PAKISTAN RESEARCH LETTER
HTTPS://PAKISTANRESEARCHLETTER.COM/INDEX.PHP/JOURNAL/INDEX
VOLUME : 4, ISSUE : 1, 2025

WORKING CAPITAL ABNORMALITIES AND INSIDER TRADING PROFITS: ACCOUNTING-BASED ANOMALY DETECTION

Hira Majeed
MS Scholar, Department of Business Studies, COMSATS University Islamabad.

Kumail Irfan
MS Scholar, Department of Business Studies, COMSATS University Islamabad.

ABSTRACT

This study examines the association of working capital anomalies with insider trading returns by developing an accounting-based anomaly detection system. The issue of detecting insiders trading is a perennial challenge in financial markets, especially those associated with emerging economies, where the level of information asymmetry is particularly strong. We posit that abnormal working capital patterns—i.e., unusual accruals, rapid changes in receivables or outsized shifts in current assets—can be indicative of opportunistic behavior associated with insider trading. Adopting a quantitative research design, we studied financial statement data of non-financial firms listed on the Pakistan Stock Exchange (2010–2022) in conjunction with transaction-level insider trading reports. The abnormal working capital was calculated based on expected accrual-based models, and the insider trading profits were computed using event-study technique. A battery of specification and statistical tests, including panel regressions and anomaly detection metrics confirmed a strong positive relationship –firms with larger WCAP anomalies showed stronger profitable insider trades evidence. The findings of this paper add evidence to a developing literature on forensic accounting and integrity in capital markets, showing that accounting-based measures can be used as preemptive signals to identify offenders engaging in fraudulent trading. This study has implications for regulators, auditors and policy-makers in their attempts to reduce insider manipulation.

Keywords: working capital anomalies, insider trading, anomaly detection, accruals, financial reporting, Pakistan Stock Exchange

INTRODUCTION

Despite periodic crackdowns and enforcement attempts by the regulators, insider trading still poses a conundrum for them because of its pervasive effects on market efficiency, integrity, and investor faith. Even with improved surveillance tools and disclosure obligations, the clandestine nature of insider activity complicates its detection. Contrary to blatant market tampering, insider trading frequently doesn't show up in a manner that's apparent to anyone until profits are booked — and so it is very hard for the authorities of enforcement to step into real time. Academics and regulators also argue that these activities involve a "relaxation" of the notion of a "level playing field" in capital markets, as well as marginalize investor confidence Some recent studies suggest that before stock price reaction to financial disclosures, corporate insiders frequently take advantage of firm-specific private information in situations when accounting signals are

manipulated or not being watched. That sets the stage for a nexus between accounting shenanigans and trading activity.

Working capital management: The production of accruals uses several channels for potential distortion and working capital management is one such channel. It is a normal part of your company's business operations to adjust its current assets and liabilities; abnormal fluctuations (such as receivables growing too much or decreasing, inventory increasing suddenly, payables decreasing) may indicate financial reporting irregularities. This type of behavior could be used to either hide or provide the market with early warning signals about opaque earnings management activities within a firm. These inefficiencies are especially useful to corporate insiders who, being inside the firm, can time their trades in anticipation of short-term market mispricing (Jiraporn et al., 2008).

The association of abnormal working capital changes and insider trading returns is particularly applicable in developing countries. In developed markets, strong corporate governance mechanisms, strict mandatory disclosure and sophisticated monitoring elements minimize (but do not completely eliminate) the prospects for insiders to exploit non-public information. The risk of such practices is much higher when corporate governance mechanisms in effect and enforcement of insider trading laws are weak or uneven as it is likely to be the case in a country like Pakistan. Recent reports by the Securities and Exchange Commission of Pakistan (SECP) indicated that insider trading cases are mostly associated with financial reporting anomalies. The combination of weak investor protection, plate glass ownership structures, and less developed regulatory provisions enhances insiders' opportunities to benefit from accounting-based manipulations.

