# Review of Australian equity market cleanliness

## 1 November 2018 to 30 April 2024

**Report 787 | July 2024**

**About this report**

This report sets out the findings of our review of Australian equity market cleanliness, with data from 2006 and a deep dive from November 2018 to April 2024. It quantifies potential insider trading and information leaks before material, price-sensitive announcements, and sets expectations for firms to protect confidential information.

We applied two methodologies to measure market cleanliness and conducted analysis across industry sectors, market capitalisation and announcement types.

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# Introduction

This report summarises the results from our review of market cleanliness in the Australian equity markets for the five and a half years to 30 April 2024. It builds on our longer-term analysis dating back to 2006.

We found that Australia's equity markets continue to be clean and operate with a high degree of integrity, and we continue to have one of the cleanest markets in the world. There were, however, two periods where there was a temporary decline in market cleanliness—during the COVID-19 pandemic in 2020–2021 and again in late 2023. We carried out decisive regulatory interventions to support market integrity and protect investors.

Industry participants need to have effective processes and policies to handle confidential information.

Market cleanliness is a priority for ASIC because it supports the integrity of Australia's financial markets and helps to ensure a fair, strong and efficient financial system for all Australians. Well-functioning financial markets have far-reaching impacts across the Australian economy. Confidence in the integrity of Australia's listed equity markets:

› encourages investor participation

› contributes to liquidity

› stimulates more competitive pricing, and

› lowers the cost of capital for companies.

However, markets can't operate fairly unless the information they run on is accurate and available to all investors. Market cleanliness is essential to underpinning confidence in the integrity of Australia's listed equity markets. In a clean market, prices react immediately after new information is released through the proper channels available to the public.

Insider trading and other types of market misconduct can create unlevel playing fields and negatively affect market integrity. Insider trading is not a victimless crime—it affects the value of your investments in shares and in superannuation. When insider traders profit, they do so at the expense of others and distort market prices. The perception that some people have access to more information than others reduces confidence in market integrity, which discourages investor participation. This can lead to lower turnover, increased trading costs and higher cost of capital, reducing companies' ability to raise equity capital efficiently and create jobs in the real economy.

Academic studies have found that effective insider trading enforcement is associated with lower cost of capital (see Bhattacharya & Daouk 2002), media articles on insider trading have a deterrent effect on this activity (see Aleksanyan et al. 2022), and stringent insider trading laws and enforcement reduce stock market transaction costs (see Kwabi & Boateng 2021).

**Note:** See Bhattacharya, U & Daouk, H 2002, 'The world price of insider trading', *The Journal of Finance*, vol. 57, no. 1, pp 57–108, Aleksanyan, M et al. 2022, 'I only fear when I hear: How media affects insider trading in takeover targets', *Journal of Empirical Finance*, vol. 67, pp 318–342 and Kwabi, FO & Boateng, A 2021, 'The effect of insider trading laws and enforcement on stock market transaction cost', *Review of Quantitative Finance and Accounting*, vol. 56, pp 939–964.

# Measuring equity market cleanliness

This report examines Australian equity market cleanliness for the period from 1 November 2018 to 30 April 2024 (current review period), building on data from 2006 to visualise longer-term trends. It focuses on possible information leaks and insider trading ahead of material, price-sensitive announcements (MPSAs). It may be of interest to market participants, investors, listed companies, industry bodies, international securities regulators and academic researchers.

In this report, we use two methods to measure market cleanliness across all ASX-listed securities:

› an **'account-based methodology'** that was developed by ASIC. This measures the concentration of profitable and unusual trading ahead of MPSAs over a longer period (e.g.10 days) to directly identify anomalous trading activity that may potentially be insider trading, and

› a **'price-based methodology'** that is widely used by international regulatory counterparts and academia. It relies on observing abnormal pre-announcement price moves (APPMs) during a shorter period (e.g. five days) ahead of MPSAs, to indirectly identify possible information leaks and/or insider trading that had an impact on share prices.

The analysis includes trades executed on both the ASX and Cboe Australia markets, as well as off-market trades reported to these market operators. It includes all MPSAs made by ASX-listed companies during the review period. Table 9 provides a summary of annual company and MPSA data.

We consider the account-based methodology to be the more robust approach as it recognises that illegal and unfair insider trading does not always move share prices. Additionally, legitimate factors in the absence of anomalous trading, such as general market volatility, could lead to seemingly 'abnormal' price movements before an MPSA. In addition to APPMs, we consider that market cleanliness measures should examine the nature and pattern of trading by each account before MPSAs.

This report includes results from the price-based methodology since 2006 to provide longer-term trends and a reference point for international comparisons. The high-level approach of both methodologies is outlined in this report. Further information on the detailed parameters and design features is available in Appendix 3 and Report 487 *Review of Australian equity market cleanliness* (REP 487).

The market cleanliness measures in this report focus more on potential information leaks conducted privately between individuals, primarily with a trading profit motive for the parties involved. We are also alert to public leaks of confidential information, which may be intended to catalyse or stymie or otherwise influence merger and takeover outcomes, without anomalous trading activity. These leaks raise significant market integrity concerns, and we continue to refine our tools for measuring and enhancing different aspects of market integrity.

# Key findings

This report extends our analysis in previous market cleanliness reports (Report 623 *Review of Australian equity market cleanliness: 1 November 2015 to 31 October 2018* (REP 623) and REP 487) to the current review period. We found that:

› Australia's listed equity markets continue to operate with a high level of integrity, although there have been periods where market cleanliness temporarily deteriorated

- applying the account-based method, 0.56% of accounts that traded before an MPSA were deemed anomalous because they traded in a timely, profitable and unusual manner. These accounts profitably traded an average of 4.75% of the trading volume before each announcement. This was an improvement over the 2015–2018 period in REP 623, where 0.57% of accounts were anomalous and they represented 5.06% of trading volume

- market cleanliness deteriorated during the COVID-19 pandemic in 2020–2021, when there was extreme price volatility, a large influx of new investors and some unusual market activity. There was also a period of deterioration in late 2023 and a moderate improvement in early 2024. Both periods of deterioration were temporary. We have taken a range of decisive actions to support market cleanliness

- the prevalence of abnormal price movements before announcements related to mergers and acquisitions (M&As) remains low and has improved compared with the 2016–2018 period (see REP 623). This aligns with external research by SS&C Intralinks and the University of London, which compares 10 jurisdictions and finds that Australian listed equity markets have consistently been among the cleanest in the world for M&A deal announcements, with 55% fewer leaks than the group average from 2009 to 2022.

**Note:** Unpublished research conducted by SS&C Intralinks and the M&A Research Centre at City, University of London (see Appendix 5).

- there was more anomalous trading and abnormal price movements before unscheduled announcements, which are less likely to be driven by the normal speculation associated with scheduled announcements, and

- announcements by larger companies had poorer market cleanliness. The real estate and financial sectors had the highest concentration of trading by anomalous accounts, while the industrials sector had the highest concentration of anomalous volume.


## ASIC regulatory actions

Maintaining market integrity is a key priority for ASIC. We continue to take action to protect investors from misconduct that compromises the fairness of the market. The health of our listed equity markets directly affects the financial wellbeing of Australians. Most Australians will have exposure to equity markets at some stage in their life, either by investing directly or through superannuation, exchange traded funds or managed funds.

During the early stages of the pandemic, we undertook a range of decisive and targeted actions to protect investors, including:

- adopting a multi-pronged early intervention approach to quickly disrupt 'pump and dump' activity, which uses social media for coordinating trading to push up the price of a listed security. Our approach involved issuing public warnings and posting directly on social media forums to warn members that their actions may be in breach of the law. The behaviour subsequently declined and the forums were shut down

- disrupting potential unlicensed activity of financial influencers (finfluencers) through direct engagement and releasing Information Sheet 269 *Discussing financial products and services online* (INFO 269), which outlines licence obligations and compliance with financial services laws

- publishing a paper on retail investor participation and trading behaviours during the COVID-19 period (see Media Release (20-102MR) *Retail investors at risk in volatile markets* (6 May 2020))

› issuing 'Dear CEO' letters to market participants setting out guidance for managing confidential information when staff were working from home

› working with Government and ASX to facilitate a range of temporary capital raising measures to help companies to raise capital quickly. ASX market statistics reported that secondary capital raisings totalled $66 billion in 2020 and $60 billion in 2021, compared with $46 billion in 2019. Australia continues to have a strong secondary capital raisings market, and

› focusing on the cyber and operational resilience of market operators and market participants to manage the elevated level of trading activity and market volatility. This included directing market participants to limit their number of trades so the clearing house could process transactions at the peak of trading activity in 2020.

Following these actions, an improvement in market cleanliness was observed in 2021 and 2022.

