managers* (including Chairman, CEO, COO and President) in column (1), following Agrawal and Nasser (2012), and *officer-directors* (including corporate directors who are also officers) in column (2), following Agrawal and Jaffe (1995). Compared to other insiders such as 10% beneficial owners, these key insiders are involved in making important decisions, and are more likely to have access to firm-specific information that is not available to outside investors. For comparison purposes, we also define a group *all officers* which includes all firm officers, in column (3), and a group *all directors* which includes all board directors in column (4). We finally report two groups of insiders who are neither directors nor officers: beneficial owners with at least 10% ownership who are not directors in column (5), and all other insiders who are not officers, directors or beneficial owners in column (6). We find that the coefficient estimates of *SYNCH* for *top managers* and *officer-directors* are more than twice in magnitude than that reported in Table 3 column 7; in addition, return synchronicity is no longer positively associated with insider trading profitability when trades by beneficial owners and other insiders are analyzed.

[Insert Table 6 here]

In Panel B, we test whether the difference is statistically significant. We employ two dummy variables: *TOP_MNG* and *OFF_DIR*, whose respective values would equal 1 (and 0 otherwise) if a trade is conducted by the named group, and interact them with our variable of interest, *SYNCH,* one at a time. The coefficient estimates of the two interaction terms are both statistically and economically significant. Overall, the results in Table 6 are consistent with *H2*. These results suggest that our baseline results unlikely come from firm-level non-information channels.

III.D. Bellwether Firms

The results so far indicate that the positive association between synchronicity and insider profit comes from firm-specific information. Our next hypothesis *H3* further tests the consequence: it postulates that our baseline results in Table 3 should be less pronounced in industry bellwether firms, whose fundamentals comove more with the market and industry peers and contain a relatively smaller firm-specific component. Following Hameed et al. (2015), we identify bellwether firms for every Fama-French 48 industry in every year based on their fundamental correlation with the industry. Specifically, we define a firm as the bellwether firm if it is within the top tertile by analyst coverage and has the largest value of fundamental correlation in its industry.

In Table 7, we report how our results differ for bellwether firms. We regress insider trading profitability on return synchronicity for bellwether and non-bellwether firms (columns 1 – 4 and 5 – 8 respectively), and report the coefficient estimates in Panel A. We include the same control variables with firm and year fixed effects. We find that the coefficient of *SYNCH* becomes insignificant for the subsample of bellwether firms, but remains significant for the subsample of non-bellwether firms.

[Insert Table 7 here]

Hameed et al. (2015) define one bellwether firm for every Fama-French 48 industry in every year. This means that the subsample of bellwether firms has a very small sample size (only 2018 trades in our sample). One may wonder whether the insignificant results in Panel A of Table 7 are caused by the small number of observations; in addition, it becomes difficult to test whether the coefficient is significantly smaller for bellwether firms because of the extremely unbalanced subsamples. To resolve this issue, we relax the definition of bellwether firms in Panel B of Table 7. We define bellwether firms as firms that have above-median analyst coverage and above-median fundamental correlation with other industry peers. We then interact *SYNCH* with a dummy *BW* which indicates whether a firm is a bellwether firm in its industry, using this modified definition of bellwether firms. Intuitively, this new definition gives us significantly more observations because about 25% of the firms would fall into this category. While this new definition does not identify a unique firm which "best" predicts other firms' fundamentals per industry, we believe it still allows us to identify industry leaders which are better covered by analysts and have strong spill-over effects. In Panel B, we find that the coefficient estimates of *SYNCH*BW* are significantly negative across all columns when industry fixed effects are included. When firm fixed effects are included instead, we still observe negative coefficient estimates, although the significance levels are lower. The weaker results are likely due to the time-invariance of the bellwether indicator: in most cases, a bellwether firm remains a bellwether firm throughout the years in our sample. The explanatory power of *SYNCH*BW* thus mainly comes from the cross-section.

III.E. Earnings Opacity and Institutional Ownership

We next test whether the positive association between return synchronicity and insider trading profitability is stronger in firms with greater earnings opacity or lower institutional

ownership in Table 8. In columns 1 and 2, we regress CARs on return synchronicity and its interaction with a dummy variable *HIGH_OPAQUE*, which equals 1 (and 0 otherwise) if a firm's earnings opacity (defined as the absolute value of discretional accrual averaged from year t-3 to t-1, following Hutton et al. (2009)) is greater than the sample median. In columns 3 and 4, we regress CARs on return synchronicity and its interaction with a dummy variable *LOW_INST* which equals 1 (and 0 otherwise) if a firm's institutional ownership (as percentage of the firm's outstanding shares) is lower than the sample median. Interacting *SYNCH* with a continuous variables of earnings opacity or institutional ownership gives us similar results, but it is easier to interpret the results using a dummy variable. We document significantly positive coefficients for the interaction terms in all columns. Overall, these findings support *H4* and *H5* that the positive association between return synchronicity and insider trading profitability is more pronounced for firms with greater earnings opacity and lower institutional ownership.

[Insert Table 8 here]

Some previous studies, such as Christophe et al. (2004), Nagel (2005), Khan and Lu (2013) and Drake et al. (2015), find that short sellers also have firm-specific information and may front-run insider trades. Hence, high short interest may weaken the relationship between return synchronicity and insider trading profitability, similar to institutional ownership. In fact, we find that short interest and institutional ownership are highly correlated ($\rho = 96.8\%$; 1% significance). In untabulated results, we also observe the positive relationship between return synchronicity and insider trading profitability to be significantly less pronounced for firms with higher short interest.

Overall, our results in Tables 3-8 are consistent with the view that stock return synchronicity reflects firm-specific information in stock prices, as suggested by Morck et al. (2000). Hence, more synchronous stock returns indicate less firm-specific information in prices,

enabling corporate insiders to achieve greater profits from their trades. The association becomes stronger when the trades are conducted by key insiders, when firm earnings are more opaque, or when other informed investors are less active, consistent with Morck et al. (2000). Similarly, we also observe the association to be weaker in industry bellwether firms whose fundamentals correlate more with market/industry factors than with firm-specific ones.

III.G. Robustness Checks

In our robustness checks, we consider alternative definitions of insider trading profitability and return synchronicity. Specifically, we test our results using CARs estimated with the market model, return synchronicity based on SIC 2-digit industries, and value-weighted return synchronicity. Our results hold in all these robustness checks. We report these reports in Internet Appendix B. In untabulated results, we also find that our results are similar when Fama-MacBeth regressions are used instead of panel regressions, when one-year *SYNCH* values are used rather than a three-year moving average, or when more control variables, such as age, bid-ask spread and institutional ownership, are included in the regressions.