This research is significant in that it provides an early warning system for the detection of anomalies in financial markets. Conventional insider trading detection systems mainly depend on the stock price movement, trading volume and disclosure breach. Although effective to a certain degree, these measures may not be able to reflect accounting-based patterns that lead up to inside trades. By concentrating on working capital differences, this research provides an accounting based approach to detecting insider trading. Accounting-based methods of anomaly detection have been popular in the context of fraud detection and earnings manipulation research, although they have seen limited use for insider trading. This paper aims to address these and related questions by examining whether abnormal working capital changes can serve as effective

predictors of the profitability produced by insider trading.

The study holds a distinct practical value apart from scientific importance. And for regulators, it presents a potential early warning system to supplement market-based monitoring. Furthermore, for auditors, working capital anomalies provide red flags that identify insider activity that should be considered along with other traditional audit routines. This knowledge of the relationships among these signals can be useful for investors in portfolio decisions by including indicators of opportunistic trading.

This study fills a void in the literature. Although previous studies have closely investigated accruals (Dechow et al., 1995), earnings manipulation (Beneish, 1999), and fraudulent reporting activities few have directly linked these accounting anomalies to insider trading performance. For example, Ke et al. (2003) show that insiders would time trades with respect to earnings announcement and the evidence for particular working capital anomalies has not been tested as much. Focusing on working capital, this research distills an empirical and operationally meaningful accounting attribute with clear implications for anomaly detection.

The impetus for the present study comes both from academic and regulatory pressures. At the same time that financial markets have grown more complex, regulators globally are using data analytics and accounting-related indicators to bolster oversight. Meanwhile, developing markets need new low-cost ways of spotting and combatting insider dealing. The ability to incorporate accounting information into surveillance systems offers a promising route toward this goal.

Objectives of the study are:

Testing the relation between excess working capital and profitable insider trading.

To construct an accounting-based anomaly detection model for insiders.

To offer a regulatory perspective for developing capital markets.

In addressing these objectives, this paper has practical implications that extends beyond academic into the work of market surveillance and forensic accounting. In the end, it aims to support market integrity - by showing how apparently mundane accounting ratios can still be used as a tool for identifying suspicious trading.

LITERATURE REVIEW

Academic literature on insider trading is rich and crosses various fields, such as law, accounting, and finance: researchers have been concerned with both the theoretical framework of insider trading and its empirical evidence. Pioneering research such as Kyle (1985) constructed models

that account for the ways by which informed traders strategically use their private information and yet trade against uninformed market participants. One of the first works documenting this fact was that of Seyhun (1986), who showed that insiders systematically achieve abnormal returns, thus demonstrating the longterm nature of information asymmetry in financial markets. Over the course, the literature has trended increasingly towards investigating how insiders accumulate and use their informational advantage, especially with respect to companies' disclosures and financial reporting processes.

One common theme in this line of research has linked insider trading to accounting signal', irregularities. Roulstone (2003) showed that insider trading regulations can affect the design of executive compensation, highlighting the interplay between governance and insider behavior. Jagolinzer, Larcker, and Taylor (2011) also underscored that the informational value of insider trades is associated not only with firm performance but also with the credibility of financial reports. These studies underscore the value of accounting-based signals for explaining and monitoring insider trading, indicating that deceased or impaired financial data tends to precede constructive insider trades.

In the accounting literature, working capital and accruals-based measures have attracted considerable interest as indicators of earnings manipulation and fraudulent financial reporting. Jones (1991) proposed a popular model to separate discretionary and nondiscretionary accruals, providing an approach with which to investigate how companies manage earnings so as to meet targets or mask underlying operating performance problems. Extending such models, Dechow et al. (1995) further developed an accrual model to narrow down managers' manipulation of earnings with substantial empirical evidence. These observations were extended by Beneish (1999) who formulated the M-score model to show that abnormal accruals, such as unusual working capital adjustments could be used to predict fraudulent financial reporting. As a collective, these papers laid the groundwork for accounting-based anomaly detection and gave both regulators and researchers quantitative methods to assess the credibility of financial statements.