Towards the end of 2023, we observed an increase in media reports ahead of announcements of takeovers, mergers and capital transactions. This may suggest that information was leaked. The deterioration in market cleanliness during this time, measured using the account-based method, echoed these incidents. We reminded market participants, listed entities and their advisers to be vigilant about the risk of leaks or mishandling of information (see Issue 153 of the *Market Integrity Update*). To address the increase in media reports, we commenced a targeted review of how firms handled confidential information. We also continue to monitor trading around significant market announcements to identify and disrupt potential market misconduct. We take insider trading and continuous disclosure deficiencies very seriously and will take decisive enforcement action where warranted.

## ASIC's expectations of market participants and listed entities

There is also a key role for companies, investment banks, brokers and other advisers to support market cleanliness. These parties have access to inside information, which needs to be handled with care.

Market participants should have effective policies and procedures overseen by a compliance function for handling inside information. This includes implementing effective information barriers, wall-crossing staff who are made aware of inside information, maintaining insider lists, and limiting information to a 'need to know' basis. Market participants should also look to enhance their internal surveillance arrangements and increase the quantity and quality of suspicious activity reporting.

Companies and their advisers involved in fundraising and control transactions should have appropriate arrangements to handle information about their company or proposed transactions they are involved in or advising on. This includes recording who has been provided with inside information (and when), adopting a 'need to know' approach, requiring external parties to enter confidentiality agreements and ensuring compliance with continuous disclosure obligations. Companies should have a formal leak policy outlining steps to monitor and react to any leaks of proposed transactions.

**Note:** See also Regulatory Guide 264 *Sell-side research* (RG 264), Report 393 *Handling of confidential information: Briefings and unannounced corporate transactions* (REP 393) and Regulatory Guide 73 *Continuous disclosure obligations: Infringement notices* (RG 73).

# Market integrity is ASIC's perennial focus

Market integrity is a key priority for ASIC. We have a strong record for prosecuting insider trading matters. We continue to strengthen our surveillance of listed equity markets and will take decisive enforcement action where illegal trading is identified. The threat of market misconduct is ever evolving and increasing in sophistication, so enhancements to surveillance and enforcement capabilities are needed to remain on the front foot. This includes investing in data and technology to help combat innovative forms of market misconduct.

For example, we have increased monitoring of insider trading across different classes of financial products and other forms of potential insider trading that are not driven by announcements. We continue to monitor developments in innovative data science tools—such as artificial intelligence and machine learning—to consider potential use cases to enhance our surveillance capabilities.

Our proprietary insider trading detection system to protect market integrity was recognised by the Australian Public Service Data Analytics and Visualisation Award in 2023. This new system automatically hunts for suspected market misconduct by identifying profitable and unusual trading patterns. It also establishes connections between traders and potential sources of inside information. It combines advanced algorithms to analyse data from various sources including ASIC, ASX, the Australian Taxation Office (ATO) and commercial vendors. This new system safely and responsibly uses pioneering technology to enable ASIC to identify harms more quickly and accurately, and combat misconduct (such as insider trading) that is damaging to Australian financial markets.

We are also monitoring changes in the structure of capital markets. This includes the growth in private markets and changes in the type and activity levels of corporate transactions. In the future, we will examine potential ways to monitor market cleanliness in private markets and non-equity capital markets (e.g. debt) and explore enhancements to, or different approaches for, measuring market integrity.

Financial technology firm, SS&C Intralinks and the M&A Research Centre at City, University of London conducted a research study on M&A deal leaks. The study compared 10 international peer jurisdictions and examined the percentage of M&A deals preceded by abnormal share price increases from the period 2009 to 2022 (see Appendix 5). Figure 1 shows that Australian listed equity markets have consistently been among the cleanest in the world.

**Figure 1: International comparison of M&A deal leaks (2009–2022)**



**Note:** See Appendix 5 for the data shown in this figure (accessible version).

# Account-based market cleanliness measure and results

## Account-based market cleanliness—Methodology

We have developed an innovative methodology for measuring market cleanliness that directly focuses on the prevalence of potentially anomalous trading by individual accounts before MPSAs. It is an improvement on traditional approaches for measuring market cleanliness, which rely on observing price run-ups ahead of MPSAs to indirectly indicate the likely presence of information leaks or potentially anomalous trading. Since it is independent of price run-ups, the account-based methodology can identify potentially anomalous trading that does not move the share price. It is also less susceptible to changes in broader market volatility where observed share price movements may be unrelated to potentially anomalous trading.

The account-based methodology leverages our in-house surveillance activity and enhanced regulatory data through our Market Analysis and Intelligence (MAI) surveillance system. This allows us to identify the accounts (also known as origin of order IDs) on the buying and selling side of each trade. Account-level data has been provided by market participants in the regulatory data feed since 28 July 2014 so this methodology can be calculated from November 2014 onwards.

The account-based market cleanliness methodology identifies accounts that:

› traded in a timely and profitable manner during the reference period (i.e. 10 trading days before an MPSA), and

› displayed unusual trading patterns compared with how the account and/or the rest of the market had traded in the preceding 60 trading day period.

Accounts that traded in a timely, profitable and unusual manner are referred to as 'anomalous accounts' and their trading volume is referred to as 'anomalous volume' (see Figure 2).

**Figure 2: Illustration of account-based market cleanliness methodology**
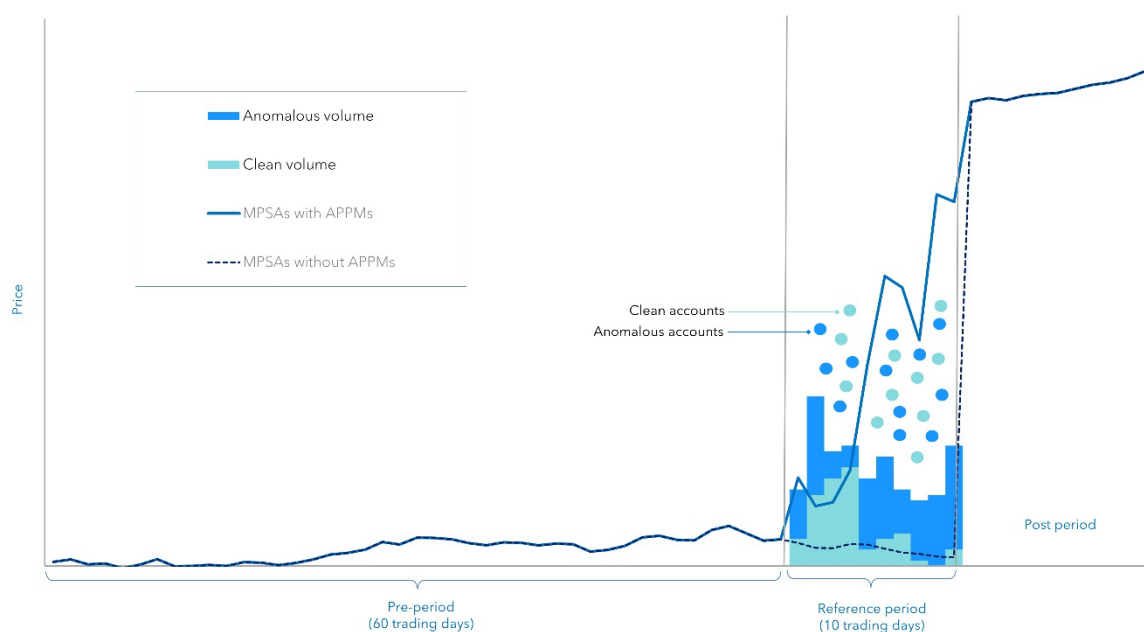


**Note:** This graph is explained in the two paragraphs above (accessible version).

We calculate two metrics using this approach for each MPSA in a security:

› the proportion of accounts that traded the security and are anomalous, and
› the proportion of trading in that security by anomalous accounts.

For both metrics, a higher score indicates poorer market cleanliness.

## Account-based market cleanliness—Results

This section extends our analysis of market cleanliness using the account-based measure from the previous review period (published in REP 623) to the current review period.

**Market cleanliness measures over time**

Figure 3 sets out the account-based market cleanliness measures from 1 November 2014 to 30 April 2024. The vertical line (October 2018) separates the current review period from the results previously published in REP 623. The time period labels correspond to the end of each six-month period—for example, the data point labelled April 2024 includes data for the six-month period from 1 November 2023 to 30 April 2024. On average, the proportion of anomalous accounts that traded ahead of MPSAs decreased slightly compared to the previous review period, from 0.57% to 0.56%. The average percentage of anomalous volume decreased from 5.06% to 4.75%.