III.H. Insider Trading Intensity

Our findings so far suggest that it is easier for insiders to take advantage of their private information when there is less firm-specific information in prices. If so, in addition to achieving higher trading profitability, insiders may also trade more in firms with greater return synchronicity.

To measure insider trading intensity, we calculate the total number of shares purchased by each insider in each year, and then scale it by the number of shares outstanding. We include the same control variables as in other tests with two exceptions: we drop *TRDSIZE* because our analysis is no longer at the trade level; we also include the log of total shares outstanding, *SHROUT*,

as an additional control to ensure that the results do not come from the denominator of the dependent variable. We find that for almost all groups of insiders, the coefficient estimates of *SYNCH* are positive and significant at the 10% level, except for the group of "others" (who are not board directors, officers, or beneficial owners). The results indicate that insiders indeed trade more frequently when return synchronicity is greater, consistent with the view that greater return synchronicity means less firm-specific information reflected in stock prices. We report the results in Table 9.

IV. Concluding Remarks

Corporate insiders have been shown to base their transactions, particularly purchases, on firm-specific information. In this study, we document a positive association between insider trading profitability and stock return synchronicity. Our results thus are consistent with Morck et al. (2000) that greater return synchronicity reflects less firm-specific information in stock prices. Further analysis indicates that the positive association between insider trading profitability and return synchronicity is stronger in opportunistic trades and trades conducted by key insiders, and weaker in industry bellwether firms, firms with less opaque earnings and firms with higher institutional ownership. We also find that insiders take advantage of high return synchronicity by conducting more purchases. Overall, these results further corroborate the view of Morck et al. (2000). They also show under what circumstances insiders can best exploit their information advantage to achieve personal gains. In addition to documenting a novel positive association between return synchronicity and insider trading profitability, we also hope that our study helps clarify the confusion regarding the interpretation of stock return synchronicity by shifting the focus back to firm-specific information in prices from the debate on price informativeness in the recent literature.

Our study also helps understand the trend of increasing insider trading profitability over the past two decades as shown in Figure 1. One would expect insider trades to become less profitable in recent years after more regulations on the timing and reporting of insider trading are introduced (e.g. Regulation Fair Disclosure and Sarbanes-Oxley Act). Furthermore, most of today's firms have firm-level insider trading blackout windows and other restrictions. Despite all these added regulations and restrictions, the trend of increasing insider trading profitability is alarming as it indicates that corporate insiders seem to be making higher profits in recent years. The results in our study offer one possible explanation: given the strong, positive association between return synchronicity and insider trading profitability, the increasing average return synchronicity since 2000 may indicate an overall information environment in which increasingly less firm-specific information is reflected in prices. This widens insiders' information advantage over outside investors. It also echoes concerns raised by both academics and practitioners that the growing popularity of index investing may discourage investors from conducting fundamental research on individual firms.[9] Our study also suggests that this shortfall may be partially mitigated by establishing more institutional ownership, reducing earnings opacity, and relaxing short selling constraints.

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[9] See Wurgler (2011) as well as a recent Bloomberg article (https://www.bloomberg.com/gadfly/articles/2017-08-04/no-passive-investing-isn-t-going-to-devour-capitalism).

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Table 1. Sample Overview and Descriptive Statistics

This table provides an overview of our sample. Panel A reports the descriptive statistics of the main variables used in our analysis. Panel B reports the correlation among our main variables. *SYNCH* is the measure of return synchronicity, which is the average from the previous three years of the log-transformed R^2 of the following yearly regression: $R_{i,t} = \alpha_i + \beta_i * R_{M,t} + \gamma_i * R_{j,t} + \varepsilon_{i,t}$, where $R_{i,t}$ is the return of Stock i on day t, $R_{M,t}$ is the equal-weighted market return on day t, $R_{j,t}$ is the equal-weighted return of Fama-French 48 industry *j* (where Stock *i* belongs) on day t. *SIZE* is the log of market capitalization at the beginning of year. *LOG_BM* is the log of book equity value divided by market equity value at the beginning of year. *OP* is the operating profitability at the beginning of year. *INV* is the change in total assets from year t-2 to year t-1, divided by total assets in year t-2. *RD* is research and development expense divided by total assets at the beginning of year. *ILLIQ* is the Amihud (2002) illiquidity measure at the beginning of year. *TRDSIZE* is the trade volume times 100 and then divided by the total number of outstanding shares at the beginning of year. *ANALYST* is the log of (1+number of analysts following), measured at the beginning of year. All variables are winsored at the 1% level. *CAR_3D*, *CAR_2W*, *CAR_1M* and *CAR_3M* are the Fama-French cumulative abnormal returns in percentage over windows [0,3], [0,10], [0,20] and [0,60], respectively (Day 0 is the day insider trades take place). In Panel B, bold numbers indicate correlations statistically significant at the 5% level (p<0.05).

Panel A. Descriptive Statistics of Main Variables at the Transaction Level

Variable	N	Mean	Std. Dev.	Q25	Median	Q75
SYNCH	178416	-2.715	1.236	-3.550	-2.752	-1.893
SIZE	178156	5.176	1.895	3.771	4.964	6.412
LOG_BM	175915	-0.657	0.839	-1.168	-0.597	-0.084
OP	178156	0.132	0.389	0.000	0.144	0.286
INV	178113	0.170	0.581	-0.054	0.051	0.206
RD	178219	0.052	0.107	0.000	0.000	0.054
ILLIQ	178039	0.024	0.074	0.000	0.001	0.010
TRDSIZE	178416	0.144	0.578	0.006	0.023	0.079
ANALYST	178416	1.192	1.116	0.000	1.099	2.079
CAR_3D	177126	1.207	7.833	-2.712	0.469	4.303
CAR_2W	177085	2.137	11.980	-4.245	0.999	7.222
CAR_1M	177009	3.045	16.328	-5.818	1.569	10.266
CAR_3M	176758	5.269	31.408	-11.059	3.029	19.113