The confluence of earnings management and insider trading activity has been addressed in a number of seminal works. Ke, Huddart, and Petroni (2003) reported the insiders trade strategically around earnings announcement dates by taking advantage of their private information about accrual-based earnings before it is priced in to market. Their results implied

that insiders are able to understand what are the implications of accrual adjustments and maximize their abnormal return. Jiraporn, Kim, and Mathur (2008) broadened this path of exploration by demonstrating that corporate insiders are more likely to exploit distorted accounting for trading profit when such distortions are relatively large within the context of a firm, supporting the view that insiders actively exploit accounting anomalies for their advantages in trading activities. These findings again stress the importance of accruals, and hence working capital items, in forming insider trading profits.

However, the literature shows significant gaps which justify the present investigation. Research on accruals and insider trading has been largely focused in developed markets where (by comparison) institutional oversight and corporate governance are strong. And studies of the U.S. and European markets are informative but may not be fully representative of emerging economies, where enforcement is less vigorous and accounting irregularities more common This is an important lacuna as it is in these very circumstances that both imbalances exist and insiders exploit private information.

Further limitations that are also limited by the scope of accounting signals studied in the literature. Most studies have regarded accruals as a generic aggregate without singling out the role of working capital abnormalities. However, working capital elements—including Receivables, Payables and Inventories—are much m and their swings are also more immediately evident in quarterly and annual reports, rendering the indicators useful for both insiders and outside monitors. Although Beneish's M-score and other similar models can be seen as indirectly taking working capital effects into account, the direct relationship between these anomalies and insider trading profitability is largely ignored.

Research Objectives:

To provide empirical evidence on the association between working capital abnormalities and insider trading profits.

For studying accounting signals-based anomaly detection models.

Investigate regulatory and audit issues related to accounting surveillance.

Research Questions:

Do 'abnormal' working capital fluctuations predict future insider trading profits?

Is "anomaly detection" in accounting figures able to improve the surveillance of insider trading?

How does it relate to the state of emerging markets?

Significance:

This paper adds to the forensic accounting literature by suggesting that working capital irregularities can be useful signals of concealed rent-seeking activities. It extends the anomaly detection models and incorporates accounting-based indicators into an arsenal of market monitoring tools, which represent a new look on the existing price- and volume-centric surveillance systems. Additionally, it notifies regulators of early warning signals for insider trading and provides regulators with practical information on how to enhance enforcement actions. Through the link between financial reporting anomalies and fraudulent trading, the study has academic importance as well as practical implications for auditors, regulators and investors in developing capital markets.

METHODOLOGY

The methodical framework of this research was rooted in the empirical exploration of the relationship between working capital abnormalities and insider trading gain in a systemic quantitative way. A panel research methodology was employed, integrating financial statement analysis and event-study approach that has been extensively used in previous studies on fraud detection and earning management (Beneish et al., 2013). This drafting made it possible to observe firm by accounting measure variations and market reactions over time to insider transactions. The study was able to follow how deviations between accounting measures and market information can link hidden imbalances within working capital components with abnormal insider returns.

The sample is made up of non-financial firms listed on the Pakistan Stock Exchange (PSX) during 2010–2022. We focus on non-financial firms as financial institutions are subject to different accounting standards and regulations that may confound the measurement of working capital anomalies. The insider trading information was manually obtained from required Securities and Exchange Commission of Pakistan (SECP) filings, relating with the purchase/sales done by directors, executives, or substantial shareholders. Firm-specific accounting and firm's current asset and liability components Firm-level financial data were collected from audited annual reports and standard databases to guarantee the quality of information with easy comparability between firms. This time frame was chosen to attain over a decade of trading/monitoring history and to permit strong statistical inference, as well as the analysis of short-run and long-run dynamics.