The average proportion of anomalous accounts preceding MPSAs displayed a significant but temporary increase from 0.48% for the half year ending on 30 April 2020 to 0.69% for the half years ending on 31 October 2020 and 30 April 2021, during the initial stages of the pandemic. The increase in 2020 may be due to factors such as:

› the significant impact of the pandemic on financial markets, including a doubling of trading volumes and tripling of market volatility

› a large number of new retail accounts, which lacked prior trading history, entering the market during the COVID-19 period. The account-based method may exhibit elevated levels since these accounts are more likely to be flagged as unusual if they traded a stock for the first time leading up to an MPSA, and

› an increase in potential market misconduct, such as insider trading and 'pump and dump' activities, which came as a result of the extraordinary market and economic conditions, and significant social media coordinated retail activity in Australia and abroad.

Following the pandemic, the proportion of anomalous accounts fell below the pre-pandemic level to 0.43% for the half year ending on 31 October 2022. A potential contributing factor to this decrease is the broader market decline at this time, during which it may have been more difficult to trade ahead of negative announcements due to short selling impediments.

The average proportion of anomalous accounts and trading volume preceding MPSAs increased noticeably in the half year ending on 31 October 2023. This was in a period that followed a general increase in deal activity. We observed that while deal activity was increasing, so too was media reporting ahead of market announcements. In response, we carried out decisive actions to maintain market integrity and enhance investor protection. Both account-based measures of market cleanliness improved moderately in the half year ending in April 2024, and the longer-term trend has been an improvement (see the trendline in Figure 3).

**Figure 3: Account-based market cleanliness measures**
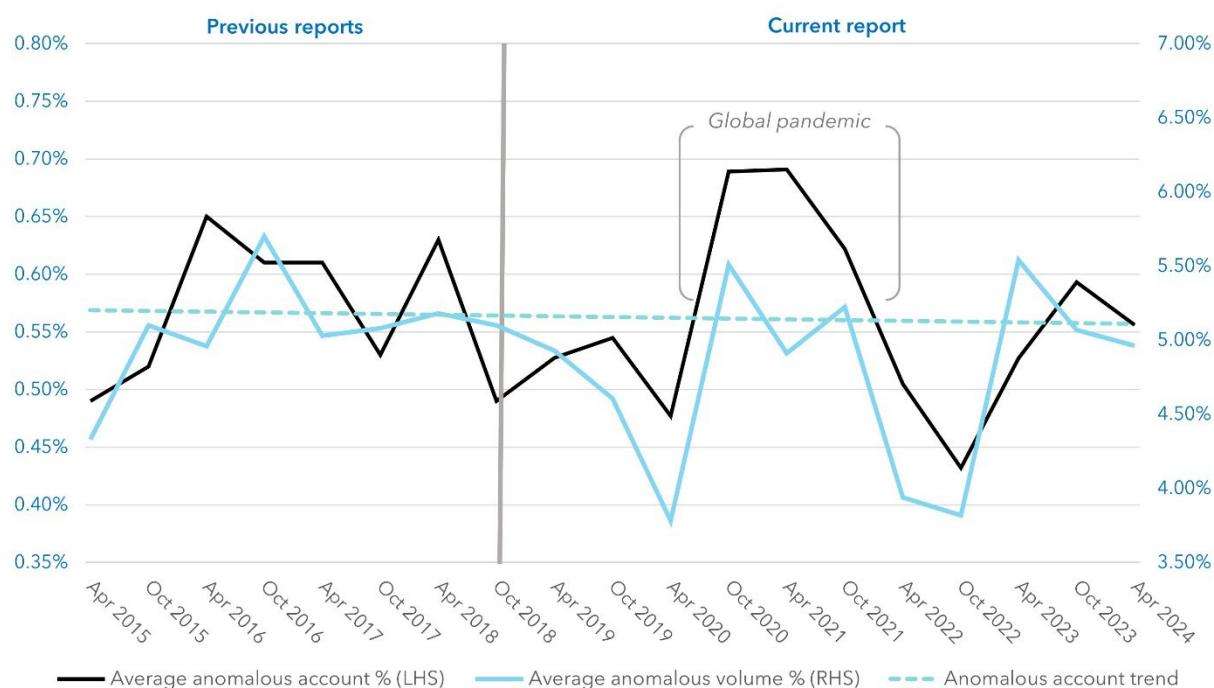


**Note:** See Table 1 for the data shown in this figure (accessible version).

## Cumulative distribution of market cleanliness measures

The account-based measure of market cleanliness for the current review period indicates that approximately 53% of MPSAs exhibited some level of anomalous trading behaviour by individual accounts. However, in most cases, the proportion of anomalous accounts that traded was negligible. For example, in 95% of cases, less than 2.2% of accounts that traded ahead of MPSAs were anomalous (see Figure 4). Fewer MPSAs in the current review period were preceded by any anomalous trading, compared with 55% in the 2015–2018 period (see REP 623). In a very small number of cases, more than 10% of accounts that traded ahead of an MPSA were anomalous, which was an increase over the 2015–2018 period.

Five per cent of MPSAs had more than 20.4% of volume traded by anomalous accounts, which is a decrease from the 23% of volume at the same threshold reported in REP 623 (see Figure 5). This indicates a decrease in the proportion of MPSAs preceded by significant anomalous trading volumes. The figures show that when anomalous accounts traded, they traded larger volumes than the average account at each level of the cumulative distribution. Note that the denominator for this measure is the total single-sided volume traded ahead of an MPSA (i.e. whether either the buyer *or* seller for a trade was anomalous). This may result in the proportion of anomalous trading volume reported exceeding 50%.

**Note:** All years referenced in the results presented in this report start on 1 November of the previous calendar year and end on 31 October of that year (e.g. 2015 refers to the period from 1 November 2014 to 31 October 2015).

**Figure 4: Account-based market cleanliness measure—Cumulative MPSA % by account**



> In 95% of cases, less than 2.2% of the accounts that traded ahead of MPSAs were anomalous
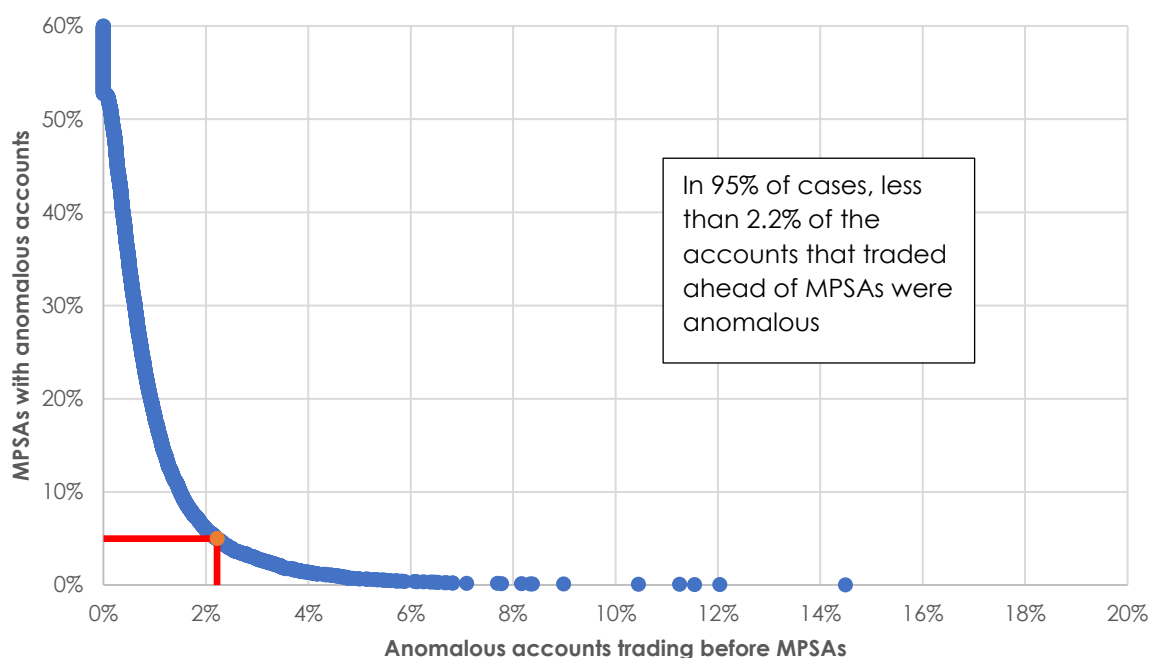
**Note:** This graph is explained in the first paragraph on p. 10 above (accessible version).