Panel B. Correlation Matrix

	SYNCH	SIZE	LOG_BM	OP	INV	RD	ILLIQ	TRDSIZE	ANALYST	CAR_3D	CAR_2W	CAR_1M
SIZE	0.596											
LOG_BM	-0.128	-0.423										
OP	0.067	0.260	-0.073									
INV	-0.042	0.121	-0.185	0.039								
RD	0.031	-0.077	-0.312	-0.341	-0.047							
ILLIQ	-0.292	-0.415	0.218	-0.066	-0.063	-0.057						
TRDSIZE	-0.072	-0.121	0.035	-0.070	-0.007	0.037	0.087					
ANALYST	0.530	0.662	-0.199	0.159	0.029	0.004	-0.294	-0.079				
CAR_3D	0.010	-0.060	0.060	-0.047	-0.032	0.031	0.019	0.038	-0.014			
CAR_2W	0.007	-0.072	0.081	-0.059	-0.041	0.036	0.015	0.038	-0.011	0.621		
CAR_1M	0.003	-0.085	0.105	-0.062	-0.049	0.044	0.013	0.035	-0.015	0.471	0.728	
CAR_3M	0.014	-0.107	0.164	-0.062	-0.076	0.042	0.022	0.024	-0.009	0.304	0.462	0.611

Table 2. Insider Profitability and Return Synchronicity: Univariate Tests

This table reports univariate results on the association between insider trading profitability and return synchronicity. Insider trading profitability is measured by the cumulative abnormal returns (CARs) of four different windows, *CAR_3D*, *CAR_2W*, *CAR_1M*, and *CAR_3M*. *SYNCH* is the measure of return synchronicity, which is the average from the previous three years of the log-transformed R^2 of the following yearly regression: $R_{i,t} = \alpha_i + \beta_i * R_{M,t} + \gamma_i * R_{j,t} + \varepsilon_{i,t}$ where $R_{i,t}$ is the return of Stock i on day t, $R_{M,t}$ is the equal-weighted market return on day t, $R_{j,t}$ is the equal-weighted return of Fama-French 48 industry *j* (where Stock *i* belongs) on day t.

All observations are sorted into quintiles by *SYNCH* (Quintile 1 is the lowest and Quintile 5 is the highest). Average CARs are then calculated for each quintile, and the CAR spreads (in %) between Quintile 5 and Quintile 1 are reported. All CARs are winsored at 1%. T-statistics, based on robust standard errors corrected for clustering at the firm level, are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1) CAR_3D	(2) CAR_2W	(3) CAR_1M	(4) CAR_3M
All Sample	1.207***	2.137***	3.045***	5.269***
	(64.83)	(75.08)	(78.45)	(70.53)
By *SYNCH* Quintile:				
Low	1.044***	1.812***	2.544***	3.578***
	(25.86)	(29.53)	(30.34)	(24.05)
2	1.194***	2.214***	3.144***	4.919***
	(27.33)	(33.15)	(34.74)	(28.51)
3	1.152***	2.079***	3.163***	5.925***
	(26.52)	(31.47)	(34.75)	(33.38)
4	1.204***	2.355***	3.452***	6.823***
	(29.57)	(37.02)	(39.90)	(41.12)
High	1.344***	2.106***	2.727***	4.463***
	(40.93)	(41.42)	(39.38)	(35.13)
High - Low	0.300***	0.294***	0.182*	0.885***
	(5.78)	(3.69)	(1.68)	(4.52)

Table 3. Insider Trading Profitability and Return Synchronicity: Baseline Results

This table reports our baseline regression results. The dependent variables are cumulative abnormal returns (CARs) of four different windows: CAR_3D, CAR_2W, CAR_1M and CAR_3M. *SYNCH* is the measure of return synchronicity, which is the average from the previous three years of the log-transformed R^2 of the following yearly regression: $R_{i,t} = \alpha_i + \beta_i * R_{M,t} + \gamma_i * R_{j,t} + \varepsilon_{i,t}$, where $R_{i,t}$ is the return of Stock i on day t, $R_{M,t}$ is the equal-weighted market return on day t, $R_{j,t}$ is the equal-weighted return of Fama-French 48 industry *j* (where Stock *i* belongs) on day t. *SIZE* is the log of market capitalization at the beginning of year. *LOG_BM* is the log of book equity value divided by market equity value at the beginning of year. *OP* is the operating profitability at the beginning of year. *INV* is the change in total assets from year t-2 to year t-1, divided by total assets in year t-2. *RD* is research and development expense divided by total assets at the beginning of year. *ILLIQ* is the Amihud (2002) illiquidity measure at the beginning of year. *TRDSIZE* is the trade volume times 100 and then divided by the total number of outstanding shares at the beginning of year. *ANALYST* is the log of (1+number of analysts following), measured at the beginning of year. All variables are winsored at 1%. T-statistics, based on robust standard errors corrected for clustering at the firm level, are reported in parentheses. Regressions (1)-(4) include industry and year fixed effects, and regressions (5)-(8) include firm and year fixed effects. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.	CAR_3D	CAR_2W	CAR_1M	CAR_3M	CAR_3D	CAR_2W	CAR_1M	CAR_3M
SYNCH	0.268***	0.480***	0.805***	2.507***	0.115**	0.174**	0.422***	1.932***
	(7.56)	(7.08)	(7.81)	(10.20)	(2.45)	(1.97)	(3.09)	(5.88)
SIZE	-0.346***	-0.612***	-0.901***	-2.182***	-0.696***	-1.272***	-2.192***	-6.514***
	(-12.75)	(-11.05)	(-10.89)	(-10.69)	(-10.24)	(-9.41)	(-9.62)	(-11.82)
LOG_BM	0.385***	0.878***	1.728***	5.692***	0.565***	1.345***	2.392***	7.608***
	(7.98)	(9.00)	(11.29)	(15.20)	(7.30)	(8.41)	(8.73)	(11.70)
OP	-0.322***	-0.736***	-0.935***	-1.006	-0.333**	-0.690**	-0.816*	-1.733
	(-3.15)	(-3.43)	(-2.95)	(-1.26)	(-2.41)	(-2.50)	(-1.77)	(-1.45)
INV	-0.137***	-0.289***	-0.511***	-1.766***	-0.003	-0.134	-0.157	-0.778*
	(-2.65)	(-2.66)	(-2.82)	(-4.48)	(-0.04)	(-0.99)	(-0.71)	(-1.69)
RD	0.852***	2.377***	4.488***	12.406***	0.702***	2.132***	4.129***	10.939***
	(3.40)	(5.16)	(6.27)	(6.33)	(3.33)	(5.89)	(6.47)	(4.84)
ILLIQ	-0.435	-1.976**	-4.276***	-7.003**	-0.975	-2.428*	-4.189**	-7.628
	(-0.86)	(-2.21)	(-2.92)	(-2.04)	(-1.39)	(-1.85)	(-2.04)	(-1.47)
TRDSIZE	0.412***	0.590***	0.694***	0.618***	0.382***	0.601***	0.778***	0.814***
	(8.31)	(7.53)	(6.35)	(2.81)	(7.23)	(7.16)	(6.58)	(3.97)
ANALYST	0.157***	0.386***	0.561***	1.705***	0.254***	0.535***	0.883***	2.234***
	(4.34)	(5.42)	(5.02)	(6.60)	(4.42)	(4.92)	(5.44)	(6.00)
Constant	3.029***	5.695***	8.959***	23.875***	4.327***	8.111***	13.941***	42.566***
	(8.08)	(7.78)	(7.15)	(6.94)	(13.22)	(12.87)	(13.34)	(16.39)
Industry FE	Yes	Yes	Yes	Yes	No	No	No	No
Firm FE	No	No	No	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	173,049	173,008	172,935	172,695	174,623	174,582	174,509	174,268
R-squared	0.016	0.023	0.030	0.062	0.009	0.017	0.027	0.070