The key variables were measured following existing accounting and finance practices. Abnormal working capital was proxied with the modified Jones model, which has been acknowledged as effective for disentangling discretionary from normal accruals. As it concentrated solely on deviations in receivables, payables and inventories, the model isolated the discretionary working capital that is most open to manipulation by directors. These deviations, measured as residuals to the normal level of adjustment for working capital, were proxy for abnormal working capital adjustments. Insider trading gains were measured as the abnormal returns around insider trade dates. We used it4yt stock-return model, which compared firms' daily stock return with a benchmark market index to obtain abnormal performance. Short and long event windows, e.g., five, ten and twenty trading days, were employed to investigate the persistence and magnitude of insider gains. This double measurement setup made sure that both accounting irregularities and trading success were accurately measured.

Panel regressions with firm and year fixed effects were used to examine the association between these variables. This specification accounted for unobserved heterogeneity across companies and time-varying shocks that could affect both insider trading in financial reporting. Known outlier exclusion procedures were also employed, including the use of anomaly detection (AD) measures (e.g., test for $z > 4$ and distributional cutoffs), to guard against extreme values that drove findings. Sensitivity tests contained modifications to our model, variations in event window size, and sub-period testing for firm size and industry category.

Performance measurement focused on statistical and explanatory aspects. P-values were calculated in traditional S. identity. Order analysis to test the quality of estimated variables. R 2 was used to test the explanatory power of the models, which indicated how much variance of insider trading profits could be explained by working capital anomalies. Sensitivity exercises also were performed to confirm that the findings were not simply a result of a few very active trading firms or extreme accounting adjustments. These methodological measures increased the reliability and validity of the results, in line with widely accepted standards in financial econometrics.

Ethica lissues were taken into account at all the stages of this research. Any information referenced to generate the results was obtained from publicly released sources as part of regulatory filings and in no way conflicts with legal or industry standards. The individual identity of insiders was kept confidential through the anonymization of transaction data, and we

only considered aggregated patterns at the firm level. In this way, we ensured our study contributed to academic and regulatory understanding without keeping or revealing personal or sensitive data. Furthermore, this reliance on audited financial statements reduced the risk of data manipulation or misreporting.

All in all, the approach employed by us combined accounting-based anomaly detection and market event analysis, thus giving an overall picture of how WC abnormalities are connected with insider trading profits. The design of the research, which consisted in bridging solid models with robust statistics, did not only increase empirical validity; also, it offered an example that could be replicated in other emerging markets.

RESULTS AND EVALUATION

The empirical evidence in the study shows a robust and significant association between the abnormal level of working capital and insider trading profitability. The results of the regression analyses were robust in that companies with abnormal A/R, A/P and INV changes were more likely to generate excess insider profits. Our results are consistent with the main prediction that deviations in working capital are an early screen for opportunistic trading activities.

The base model with firm and year fixed effects showed that firms with high abnormal receivables/payables earned insider trading profits that were 2.3% higher in the ten day event window than the gains prevailing for firms with normal levels of working capital. This size is both statistically significant at the 1\% level and economically meaningful, as only a few percentage points of excess return can translate into far-reaching insider gains when it comes to multiple transactions.

A summary of the baseline regression results is presented in **Table 1** below:

Table 1. Regression of Insider Trading Profits on Working Capital Abnormalities

Variable	Coefficient (β)	t-Statistic	Significance
Abnormal Receivables	0.018	3.42	***
Abnormal Payables	0.015	2.97	**
Abnormal Inventory	0.009	1.85	*
Firm Size (log assets)	-0.004	-1.12	ns

Leverage	0.006	0.87	ns
Industry Fixed Effects	Controlled	–	–
R^2	0.32	–	–

*Note: ***, *, * *denote significance at the 1%, 5%, and 10% levels, respectively.*

Obviously, the receivable/payable effect is even more important for the explanation of insider trading profits than that using inventory changes. The lower strength of the inventory anomaly may indicate less accounting discretion or delayed detection that manipulation takes place in th category.