**Figure 5: Account-based market cleanliness measure—Cumulative MPSA % by volume**



> In 95% of cases, less than 20.4% of the volume traded ahead of MPSAs was anomalous
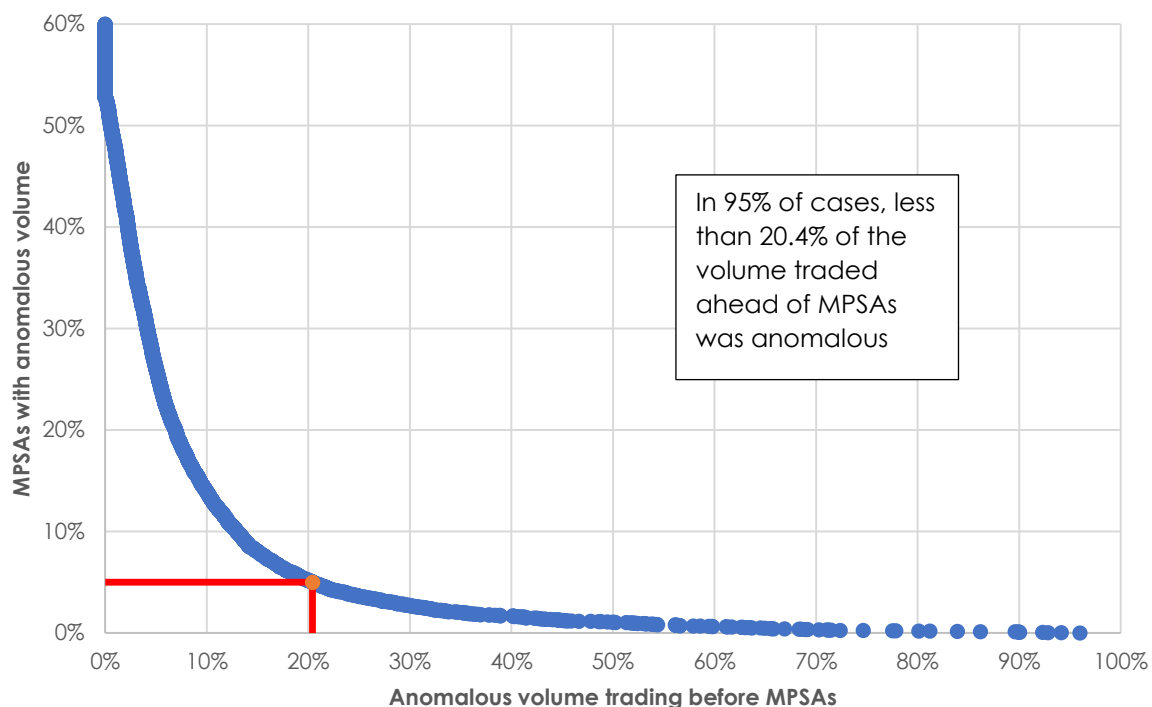
**Note:** This graph is explained in the last paragraph on p. 10 above (accessible version).

### Industry sector

To examine market cleanliness across industry sectors, we used the 11 sectors that comprise the Global Industry Classification Standard (GICS)—that is, energy, materials, industrials, consumer discretionary, consumer staples, health care, financials, information technology, real estate, telecommunication services and utilities.

The account-based market cleanliness measures showed an overall improvement across most industry sectors for the current review period compared with the 2015–2018 period (see REP 623).

During the current review period, the real estate, financials and materials sectors had the highest percentage of anomalous accounts preceding MPSAs (see Figure 6). Utilities and telecommunication services were the cleanest sectors with less than 0.5% of accounts identified as anomalous. Sectors that experienced a decrease in both percentage of anomalous accounts and anomalous volume from the 2015–2018 period to the current review period included industrials, information technology, materials and telecommunication services.

The consumer staples and telecommunication services sectors showed the biggest decline in the percentage of anomalous accounts. The telecommunication services and health care sectors had the largest improvement in terms of percentage of anomalous volume.

**Figure 6: Account-based market cleanliness measures by sector**
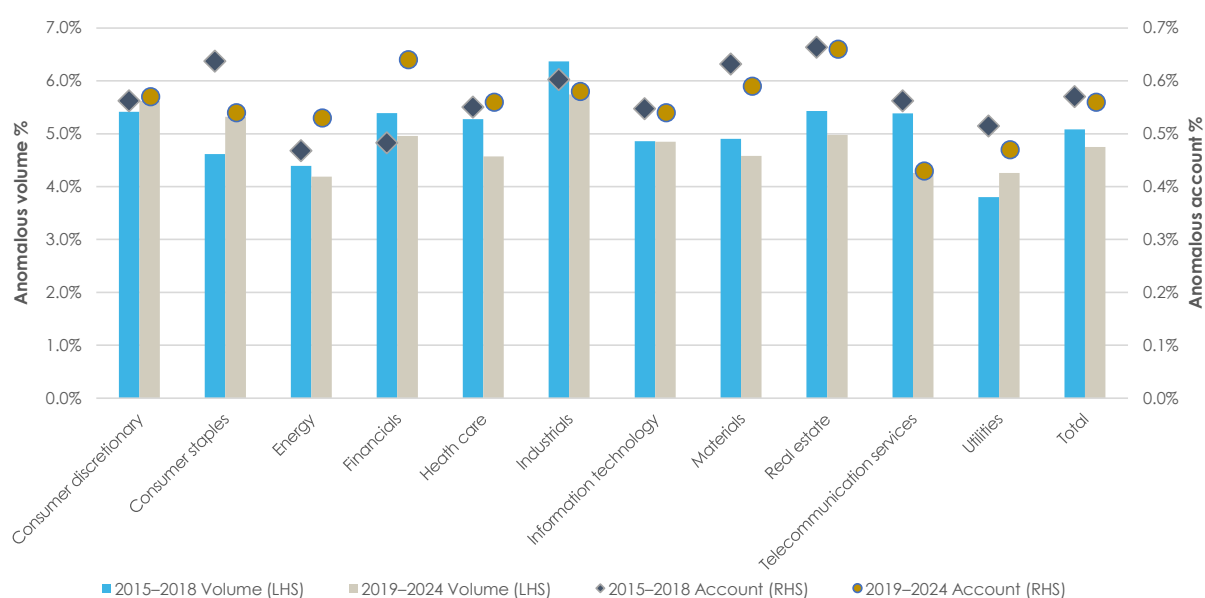


**Note:** See Table 2 for the data shown in this figure (accessible version).

### Size—Market capitalisation

We are interested in the relationship between company size and market cleanliness scores. We grouped companies into quintiles according to their market capitalisation—Quintile 1 being the smallest 20% and Quintile 5 the largest 20%. Market capitalisation for each company was determined using the average market capitalisation for the five days before the MPSA.

In general, larger companies may be expected to have better market cleanliness scores because they have more resources devoted to compliance with continuous disclosure requirements and management of confidential information.

Comparing the current review period with the 2015–2018 period, the percentage of anomalous accounts increased for the largest quintile and smallest quintile but decreased for the middle three quintiles. The percentage of anomalous volume decreased for all quintiles except the smallest.

The largest companies (Quintile 5) had the highest percentage of anomalous accounts, at 0.68%, but a lower percentage of anomalous volume than mid-sized companies. The proportion of anomalous accounts decreased with each smaller quintile, and the smallest companies (Quintile 1)

had 0.42% of anomalous accounts. One possible explanation for this is that the metric requires the account to have made a substantial profit, which may be more difficult to achieve in smaller and less liquid stocks (see Figure 7).

Quintile 1 (smallest stocks) was dominated by companies in the materials sector, which were 50% of the composition. Quintile 5 (largest stocks) had a more diverse spread of sectors, including financials, materials and health care, which comprised 30%, 17% and 10% of this quintile, respectively.

**Figure 7: Account-based market cleanliness measures by market capitalisation quintile—Q5 (largest) to Q1 (smallest)**
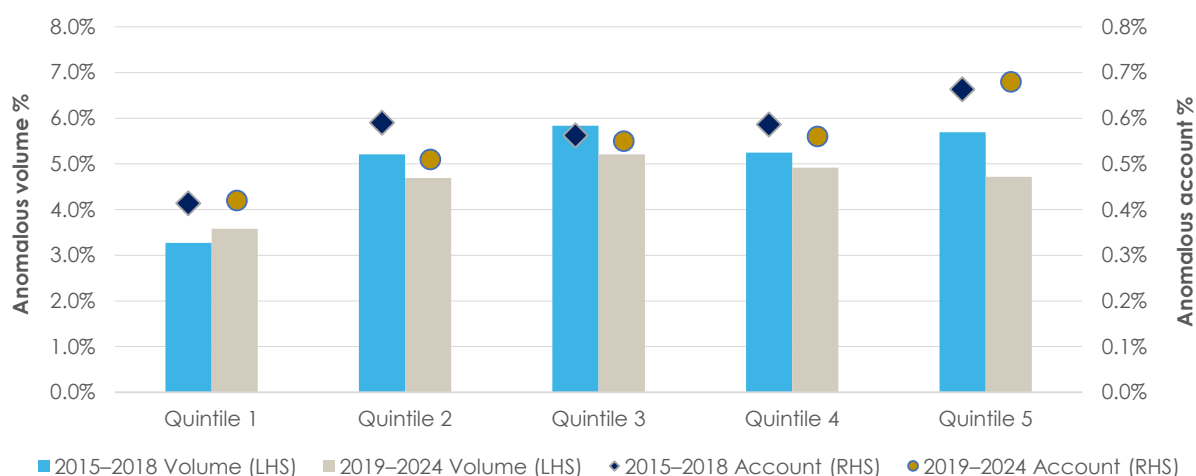


**Note:** See Table 3 for the data shown in this figure (accessible version).

## Announcement type

M&A announcements displayed a deterioration in market cleanliness from the 2015–2018 period to the current review period, both in terms of percentage of anomalous accounts and anomalous volume. Notably, M&A announcements only constitute around 2% of MPSAs (see Table 9).