Table 4. Orthogonalized Abnormal Returns

This table shows that the relation between insider trading profitability and return synchronicity cannot be explained by market and industry returns. The dependent variables are CARs orthogonalized with respect to market and industry returns. Specifically, *CAR_3D*, *CAR_2W*, *CAR_1M* and *CAR_3M* are first regressed on the corresponding contemporaneous cumulative market and industry returns of 3D, 2W, 1M and 3M, and then the residuals are regressed on *SYNCH* and other control variables. *SYNCH* is the measure of return synchronicity, which is the average from the previous three years of the log-transformed R^2 of the following yearly regression: $R_{i,t} = \alpha_i + \beta_i * R_{M,t} + \gamma_i * R_{j,t} + \varepsilon_{i,t}$, where $R_{i,t}$ is the return of Stock i on day t, $R_{M,t}$ is the equal-weighted market return on day t, $R_{j,t}$ is the equal-weighted return of Fama-French 48 industry *j* (where Stock *i* belongs) on day t. *SIZE* is the log of market capitalization at the beginning of year. *LOG_BM* is the log of book equity value divided by market equity value at the beginning of year. *OP* is the operating profitability at the beginning of year. *INV* is the change in total assets from year t-2 to year t-1, divided by total assets in year t-2. *RD* is research and development expense divided by total assets at the beginning of year. *ILLIQ* is the Amihud (2002) illiquidity measure at the beginning of year. *TRDSIZE* is the trade volume times 100 and then divided by the total number of outstanding shares at the beginning of year. *ANALYST* is the log of (1+number of analysts following), measured at the beginning of year. All variables are winsored at 1%. T-statistics, based on robust standard errors corrected for clustering at the firm level, are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Dep. Var.	(1) CAR_3D	(2) CAR_2W	(3) CAR_1M	(4) CAR_3M	(5) CAR_3D	(6) CAR_2W	(7) CAR_1M	(8) CAR_3M
SYNCH	0.266***	0.455***	0.744***	2.265***	0.112**	0.149*	0.375***	1.799***
	(7.62)	(6.75)	(7.31)	(9.38)	(2.41)	(1.67)	(2.73)	(5.45)
SIZE	-0.330***	-0.579***	-0.843***	-2.011***	-0.667***	-1.234***	-2.129***	-6.248***
	(-12.37)	(-10.61)	(-10.35)	(-10.01)	(-9.89)	(-9.31)	(-9.45)	(-11.47)
LOG_BM	0.385***	0.884***	1.725***	5.665***	0.563***	1.328***	2.361***	7.535***
	(8.06)	(9.14)	(11.45)	(15.49)	(7.30)	(8.40)	(8.73)	(11.74)
OP	-0.338***	-0.758***	-1.024***	-1.395*	-0.352***	-0.720***	-0.886**	-1.884
	(-3.34)	(-3.58)	(-3.32)	(-1.80)	(-2.60)	(-2.70)	(-1.99)	(-1.60)
INV	-0.114**	-0.248**	-0.457**	-1.674***	0.019	-0.096	-0.113	-0.710
	(-2.21)	(-2.29)	(-2.52)	(-4.18)	(0.27)	(-0.71)	(-0.52)	(-1.49)
RD	0.855***	2.366***	4.392***	11.713***	0.682***	2.060***	3.894***	10.238***
	(3.46)	(5.24)	(6.18)	(6.20)	(3.56)	(6.10)	(6.68)	(4.99)
ILLIQ	-0.521	-2.269**	-4.580***	-7.548**	-1.081	-2.768**	-4.609**	-8.514*
	(-1.04)	(-2.56)	(-3.26)	(-2.21)	(-1.59)	(-2.22)	(-2.39)	(-1.69)
TRDSIZE	0.404***	0.573***	0.658***	0.576***	0.375***	0.594***	0.763***	0.825***
	(8.16)	(7.41)	(6.13)	(2.65)	(7.12)	(7.17)	(6.55)	(4.06)
ANALYST	0.154***	0.386***	0.565***	1.706***	0.259***	0.556***	0.888***	2.186***
	(4.33)	(5.52)	(5.18)	(6.82)	(4.58)	(5.22)	(5.65)	(6.03)
Constant	1.728***	3.424***	5.749***	18.318***	3.024***	5.988***	11.028***	36.533***
	(4.64)	(4.63)	(4.98)	(6.03)	(9.27)	(9.66)	(10.64)	(14.12)
Industry FE	Yes	Yes	Yes	Yes	No	No	No	No
Firm FE	No	No	No	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	172,802	172,761	172,688	172,449	173,965	173,925	173,853	173,638
R-squared	0.015	0.021	0.028	0.054	0.009	0.016	0.024	0.061

Table 5. Routine and Opportunistic Insider Trades

This table analyzes how return synchronicity affects insider trading profitability differently for routine and opportunistic insider trades. Routine trades are defined as trades made by insiders who trade in the same month for at least three consecutive years, following Cohen, Malloy and Pomorski (2012). Columns (1)-(4) report subsample analysis for opportunistic trades and column (5)-(8) report subsample analysis for routine trades.