Special event analysis gave additional evidence of insiders' strategic behavior. No trades were notable evenly spread through time but concentrated around quarterly announcements when working capital changes would be most marked. Generally, insiders seem to have transacted in the expectation of how these abnormalities would determine future market perceptions.

Sensitivity analysis was performed by dropping firms in the top decile of trading volume and accounting problems to ensure that findings were not driven by few highly active companies. Despite this limitation, the positive relationship between working capital anomalies and insider trading profits was still highly statistically significant. The fact that this is found in both robustness tests strengthens the empirical evidence.

The evaluation measures show both statistical and practical significance. With the R^2 at 0.32, approximately one-third of insider trading profits variation is explained by working capital abnormalities and control variables. Though not comprehensive, the predictive power of this explanation serves as a remarkable witness of how complicated and diversified insider trading action is. It is important that the fact that results are statistically significant across different models makes it less probable that the association between configuration and performance is spurious.

Collectively, these results are consistent with the argument that anomalous WCAs serve as flags for regulators and auditors. By monitoring abnormal patterns in receivables and payables, regulators could flag for scrutiny companies where insiders are more likely to reap an imbalanced benefit from private information. Additionally, the evidence adds to the

accumulating body of literature associating financial statement anomalies with market-based exploitation and is especially applicable in emerging markets that still experience weak governance structures.

DISCUSSION

The results presented in this paper reconcile the growing evidence on linking accounting anomalies with insider trading profits, and chip in to distinguish a specific role for working capital changes acting as valuable detection approach. Previous studies have tended to focus on total accruals and broad-based measures of earnings management, generally focusing on how insiders take advantage of private information about upcoming announcements or deviations in accounting indicators (Ke et al., 2003; Jagolinzer, Larcker &Taylor,2011). By concentrating explicitly on working capital, we show that certain constituents of accruals—receivables, payables and to a lesser extent inventory—can act as sharper signals of nefarious trading. In so doing, the paper sharpens the analytic focus of those regulators, auditors, and investors who are frequently challenged to disentangle normal accounting fluctuations from fraud.

The findings are consistent with existing theories on information asymmetry. Kyle (1985) put forth a model of insider trading which predicted that insiders would use private information to trade in a manner which trades off profitability versus probability of being detected. Our findings indicate the existence of such mechanism in the setting of a real-world emerging market where abnormal swings of working capital can create an exploitable informational advantage for insiders. For example, in periods with high receivables, insiders might expect that analysts or external auditors will question the quality of earnings produced by these numbers. Likewise, decreases in payables that don’t seem to fit with the operational cycle may be an early indicator of earnings smoothing or short-term liquidity gamesmanship. In both scenarios, insiders seem to take advantage of their access to information on the true state of the economy - knowledge which outsiders lack until news is released.

Regulatory implications of such findings are significant. Traditional surveillance systems implemented by organizations like the SECP nowadays tend to include such methods as intense transaction surveillance, whistleblowing reports or reporting based on reactions, and investigating after potentially suspicious trading activity has already been evidenced. The integration of an accounting-based anomaly detection system which observes abnormal working capital behavior can bolster proactive control. We can imagine, say, a system that will flag

companies whose current receivables or payables are abnormal relative to their own histories or those of the peer group—the classic alert mechanism for subsequent closer inspection of inside trading activities. This is even more important in developing countries where resources are not available for regulators to monitor every transaction in the real time when it happens. By restricting scrutiny to high-risk companies, which could be detected by abnormal accounting items, regulators are better certain of optimizing inspection.

The implications for auditors are equally significant. Audit standards now focus on the need for auditors to exercise professional skepticism when assessing management's use of accounting judgments. But auditors also have a hard time picking up on more subtle machinations that are technically allowable under accounting standards. Other working capital flows are further diagnostic opportunities. Where auditors observe unusually large differences in receivables or payables without a clear operational explanation, these cues could not only indicate potential earnings management, but also signal managers opportunistic use of private information. It would therefore allow auditors to incorporate anomaly detection measures in their risk–assessment frameworks, enhancing the potential for providing early warnings not limited to the area of reliability of financial statements.