**Figure 8: Account-based market cleanliness measures by announcement type**
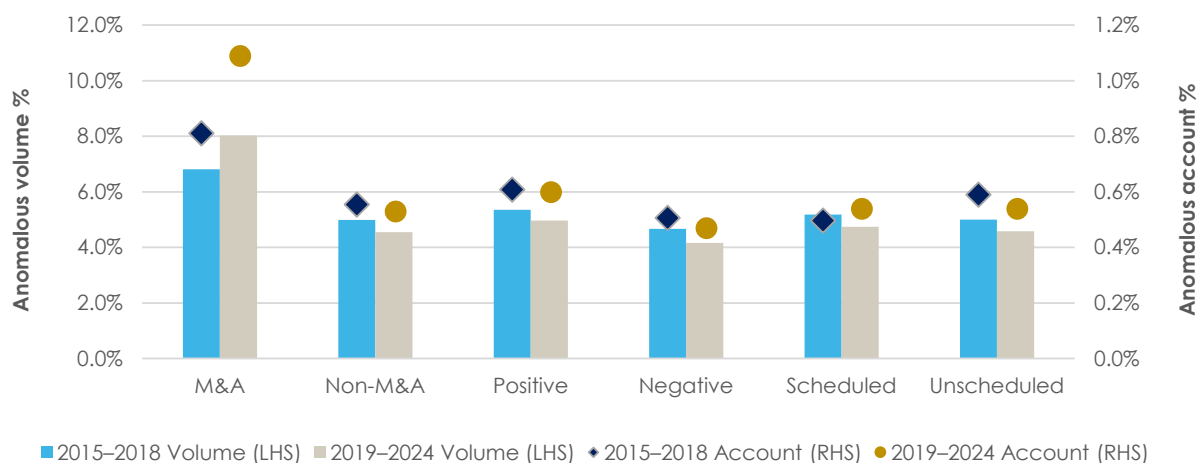


**Note:** See Table 4 for the data shown in this figure (accessible version).

A potential reason for M&As to have poorer market cleanliness than other types of announcements is that there are relatively more people involved in takeovers over a longer time period, which can increase the risk of leaks. We remind all parties involved in M&A transactions, including acquirers and advisers (and also targets and their advisers), to have robust confidentiality arrangements in place from the early stages of a potential transaction and ensure that these are actively implemented.

Anomalous trading decreased for both positive and negative announcements from the previous review period. Positive announcements demonstrated poorer market cleanliness than negative announcements. This difference may be because an insider with knowledge of a negative MPSA may be unable to sell securities they do not own (short selling) in pursuit of trading profits, unless they have obtained securities under a securities lending arrangement (a covered short sale), or limited exemptions apply. Insiders may also face restrictions on selling shares they own (for example, the shares are held in escrow).

During the current review period, scheduled and unscheduled announcements had very similar market cleanliness scores on average.

# Price-based market cleanliness measure and results

## Price-based market cleanliness—Methodology

The price-based market cleanliness methodology identifies abnormal price movements ahead of MPSAs. Price moves before an announcement—in the same direction and larger than normal volatility—can raise concerns about market integrity and efficiency because they may be readily observable.

In a clean market, security prices should react instantaneously to new information released through the proper channels, and announcements should be preceded by minimal anomalous trading or anticipatory price moves. Significant and abnormal price movements ahead of announcements may signal information leaks and indicate an unclean market.

This is illustrated in Figure 9. In an unclean market, the share price rises before the positive announcement. By contrast, in a clean market, the share price reacts instantaneously to the announcement.

**Figure 9: Illustration of price-based market cleanliness methodology**
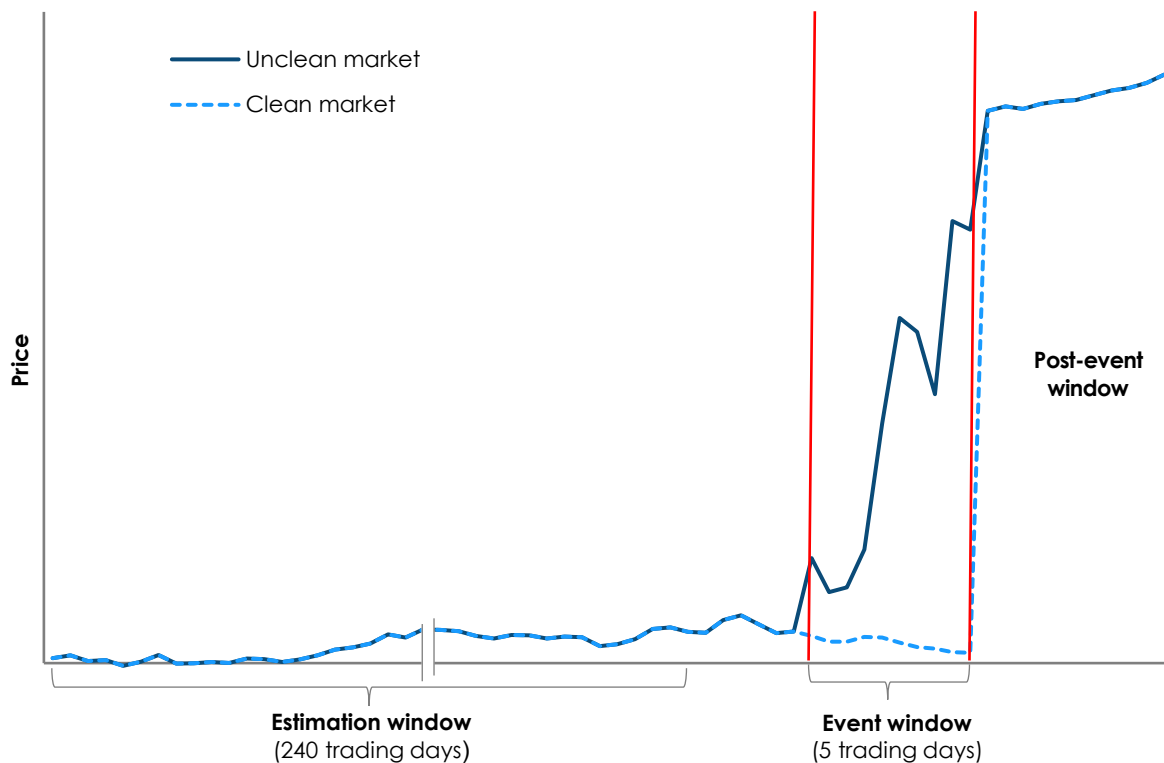


**Note:** This graph is explained in the paragraph above (accessible version).

The price-based measure of market cleanliness is calculated as the percentage of MPSAs preceded by APPMs. A lower percentage of APPMs indicates that markets are cleaner.

This methodology has been widely applied by international securities regulators, market operators, industry think tanks and academia (see Appendix 4). Nevertheless, it should be interpreted in the context of the methodology's limitations (see REP 487 at paragraphs 33–41). Despite its limitations, however, this methodology is intuitively attractive and may be calculated without regulatory data on individual client accounts. It can provide regulators and industry

stakeholders with a broad indication of changes in the level of market integrity when applied with the same parameters over time, and can also be used to compare various market segments.

## Price-based market cleanliness—Results

Figure 10 shows the price-based market cleanliness measure in Australia based on our sample of MPSAs from 2006 to 2023 (full years to end October), with an additional six months to the end of April 2024. Following a general improvement in market cleanliness from 2006 to 2019, there was a temporary and significant deterioration during the early phase of the pandemic in 2020. This was followed by three consecutive years of improvement from 2021 to 2023. The vertical line (2018) separates the current review period from the results previously published in REP 623.