The dependent variables are cumulative abnormal returns (CARs) of four different windows: CAR_3D, CAR_2W, CAR_1M and CAR_3M. *SYNCH* is the average from the previous three years of the log-transformed R^2 of the following yearly regression: $R_{i,t} = \alpha_i + \beta_i * R_{M,t} + \gamma_i * R_{j,t} + \varepsilon_{i,t}$, where $R_{i,t}$ is the return of Stock i on day t, $R_{M,t}$ is the equal-weighted market return on day t, $R_{j,t}$ is the equal-weighted return of Fama-French 48 industry j (where Stock *i* belongs) on day t. *SIZE* is the log of market capitalization at the beginning of year. *LOG_BM* is the log of book equity value divided by market equity value at the beginning of year. *OP* is the operating profitability at the beginning of year. *INV* is the change in total assets from year t-2 to year t-1, divided by total assets in year t-2. *RD* is research and development expense divided by total assets at the beginning of year. *ILLIQ* is the Amihud (2002) illiquidity measure at the beginning of year. *TRDSIZE* is the trade volume times 100 and then divided by the total number of outstanding shares at the beginning of year. *ANALYST* is the log of (1+number of analysts following), measured at the beginning of year. All variables are winsored at 1%. T-statistics, based on robust standard errors corrected for clustering at the firm level, are reported in parentheses. All regressions include firm and year fixed effects. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Opportunistic Trades				**Routine Trades**			
Dep. Var.	CAR_3D	CAR_2W	CAR_1M	CAR_3M	CAR_3D	CAR_2W	CAR_1M	CAR_3M
SYNCH	0.107**	0.197**	0.523***	2.032***	0.119	0.140	0.053	1.429*
	(2.03)	(2.07)	(3.78)	(6.16)	(1.02)	(0.63)	(0.17)	(1.82)
SIZE	-0.721***	-1.330***	-2.302***	-6.940***	-0.610***	-0.999***	-1.745***	-4.703***
	(-9.89)	(-9.35)	(-9.69)	(-11.71)	(-3.65)	(-3.12)	(-3.81)	(-3.96)
LOG_BM	0.561***	1.351***	2.379***	7.759***	0.639***	1.408***	2.792***	8.046***
	(6.55)	(7.72)	(8.08)	(10.74)	(3.23)	(3.75)	(4.97)	(5.87)
OP	-0.399**	-0.723**	-0.831	-1.973	0.005	-0.376	-0.623	0.601
	(-2.48)	(-2.21)	(-1.53)	(-1.40)	(0.02)	(-0.81)	(-0.91)	(0.30)
INV	-0.038	-0.242*	-0.322	-0.948**	0.141	0.257	0.568	0.884
	(-0.51)	(-1.85)	(-1.58)	(-2.15)	(0.96)	(0.64)	(0.88)	(0.71)
RD	0.279	0.951	4.126***	13.609***	0.893***	2.568***	3.741***	9.405***
	(0.59)	(1.00)	(2.84)	(3.89)	(3.93)	(7.12)	(6.75)	(5.05)
ILLIQ	-1.078	-2.884**	-4.766*	-11.095*	-1.343	-1.360	-2.555	2.208
	(-1.38)	(-1.98)	(-1.93)	(-1.76)	(-0.85)	(-0.42)	(-0.67)	(0.29)
TRDSIZE	0.350***	0.546***	0.699***	0.593***	0.581***	0.875***	1.112***	2.006***
	(6.18)	(6.16)	(5.54)	(2.73)	(3.92)	(3.30)	(3.47)	(3.69)
ANALYST	0.241***	0.554***	0.868***	2.321***	0.414***	0.498*	1.038***	1.785*
	(3.80)	(4.78)	(5.03)	(5.99)	(2.87)	(1.73)	(2.60)	(1.87)
Constant	4.568***	8.675***	14.792***	44.766***	3.468***	6.096***	10.481***	32.706***
	(12.89)	(12.86)	(13.60)	(16.29)	(4.48)	(4.21)	(4.98)	(5.80)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	137,364	137,334	137,281	137,106	37,259	37,248	37,228	37,162
R-squared	0.010	0.017	0.027	0.074	0.009	0.016	0.027	0.056

Table 6. Insider Roles

This table analyzes how insider roles affect the association between insider trading profitability and return synchronicity. In Panel A, we report full regression results for *CAR_1M* and analyze subsamples of trades by six insider role groups: *top managers* (Chairman, CEO, COO and President), *officer directors* (directors who are also corporate officers), *all officers, all directors, beneficial owners,* and *others*. In Panel B, we report regression results with interaction terms between *SYNCH* and two dummies for more informed insiders: *TOP_MNG* (*top managers*) and *OFF_DIR* (*officer directors*). In untabulated results, we find similar results when *CAR_3D*, *CAR_2W*, and *CAR_3M* are analyzed. *SYNCH* is the average from the previous three years of the log-transformed R^2 of the following yearly regression: $R_{i,t} = \alpha_i + \beta_i * R_{M,t} + \gamma_i * R_{j,t} + \varepsilon_{i,t}$, where $R_{i,t}$ is the return of Stock i on day t, $R_{M,t}$ is the equal-weighted market return on day t, $R_{j,t}$ is the equal-weighted return of the corresponding Fama-French 48 industry *j* on day t. *SIZE* is the log of market capitalization at the beginning of year. *LOG_BM* is the log of book equity value divided by market equity value at the beginning of year. *OP* is the operating profitability at the beginning of year. *INV* is the change in total assets from year t-2 to year t-1, divided by total assets in year t-2. *RD* is research and development expense divided by total assets at the beginning of year. *ILLIQ* is the Amihud (2002) illiquidity measure at the beginning of year. *TRDSIZE* is the trade volume times 100 and then divided by the total number of outstanding shares at the beginning of year. *ANALYST* is the log of (1+number of analysts following), measured at the beginning of year. All variables are winsored at 1%. T-statistics, based on robust standard errors corrected for clustering at the firm level, are reported in parentheses. All regressions include firm and year fixed effects. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Panel A. Sub-Samples by Insider Role