The findings also serve as a reminder for investors of the need to pay close attention to working capital disclosures during their due diligence phase. While investors regularly home in on headline numbers such as EPS, cash flow from ops or leverage ratios, the more discreet features of working capital are often overlooked. However, our findings indicate that these terms incorporate some useful information on managerial latitude and inside incentives. Investors who consider the working capital anomaly in their trading may have better expectations of price revisions after announcements and hence mitigate themselves from AV costs due to private information. At best, increased sensitivity to not-normal looks could act as a "red" light", arousing even more wariness in trading decisions.

Although this study adds meaningfully to the literature, it has several limitations. First, the sample being confined to non-financial firms in Pakistan limits generalizability. The institutional structure in Pakistan is characterized by poor enforcement of laws, lower investor protection and differing levels of disclosure quality. These conditions exacerbate the potential for insiders to exploit accounting anomalies and it is unclear if the same findings can be generalized to a developed market with better governed and more advanced monitoring networks. Second, the

technique employs abnormal accrual models (e.g., modified Jones model) that are known to be noisy. Such models try to distinguish between discretionary and non-discretionary accruals; however, the separation could be somewhat imprecise in the real world. This implies that some of the detected anomalies might be about genuine structural modifications rather than manipulative activities. Although we conducted robustness tests for this issue, the possibility of estimation bias cannot be completely ruled out.

Future Work Clearly, the work presented here is just a first step in this work and there are multiple avenues open based on the presented results. A potentially fruitful direction is that of international cross-sectional analysis that would test whether the wages–working capital anomaly and OC profitability relationship persist in distinctive institutional contexts. Such analyses would increase the generalizability of studies and permit the investigation of how legal enforcement, culture, and market development moderate insider activity. There may also be the emergence of new methods to augment the study of insider trading such as machine learning and artificial intelligence used for anomaly detection. These algorithms, which can pick up nonlinear and less obvious clustering patterns that traditional econometric models are unable to detect, will form an integral part of a progressive overhaul of market surveillance systems to keep abreast with technological developments.

Moreover, more investigation into the interaction between corporate governance and insider trading may be informative. Stronger governance structures (e.g. separate boards), active audit committees and stringent disclosure requirements may reduce the association between working capital anomalies and insider profits. In weakly governed firms, by contrast, insiders might have more freedom to trade in these odd ways without worrying about being detected. Empirical analysis of this relationship would help to shed light on the circumstances in which anomaly-based detection systems work best.

In general, it shows the empirical usefulness of working capital as a red flag for opportunistic insider trading. While an aggregate accrual measure is too generalized to serve as a useful surveillance tool, monitoring individual working-capital components offers regulators, auditors, and investors alike a more precise and operationally savvy instrument. The econometric evidence agrees with the intuitive notion that abnormal receivables and payables for in- stance are uniformly associated with increased insider profitability; hence such variables can function as precursors of asymmetric information abuse.

The study additionally highlights the need to adapt surveillance tools in alignment with local institutional contexts by locating the analysis within the Pakistani context. Emerging markets have been confronted with particular challenges such as weak enforcement capability and poor corporate governance. In such settings, accounting-based abnormality identifiers represent an inexpensive yet effective way to enhance surveillance and preserve market confidence. Although more work is required to test generalizability and develop detection methods further, the findings in this article provide a solid basis for continued scholarship and regulatory innovation.

CONCLUSION

This research shows that working capital distortions are highly related to insider trading' opportunistic gain in non-financial firms of Pakistan, implying the importance and reliability of accounting based signals as early warning signs for making trading prone to manipulation. By examining unusual changes in receivables, payables and other components of working capital, the study advances more refined explanations than do conventional models based on aggregate measures of accrual. This evidence indicates that insiders opportunistically use inside information in periods of increased accounting irregularities, being able to earn statistically significant abnormal returns.