**Figure 10: Price-based market cleanliness measure**
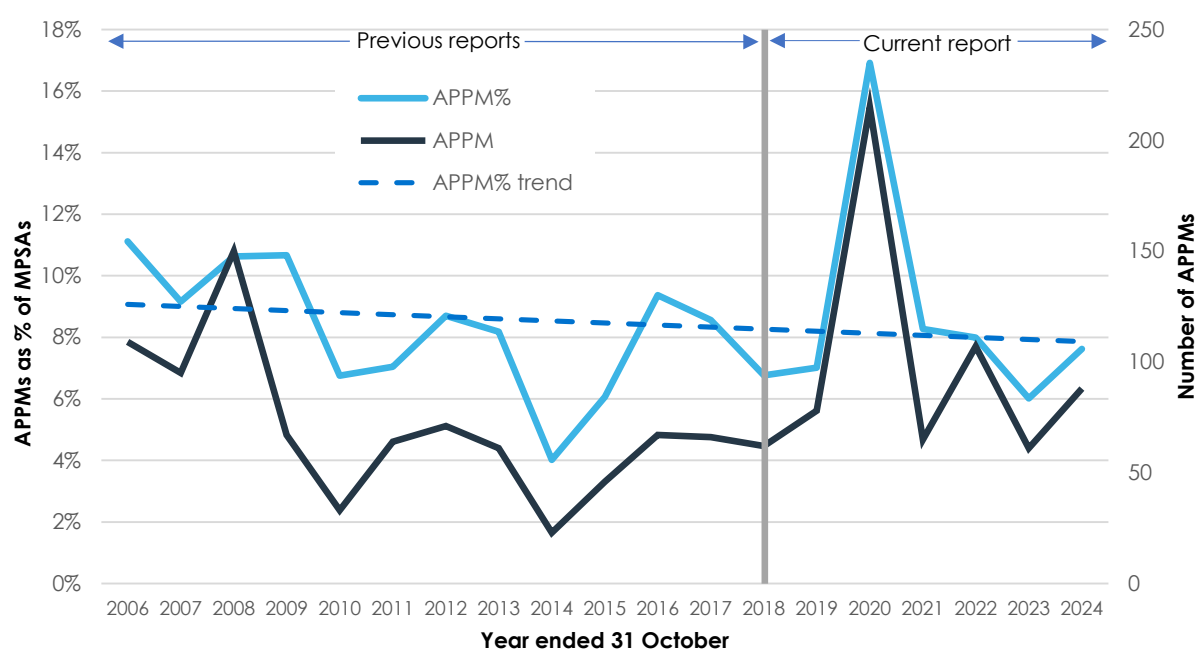


**Note 1:** The data for 2024 is for the period from 1 November 2023 to 30 April 2024. It has been annualised by multiplying by two so that it's comparable with the annual observations for the other years.
**Note 2:** See Table 5 for the data shown in this figure (accessible version).

In 2019, 7% of MPSAs were preceded by APPMs. In 2020, anomalous MPSAs rose noticeably to 17%. This increase is significantly larger than for the account-based market cleanliness measure. The inherent design characteristics of the 'price run-up' based methodology make it more sensitive to the elevated trading volumes and market volatility during this period. The significant deterioration in this market cleanliness measure also mirrored an increase in ASX price queries at this time. This was a response to the extreme and extraordinary circumstances of the pandemic and uncertainty about the implications for businesses of the disruption to supply chains and the extended lockdowns. The price-based measure fell to 8% in 2021 and 2022, consistent with the improvements in market cleanliness during these years exhibited by the account-based measure. It continued to improve—falling to 6% in 2023—although there was an uptick to 8% in 2024, which is in line with the long-term average.

During the five and a half years from 1 November 2018 to 30 April 2024, the price-based market cleanliness measure across industry sectors, market capitalisation quintiles and announcement types generally spiked in 2020, before improving. This mirrors the overall market trends.

Our observations are consistent with the United Kingdom, where the Financial Conduct Authority (FCA) also reported poorer market cleanliness during the pandemic. The [FCA's price-based market cleanliness measure](#) increased to 21.9% of takeovers being preceded by abnormal price movements in 2020, compared with their five-year average of 18%.

**Industry sectors**

We grouped the company announcements by industry sector to explore whether there were any industry-specific patterns of variation in the price-based market cleanliness measure over the periods 2006–2010, 2011–2015, 2016–2018 and the current review period (see Figure 11).

Our analysis of the sectors using the price-based method indicates the highest percentage of APPMs was in the period 2006–2010 for most industries. There was a substantial improvement in 2011–2015, which did not continue in later periods, although most sectors still showed an overall improvement in cleanliness compared with the 2006–2010 period. Despite the spike in 2020, this suggests a long-term improvement in market cleanliness for most sectors.

The utilities sector improved significantly in recent years, as evidenced by a reduction in APPMs, with zero and two APPMs in 2016–2018 and the current review period, respectively. Historically, however, this sector's market cleanliness measure has been volatile. Materials and telecommunication services are the only two sectors that showed an improvement in the price-based market cleanliness measure in the current review period, while the others showed a deterioration due to the spike in the measure in 2020.

For the current review period, the energy and consumer discretionary sectors had the poorest price-based market cleanliness scores (10.73% and 10.27% APPMs respectively). The IT sector followed with the third poorest market cleanliness measure (9.86% APPMs). Notably, the materials sector accounted for around 35% of MPSAs in the current review period.

**Size—Market capitalisation**

Our analysis by size (market capitalisation quintile) shows that larger companies generally exhibited better market cleanliness. Larger companies have greater liquidity, which can better absorb the potential price impact of anomalous trading ahead of announcements.

During the current review period, three out of five quintiles had poorer market cleanliness compared with the 2016–2018 period. Only Quintile 2 (the second smallest group of stocks) saw market cleanliness improve materially in comparison to the 2016–2018 levels. Quintile 5, which contains the largest companies, experienced little change in market cleanliness in the current review period (see Figure 12). The probable reason for the overall deterioration in market cleanliness is the spike during the 2020 pandemic that significantly increased the average for the period. We think this was caused by high stock price volatility and the influx of retail investors, whose trading may have had a stronger price impact on small and mid-size companies.

The 2006–2010 and 2011–2015 periods saw consistently better market cleanliness with each increase in quintile size. This trend was not observed for the 2016–2018 and current review periods, which saw Quintile 2 (the second smallest group) having the poorest market cleanliness overall. These observations mirror the increased prevalence of anomalous price movements among smaller companies, coinciding with social media coordinated activities.