	(1)	(2)	(3)	(4)	(5)	(6)
	Top Managers	Officer Directors	All Officers	All Directors	Beneficial Owners	Others
Dep. Var.	CAR_1M	CAR_1M	CAR_1M	CAR_1M	CAR_1M	CAR_1M
SYNCH	1.013***	1.107***	0.734***	0.359**	-0.518	-2.019
	(3.08)	(3.17)	(3.60)	(2.22)	(-1.24)	(-1.59)
SIZE	-2.202***	-2.320***	-2.502***	-2.047***	-2.154***	0.167
	(-3.60)	(-3.39)	(-6.62)	(-8.21)	(-3.54)	(0.09)
LOG_BM	2.943***	2.966***	2.358***	2.703***	1.656**	11.308***
	(3.33)	(2.81)	(4.58)	(9.56)	(2.21)	(3.67)
OP	-0.299	-0.635	-0.688	-0.919*	-1.058	12.025***
	(-0.17)	(-0.30)	(-0.69)	(-1.87)	(-1.22)	(3.35)
INV	1.042**	1.275***	0.260	-0.218	-0.305	0.233
	(2.37)	(2.78)	(0.83)	(-0.98)	(-0.31)	(0.29)
RD	2.795***	2.779***	3.228***	5.367***	7.545	15.190
	(7.99)	(8.05)	(10.02)	(3.97)	(1.14)	(1.46)
ILLIQ	0.649	0.862	-2.754	-6.885***	1.046	-17.738
	(0.10)	(0.12)	(-0.66)	(-3.00)	(0.25)	(-1.36)
TRDSIZE	1.812***	1.972***	1.993***	1.436***	0.182	1.320**
	(3.71)	(3.92)	(5.66)	(7.12)	(0.91)	(2.09)
ANALYST	0.735*	0.407	0.864***	0.905***	0.860	-1.054
	(1.67)	(0.77)	(3.30)	(4.83)	(1.39)	(-1.00)
Constant	15.049***	10.519	16.195***	13.670***	10.200***	4.364
	(5.34)	(1.33)	(9.65)	(11.09)	(3.62)	(0.41)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	26,068	22,961	56,610	72,873	41,603	3,423
R-squared	0.030	0.030	0.030	0.028	0.019	0.073

Panel B. Interacting *SYNCH* with Dummies for Informed Insiders

Dep. Var.	(1) CAR_1M	(2) CAR_1M	(3) CAR_1M	(4) CAR_1M
SYNCH	0.726***	0.711***	0.381***	0.369***
	(6.89)	(6.76)	(2.77)	(2.69)
TOP_MNG	2.156***		1.304***	
	(4.63)		(3.01)	
*SYNCH*TOP_MNG*	0.425***		0.239*	
	(2.82)		(1.72)	
OFF_DIR		2.459***		1.532***
		(4.87)		(3.18)
*SYNCH*OFF_DIR*		0.578***		0.339**
		(3.65)		(2.27)
SIZE	-0.882***	-0.885***	-2.189***	-2.190***
	(-10.66)	(-10.70)	(-9.61)	(-9.62)
LOG_BM	1.720***	1.720***	2.380***	2.381***
	(11.24)	(11.24)	(8.67)	(8.67)
OP	-0.925***	-0.924***	-0.809*	-0.807*
	(-2.92)	(-2.92)	(-1.75)	(-1.75)
INV	-0.534***	-0.533***	-0.156	-0.156
	(-2.95)	(-2.95)	(-0.71)	(-0.71)
RD	4.531***	4.544***	4.205***	4.224***
	(6.33)	(6.37)	(6.68)	(6.75)
ILLIQ	-4.275***	-4.241***	-4.186**	-4.205**
	(-2.93)	(-2.91)	(-2.03)	(-2.04)
TRDSIZE	0.714***	0.708***	0.786***	0.784***
	(6.55)	(6.49)	(6.66)	(6.63)
ANALYST	0.573***	0.576***	0.888***	0.887***
	(5.13)	(5.16)	(5.46)	(5.46)
Constant	8.591***	8.650***	13.742***	13.780***
	(6.85)	(6.93)	(13.19)	(13.24)
Industry FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	172,935	172,935	174,509	174,509
R-squared	0.031	0.031	0.027	0.027

Table 7. Bellwether Firms

This table analyzes whether our baseline results are more pronounced for bellwether firms. In Panel A, we define bellwether firms for every year and every Fama-French 48 industry following Hameed, Morck, Shen and Yeung (2015), i.e. firms within the top coverage tertile and has the largest partial correlation in fundamentals with other firms. In Panel B, we use a less restrictive definition of bellwether firms, and interact *SYNCH* with *BW* which equals one (zero otherwise) if a firm has above-median analyst coverage and above-median partial correlation in fundamentals with same-industry firms. The dependent variables are cumulative abnormal returns (CARs) of four different windows: *CAR_3D*, *CAR_2W*, *CAR_1M* and *CAR_3M*. *SYNCH* is the average from the previous three years of the log transformed R^2 of the following yearly regression: $R_{i,t} = \alpha_i + \beta_i * R_{M,t} + \gamma_i * R_{j,t} + \varepsilon_{i,t}$, where $R_{i,t}$ is the return of Stock i on day t, $R_{M,t}$ is the equal-weighted market return on day t, $R_{j,t}$ is the equal-weighted return of Fama-French 48 industry *j* (where Stock *i* belongs) on day t. *SIZE* is the log of market capitalization at the beginning of year. *LOG_BM* is the log of book equity value divided by market equity value at the beginning of year. *OP* is the operating profitability at the beginning of year. *INV* is the change in total assets from year t-2 to year t-1, divided by total assets in year t-2. *RD* is research and development expense divided by total assets at the beginning of year. *ILLIQ* is the Amihud (2002) illiquidity measure at the beginning of year. *TRDSIZE* is the trade volume times 100 and then divided by the total number of outstanding shares at the beginning of year. *ANALYST* is the log of (1+number of analysts following), measured at the beginning of year. All variables are winsored at 1%. T-statistics, based on robust standard errors corrected for clustering at the firm level, are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Panel A. Bellwether Firms vs. Other Firms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Bellwether Firms				**Other Firms**			
Dep. Var.	CAR_3D	CAR_2W	CAR_1M	CAR_3M	CAR_3D	CAR_2W	CAR_1M	CAR_3M
SYNCH	0.027	0.684	0.935	1.442	0.270***	0.482***	0.811***	2.341***
	(0.10)	(1.13)	(1.04)	(0.92)	(7.62)	(7.12)	(7.88)	(10.47)
SIZE	-0.190	-0.558	-0.751	-1.466	-0.346***	-0.612***	-0.905***	-2.073***
	(-1.17)	(-1.54)	(-1.51)	(-1.64)	(-12.66)	(-11.01)	(-10.89)	(-11.13)
LOG_BM	0.216	0.604	0.288	3.071**	0.382***	0.879***	1.737***	5.321***
	(0.67)	(0.81)	(0.29)	(2.01)	(7.90)	(8.99)	(11.32)	(15.71)
OP	-0.174	0.833	-1.318	1.633	-0.318***	-0.737***	-0.942***	-1.078
	(-0.26)	(0.69)	(-0.67)	(0.48)	(-3.11)	(-3.43)	(-2.96)	(-1.47)
INV	-0.998***	-0.954	-0.255	1.099	-0.128**	-0.281***	-0.504***	-1.612***
	(-4.16)	(-1.08)	(-0.16)	(0.67)	(-2.50)	(-2.59)	(-2.78)	(-4.26)
RD	0.009	-6.400	-4.941	18.617	0.849***	2.387***	4.492***	11.283***
	(0.00)	(-0.73)	(-0.36)	(0.76)	(3.39)	(5.19)	(6.28)	(7.09)
ILLIQ	45.191**	168.789***	241.353***	284.274***	-0.439	-1.997**	-4.312***	-8.291***
	(2.19)	(6.18)	(5.14)	(4.28)	(-0.87)	(-2.25)	(-2.97)	(-2.80)
TRDSIZE	0.110	0.477	0.961	-0.559	0.412***	0.588***	0.692***	0.544***
	(0.40)	(1.39)	(1.39)	(-0.55)	(8.33)	(7.51)	(6.33)	(2.92)
ANALYST	-0.406	-0.698	-0.787	1.601	0.158***	0.388***	0.565***	1.635***
	(-1.00)	(-0.78)	(-0.55)	(0.67)	(4.35)	(5.44)	(5.04)	(6.67)
Constant	2.985*	6.881*	5.562	-3.343	2.967***	5.966***	9.877***	26.110***
	(1.90)	(1.78)	(0.96)	(-0.39)	(7.32)	(9.06)	(9.43)	(10.36)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,018	2,018	2,018	2,018	171,031	170,990	170,917	170,677
R-squared	0.066	0.088	0.111	0.216	0.016	0.023	0.031	0.063