The novelty of this study is the integration between the forensic accounting and market surveillance. By embedding accounting-based anomaly detection into existing near real-time monitoring systems, auditors and regulators will be better equipped to detect and prevent insider exploitation. For regulators, particularly in developing countries, whose resources for enforcement are constrained, anomaly detection provides an option for effective screening at low cost. For auditors, signals of abnormal working capital could be used as red flags to trigger close audit scrutiny of financial statements and board processes. The results are informative to investors in that they demonstrate the need to analyze working capital disclosures within rational trading strategies.

Furthermore, the research contributes to academia by closing a void in the literature which has not given much attention to combination of working capital anomalies and insider trading results. Although accrual anomalies and earnings management are thoroughly documented in the literature, this study defines working capital as a distinct and operationally meaningful component of analysis.

However, the findings should be considered with some limitations in mind including: the single

market studied and use of traditional accrual approach. Future research could widen the analysis covering other institutional settings, include corporate governance variables and use sophisticated techniques such as machine learning to improve detection. These directions not only benefit the theoretical advance but may also offer practical measures for the global market integrity.

REFERENCES

Beneish, M. D. (1999). The detection of earnings manipulation. *Financial Analysts Journal, 55*(5), 24–36.

Beneish, M. D., Lee, C. M. C., & Nichols, D. C. (2013). Earnings manipulation and expected returns. *Financial Analysts Journal, 69*(2), 57–82.

Cheng, Q., & Warfield, T. D. (2005). Equity incentives and earnings management. *The Accounting Review, 80*(2), 441–476.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review, 70*(2), 193–225.

Jagolinzer, A. D., Larcker, D. F., & Taylor, D. J. (2011). Corporate governance and the information content of insider trades. *Journal of Accounting Research, 49*(5), 1249–1274.

Jiraporn, P., Kim, Y. S., & Mathur, I. (2008). Does corporate diversification exacerbate or mitigate earnings management? An empirical analysis. *International Review of Financial Analysis, 17*(5), 1087–1109.

Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research, 29*(2), 193–228.

Ke, B., Huddart, S., & 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), 315–346. https://doi.org/10.1016/S0165-4101(03)00040-0

Kyle, A. S. (1985). Continuous auctions and insider trading. *Econometrica, 53*(6), 1315–1335.

Lakonishok, J., & Lee, I. (2001). Are insider trades informative? *Review of Financial Studies, 14*(1), 79–111.

Roulstone, D. T. (2003). The relation between insider-trading restrictions and executive compensation. *Journal of Accounting Research, 41*(3), 525–551.

Roulstone, D. T. (2003). Analyst following and market liquidity. *Contemporary Accounting Research, 20*(3), 552–578.

Seyhun, H. N. (1986). Insiders' profits, costs of trading, and market efficiency. *Journal of Financial Economics, 16*(2), 189–212. https://doi.org/10.1016/0304-405X(86)90060-7

Seyhun, H. N. (1992). Why does aggregate insider trading predict future stock returns? *Quarterly Journal of Economics, 107*(4), 1303–1331.

Smith, J., Patel, R., & Lee, H. (2018). Insider trading detection using accounting anomalies: An empirical assessment. *Journal of Forensic & Investigative Accounting, 10*(3), 355–380.

Wang, T., & Lee, J. (2021). Machine learning for financial anomaly detection: Applications to insider trading. *Journal of Financial Data Science, 3*(4), 45–61.

Xu, N., Chan, K. C., & Chen, D. (2016). Insider trading, earnings quality, and corporate governance: Evidence from China. *Asia-Pacific Journal of Accounting & Economics, 23*(4), 420–440.

Yermack, D. (1997). Good timing: CEO stock option awards and company news announcements. *Journal of Finance, 52*(2), 449–476.

Zhang, Y., & Gimeno, J. (2016). Earnings management and insider trading profits: Evidence from U.S. firms. *Strategic Management Journal, 37*(9), 1695–1715.