**Figure 11: Price-based market cleanliness measure by industry sector**



Legend:
- 2006–2010
- 2011–2015
- 2016–2018
- 2019–2024

Consumer discretionary
- 8.61%
- 3.76%
- 4.61%
- 10.27%

Consumer staples
- 10.16%
- 1.93%
- 6.80%
- 8.30%

Energy
- 9.25%
- 7.38%
- 9.76%
- 10.73%

Financials
- 8.90%
- 5.03%
- 5.03%
- 7.73%

Heath care
- 9.21%
- 6.79%
- 8.63%
- 9.57%

Industrials
- 11.20%
- 6.00%
- 6.85%
- 7.16%

Information technology
- 10.15%
- 6.49%
- 8.87%
- 9.86%

Materials
- 10.48%
- 9.08%
- 9.83%
- 8.50%

Telecommunication services
- 9.38%
- 5.66%
- 10.85%
- 9.48%

Utilities
- 14.68%
- 4.62%
- 0.00%
- 2.90%
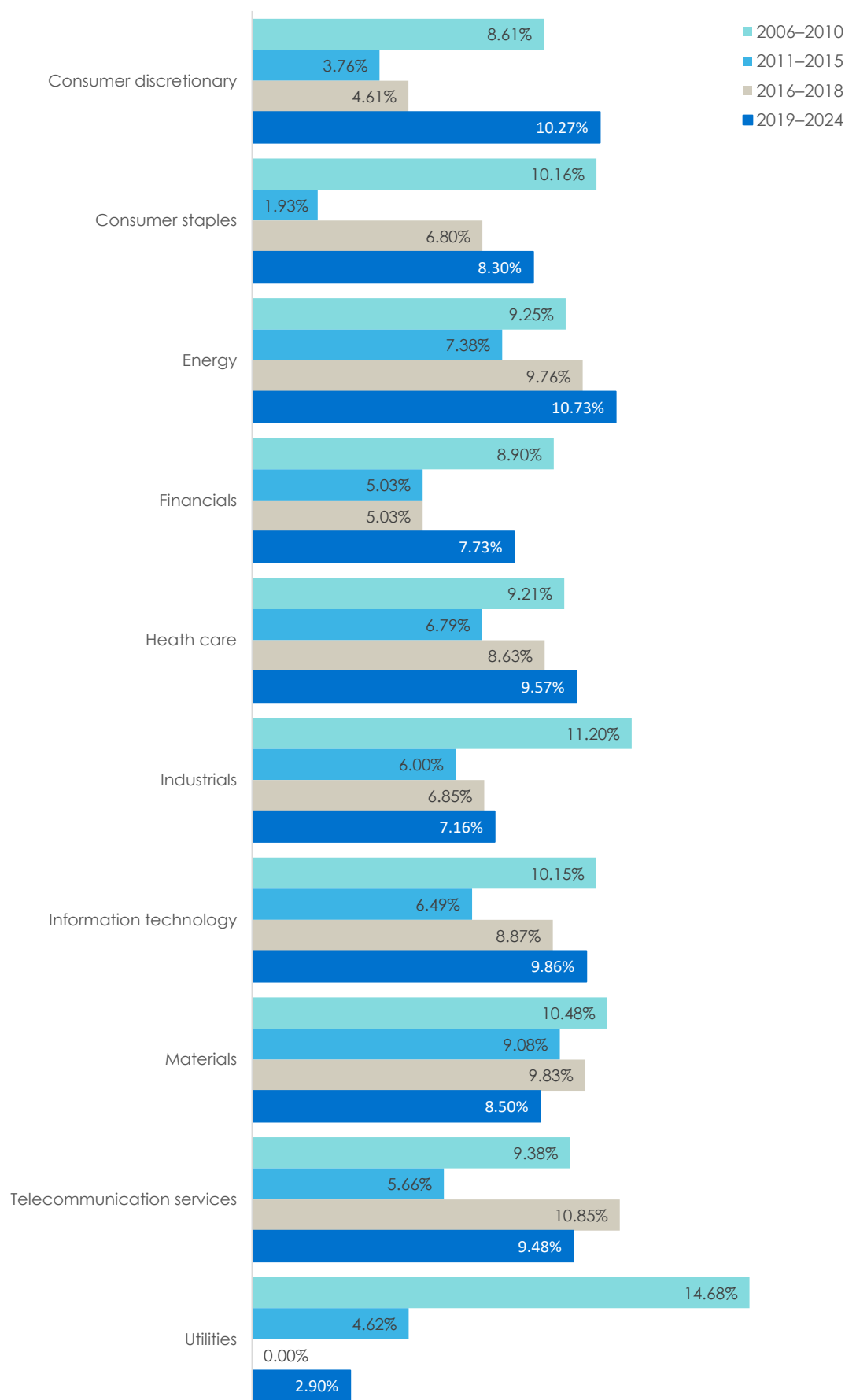
**Note:** See Table 6 for the data shown in this figure (accessible version).

**Figure 12: Price-based market cleanliness measure by market capitalisation quintile—Q5 (largest) to Q1 (smallest)**
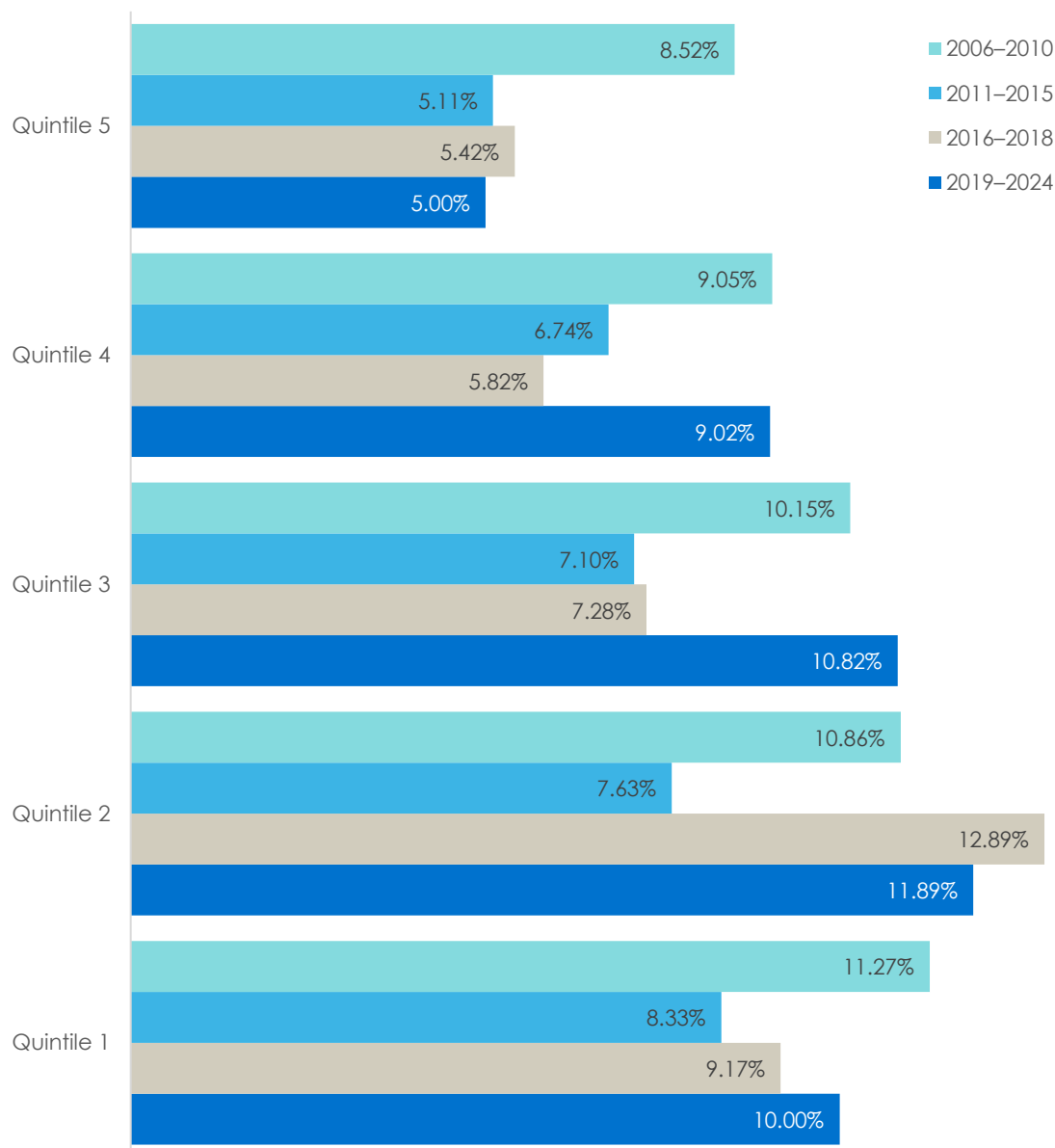


Note: See Table 7 for the data shown in this figure (accessible version).

## Announcement type

This section examines the price-based market cleanliness measure by announcement type (see Figure 13).

Consistent with REP 623, M&A announcements had the best market cleanliness score of the six announcement types. Given that the number of people working on M&A deals would be quite large, this result is somewhat surprising. Indeed, it is in direct contrast with the account-based market cleanliness measure in the previous section, which exhibited worse cleanliness for M&As. This may be because M&As tend to be in larger, more liquid stocks and insiders potentially are aware of the information months in advance. Their trading is therefore less likely to have the price impact during the event window required for identification by the methodology.