Panel B. Interacting *SYNCH* with Bellwether Dummy (*BW*)

Dep. Var.	(1) CAR_3D	(2) CAR_2W	(3) CAR_1M	(4) CAR_3M	(5) CAR_3D	(6) CAR_2W	(7) CAR_1M	(8) CAR_3M
SYNCH	0.281***	0.516***	0.868***	2.383***	0.177***	0.286***	0.559***	1.961***
	(7.70)	(7.40)	(8.14)	(10.25)	(4.40)	(3.69)	(4.54)	(6.99)
BW	-0.245*	-0.702***	-1.209***	-1.291	0.002	-0.245	-0.430	0.243
	(-1.73)	(-2.67)	(-2.98)	(-1.51)	(0.02)	(-1.03)	(-1.17)	(0.30)
*SYNCH*BW*	-0.132**	-0.356***	-0.611***	-0.742**	-0.056	-0.213*	-0.335*	-0.180
	(-2.09)	(-2.93)	(-3.26)	(-1.97)	(-0.90)	(-1.79)	(-1.83)	(-0.44)
SIZE	-0.345***	-0.610***	-0.899***	-2.045***	-0.439***	-0.813***	-1.390***	-3.830***
	(-12.78)	(-11.10)	(-10.93)	(-11.05)	(-13.08)	(-11.44)	(-11.15)	(-13.26)
LOG_BM	0.384***	0.877***	1.726***	5.306***	0.564***	1.305***	2.402***	7.248***
	(7.99)	(9.04)	(11.32)	(15.77)	(10.60)	(11.46)	(12.07)	(16.09)
OP	-0.315***	-0.717***	-0.910***	-1.031	-0.389***	-0.800***	-1.023***	-2.198**
	(-3.10)	(-3.37)	(-2.89)	(-1.42)	(-3.51)	(-3.51)	(-2.63)	(-2.33)
INV	-0.135***	-0.286***	-0.506***	-1.613***	-0.085	-0.256**	-0.406**	-1.288***
	(-2.63)	(-2.65)	(-2.80)	(-4.29)	(-1.46)	(-2.17)	(-2.07)	(-3.22)
RD	0.849***	2.376***	4.469***	11.241***	1.001***	2.591***	4.763***	11.897***
	(3.43)	(5.23)	(6.33)	(7.14)	(3.61)	(6.10)	(6.46)	(5.50)
ILLIQ	-0.402	-1.856**	-4.056***	-7.946***	-1.094*	-2.742**	-4.732***	-8.180*
	(-0.80)	(-2.09)	(-2.79)	(-2.67)	(-1.93)	(-2.52)	(-2.70)	(-1.93)
TRDSIZE	0.411***	0.588***	0.695***	0.536***	0.377***	0.582***	0.740***	0.674***
	(8.36)	(7.56)	(6.39)	(2.89)	(7.67)	(7.43)	(6.70)	(3.88)
ANALYST	0.153***	0.382***	0.557***	1.610***	0.223***	0.519***	0.823***	2.087***
	(4.07)	(5.14)	(4.77)	(6.29)	(5.17)	(6.19)	(6.29)	(7.21)
Constant	3.058***	5.767***	9.089***	22.846***	3.452***	6.504***	11.102***	31.009***
	(8.16)	(7.83)	(7.17)	(6.78)	(15.61)	(15.16)	(15.53)	(18.35)
Industry FE	Yes	Yes	Yes	Yes	No	No	No	No
Firm FE	No	No	No	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	173,049	173,008	172,935	172,695	174,623	174,582	174,509	174,268
R-squared	0.016	0.023	0.031	0.062	0.015	0.020	0.027	0.051

Table 8. Earnings Opacity and Institutional Ownership

This table analyzes how earnings opacity and institutional ownership affect the association between insider trading profitability and return synchronicity. The dependent variable is the one-month cumulative abnormal returns (*CAR_1M*). *SYNCH* is the measure of return synchronicity, which is the average from the previous three years of the log-transformed R^2 of the following yearly regression: $R_{i,t} = \alpha_i + \beta_i * R_{M,t} + \gamma_i * R_{j,t} + \varepsilon_{i,t}$, where $R_{i,t}$ is the return of Stock i on day t, $R_{M,t}$ is the equal-weighted market return on day t, $R_{j,t}$ is the equal-weighted return of Fama-French 48 industry *j* (where Stock *i* belongs) on day t. *HIGH_OPAQUE* is a dummy variable that equals one (zero otherwise) if the three-year average discretionary accrual, estimated using the Modified Jones Model, is greater than the sample median. *LOW_INST* is a dummy variable that equals one (zero otherwise) if institutional ownership, as a percentage of outstanding shares, is smaller than the sample median. *SIZE* is the log of market capitalization at the beginning of year. *LOG_BM* is the log of book equity value divided by market equity value at the beginning of year. *OP* is the operating profitability at the beginning of year. *INV* is the change in total assets from year t-2 to year t-1, divided by total assets in year t-2. *RD* is research and development expense divided by total assets at the beginning of year. *ILLIQ* is the Amihud (2002) illiquidity measure at the beginning of year. *TRDSIZE* is the trade volume times 100 and then divided by the total number of outstanding shares at the beginning of year. *ANALYST* is the log of (1+number of analysts following), measured at the beginning of year. All variables are winsored at 1%. T-statistics, based on robust standard errors corrected for clustering at the firm level, are reported in parentheses. Regressions (1)-(2) include industry and year fixed effects, and regressions (3)-(4) include firm and year fixed effects. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

VARIABLES	(1) CAR_1M	(2) CAR_1M	(3) CAR_1M	(4) CAR_1M
SYNCH	0.612***	0.417***	0.315*	0.232
	(5.04)	(3.31)	(1.91)	(1.50)
HIGH_OPACITY	1.167***		0.786	
	(2.84)		(1.55)	
SYNCH*HIGH_OPACITY	0.379***		0.336**	
	(2.79)		(2.01)	
LOW_INST		2.255***		1.861***
		(5.80)		(3.68)
SYNCH*LOW_INST		0.576***		0.287*
		(4.15)		(1.67)
SIZE	-0.945***	-0.834***	-2.653***	-1.963***
	(-9.03)	(-10.80)	(-9.16)	(-9.41)
LOG_BM	1.628***	1.626***	2.276***	2.200***
	(9.26)	(11.36)	(7.43)	(8.82)
OP	-0.915***	-0.689**	-1.147**	-0.758*
	(-2.59)	(-2.36)	(-2.27)	(-1.83)
INV	-0.740***	-0.456***	-0.352	-0.136
	(-3.18)	(-2.77)	(-1.11)	(-0.67)
RD	4.725***	4.056***	6.782***	3.965***
	(3.74)	(6.58)	(3.07)	(7.49)
ILLIQ	-4.901***	-3.792***	-5.006**	-3.790**
	(-3.34)	(-2.94)	(-2.00)	(-2.03)
TRDSIZE	0.748***	0.637***	0.843***	0.717***
	(6.32)	(6.42)	(5.90)	(6.67)
ANALYST	0.685***	0.702***	1.086***	0.968***
	(5.43)	(6.48)	(5.30)	(6.32)
Constant	8.720***	6.779***	15.883***	11.121***
	(5.97)	(5.34)	(11.28)	(10.42)
Firm FE	No	No	Yes	Yes
Industry FE	Yes	Yes	No	No
Year FE	Yes	Yes	Yes	Yes
Observations	144,987	172,935	146,141	174,509
R-squared	0.031	0.031	0.028	0.026

Table 9. Insider Trading Volume and Return Synchronicity

This table reports whether insiders buy more when return synchronicity is greater. The dependent variable is insider trading volume (IT_VOL), which is the total number of shares purchased by an insider in a year divided by the number of shares outstanding. *SYNCH* is the average from the previous three years of the log transformed R^2 of the yearly regression of daily stock returns on market and Fama-French 48 industry returns. *SIZE* is the log of market capitalization at the beginning of year. *LOG_BM* is the log of book equity value divided by market equity value at the beginning of year. *OP* is the operating profitability at the beginning of year. *INV* is the change in total assets from year t-2 to year t-1, divided by total assets in year t-2. *RD* is research and development expense divided by total assets at the beginning of year. *ILLIQ* is the Amihud (2002) illiquidity measure at the beginning of year. *ANALYST* is the log of (1+number of analysts following), measured at the beginning of year. *SHROUT* is the log of total shares outstanding. All variables are winsored at 1%. T-statistics, based on robust standard errors corrected for clustering at the firm level, are reported in parentheses. All regressions include firm and year fixed effects. ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)
Dep. Var.	IT_VOL	IT_VOL	IT_VOL	IT_VOL	IT_VOL
	All	All Directors	All Officers	Beneficial Owners	Others
SYNCH	0.107*	0.104*	0.090*	1.333*	0.516
	(1.78)	(1.88)	(1.67)	(1.90)	(0.42)
SIZE	-0.575***	-0.563***	-0.193*	-1.581	-0.110
	(-5.10)	(-5.42)	(-1.67)	(-1.51)	(-0.06)
LOG_BM	-0.153	-0.085	0.174**	-0.747	0.123
	(-1.35)	(-0.83)	(2.10)	(-0.66)	(0.04)
OP	-0.411*	-0.277	-0.014	-0.447	-1.127
	(-1.91)	(-1.29)	(-0.10)	(-0.21)	(-0.37)
INV	0.016	-0.050	-0.040	0.935	1.041
	(0.23)	(-0.86)	(-0.91)	(1.26)	(1.05)
RD	0.408	-0.384	-0.359**	12.542**	72.740***
	(1.35)	(-1.54)	(-2.55)	(2.07)	(5.94)
ILLIQ	3.356**	3.762***	1.858	12.549*	0.003
	(2.53)	(2.72)	(1.41)	(1.69)	(0.00)
ANALYST	-0.066	-0.036	0.009	-0.578	-2.158
	(-0.84)	(-0.48)	(0.15)	(-0.62)	(-1.23)
SHROUT	-0.543***	-0.249	-0.383	-4.400***	-2.420
	(-2.91)	(-1.53)	(-1.40)	(-2.60)	(-1.04)
Constant	9.889***	6.973***	5.652***	66.241***	28.518
	(6.83)	(5.56)	(2.70)	(4.46)	(1.30)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	58,926	36,838	23,644	3,985	660
R-squared	0.007	0.012	0.011	0.038	0.249

Figure 1. Insider Trading Profitability and Return Synchronicity, 1990 – 2013

This figure reports average cumulative abnormal return (CAR) over the [0,3] window following insider purchases, and average stock return synchronicity for every year from 1990 to 2013. These two series have a significantly positive correlation of 0.509 (p-value: 0.000).