**Figure 13: Price-based market cleanliness measure by announcement type**



| Announcement type | 2006–2010 | 2011–2015 | 2016–2018 | 2019–2024 |
|---|---|---|---|---|
| Unsched. | 10.40% | 7.50% | 9.54% | 11.25% |
| Scheduled | 4.07% | 4.48% | 4.68% | 4.34% |
| Negative | 10.22% | 6.53% | 6.17% | 7.06% |
| Positive | 9.80% | 7.33% | 9.64% | 11.07% |
| Non-M&A | 10.15% | 7.09% | 8.25% | 9.50% |
| M&A | 2.94% | 1.25% | 4.00% | 2.27% |
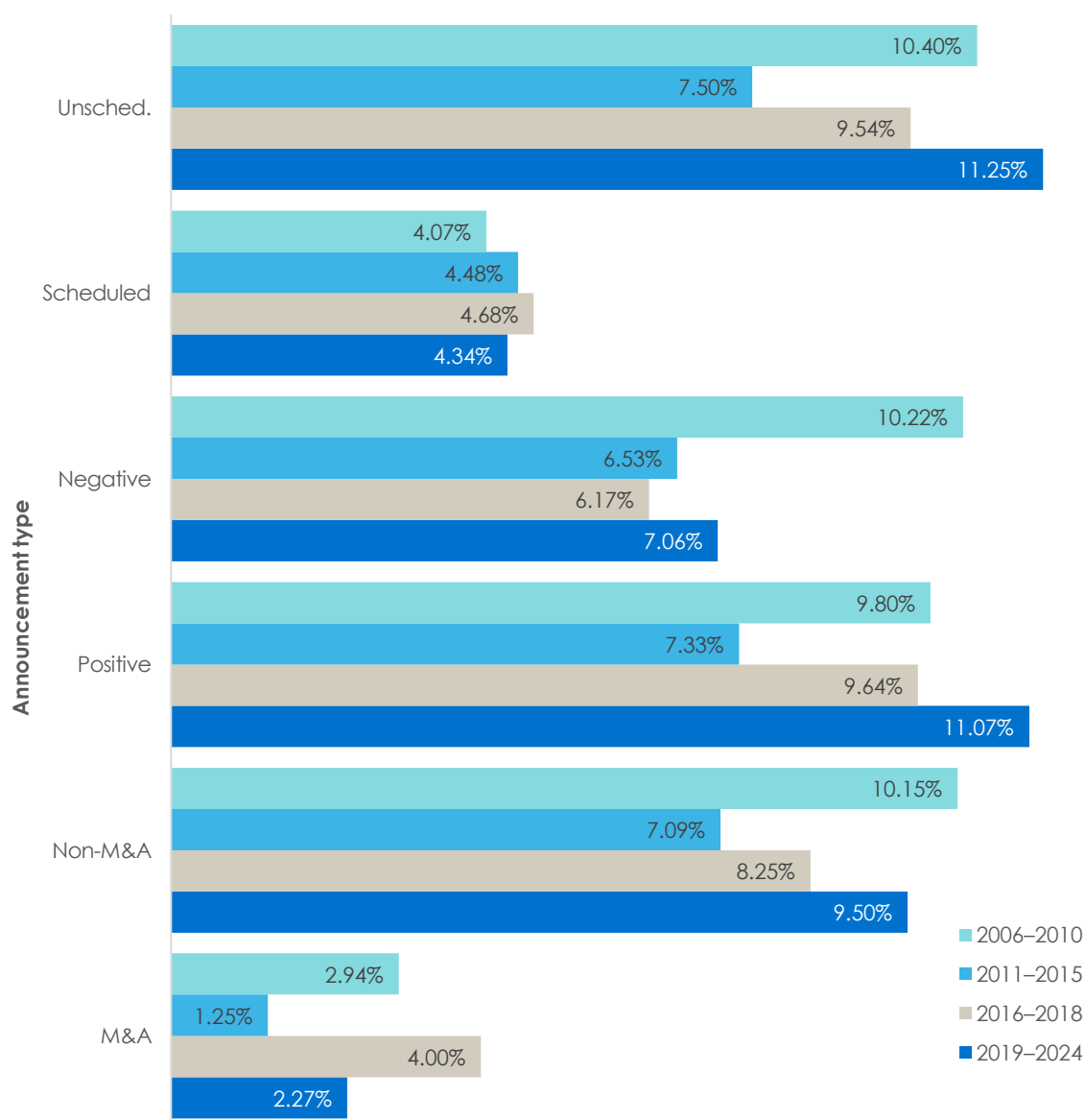
**Note:** See Table 8 for the data shown in this figure (accessible version).

Positive MPSAs were less clean than negative MPSAs, which may be due to short selling regulations.

The market cleanliness measure for unscheduled MPSAs was significantly worse than for scheduled MPSAs. Scheduled announcements are expected, and they may be managed with analyst briefings, company updates and market research before the announcement. One would also expect scheduled MPSAs to be preceded by increased liquidity and speculation in both positive and negative directions, which may mask any anomalous trading and make it more difficult to create price movements. Additionally, private leaks can occur over a more prolonged period of time, which may be outside the methodology's observation window. On the other hand, the unexpected nature of unscheduled announcements provides limited time for insiders to act after they become aware of the information before its disclosure to the market. These announcements may also carry more sensitive or idiosyncratic information for opportunistic trading. More urgent opportunistic trading ahead of unscheduled announcements is likely to generate more price impact within a short window before the MPSA.

In the current review period, most announcement types showed a deterioration in the level of market cleanliness compared with the 2016–2018 period, except for scheduled and M&A groups. This is consistent with external research by SS&C Intralinks and the University of London, which investigated the leakiness of M&As across 10 peer jurisdictions and found that Australia is among the least leaky, with 55% fewer leaks than the group average from 2009 to 2022 (see Appendix 5). Unscheduled announcements experienced the most deterioration, from 9.54% to 11.25%, followed by positive announcements, from 9.64% to 11.07%.

# Appendix 1: Accessible versions of figures

This appendix is for people with visual or other impairments. It provides the underlying data for the figures in this report.

**Table 1: Account-based market cleanliness measures**

| Half-year period ending in | Average anomalous accounts % | Average anomalous volume % |
|---|---|---|
| April 2015 | 0.49% | 4.33% |
| October 2015 | 0.52% | 5.10% |
| April 2016 | 0.65% | 4.96% |
| October 2016 | 0.61% | 5.70% |
| April 2017 | 0.61% | 5.03% |
| October 2017 | 0.53% | 5.08% |
| April 2018 | 0.63% | 5.18% |
| October 2018 | 0.49% | 5.10% |
| April 2019 | 0.53% | 4.93% |
| October 2019 | 0.54% | 4.60% |
| April 2020 | 0.48% | 3.78% |
| October 2020 | 0.69% | 5.51% |
| April 2021 | 0.69% | 4.91% |
| October 2021 | 0.62% | 5.22% |
| April 2022 | 0.50% | 3.94% |
| October 2022 | 0.43% | 3.82% |
| April 2023 | 0.53% | 5.54% |
| October 2023 | 0.59% | 5.07% |
| April 2024 | 0.56% | 4.96% |

**Note:** This is the data contained in Figure 3.

**Table 2: Account-based market cleanliness measures by sector**

| Sector | 2015–2018 accounts | 2015–2018 volume | 2019–2024 accounts | 2019–2024 volume |
|---|---|---|---|---|
| Consumer discretionary | 0.56% | 5.42% | 0.57% | 5.62% |
| Consumer staples | 0.64% | 4.61% | 0.54% | 5.32% |
| Energy | 0.47% | 4.39% | 0.53% | 4.19% |
| Financials | 0.48% | 5.39% | 0.64% | 4.96% |
| Heath care | 0.55% | 5.28% | 0.56% | 4.57% |

| Sector | 2015–2018 accounts | 2015–2018 volume | 2019–2024 accounts | 2019–2024 volume |
|---|---|---|---|---|
| Industrials | 0.60% | 6.37% | 0.58% | 5.74% |
| Information technology | 0.55% | 4.86% | 0.54% | 4.85% |
| Materials | 0.63% | 4.90% | 0.59% | 4.58% |
| Real estate | 0.66% | 5.43% | 0.66% | 4.98% |
| Telecommunication services | 0.56% | 5.39% | 0.43% | 4.26% |
| Utilities | 0.51% | 3.80% | 0.47% | 4.26% |
| **Total** | 0.57% | 5.08% | 0.56% | 4.75% |

**Note:** This is the data contained in Figure 6.

**Table 3: Account-based market cleanliness measures by market capitalisation quintile**

| Quintile | 2015–2018 accounts | 2015–2018 volume | 2019–2024 accounts | 2019–2024 volume |
|---|---|---|---|---|
| Quintile 1 | 0.41% | 3.27% | 0.42% | 3.58% |
| Quintile 2 | 0.59% | 5.21% | 0.51% | 4.69% |
| Quintile 3 | 0.56% | 5.84% | 0.55% | 5.21% |
| Quintile 4 | 0.59% | 5.25% | 0.56% | 4.92% |
| Quintile 5 | 0.66% | 5.69% | 0.68% | 4.72% |

**Note:** This is the data contained in Figure 7.

**Table 4: Account-based market cleanliness measures by announcement type**

| Announcement type | 2015–2018 accounts | 2015–2018 volume | 2019–2024 accounts | 2019–2024 volume |
|---|---|---|---|---|
| M&A | 0.81% | 6.81% | 1.09% | 8.02% |
| Non-M&A | 0.56% | 4.99% | 0.53% | 4.55% |
| Positive | 0.61% | 5.35% | 0.60% | 4.97% |
| Negative | 0.51% | 4.67% | 0.47% | 4.16% |
| Scheduled | 0.50% | 5.19% | 0.54% | 4.74% |
| Unscheduled | 0.59% | 5.00% | 0.54% | 4.58% |

**Note:** This is the data contained in Figure 8.

**Table 5: Price-based market cleanliness measure**

| Year ended 31 October | APPMs | APPM% |
|---|---|---|
| 2006 | 109 | 11.11% |
| 2007 | 95 | 9.16% |
| 2008 | 150 | 10.62% |

| Year ended 31 October | APPMs | APPM% |
|---|---|---|
| 2009 | 67 | 10.67% |
| 2010 | 33 | 6.75% |
| 2011 | 64 | 7.04% |
| 2012 | 71 | 8.70% |
| 2013 | 61 | 8.18% |
| 2014 | 23 | 4.01% |
| 2015 | 46 | 6.07% |
| 2016 | 67 | 9.37% |
| 2017 | 66 | 8.56% |
| 2018 | 62 | 6.76% |
| 2019 | 78 | 7.01% |
| 2020 | 215 | 16.92% |
| 2021 | 65 | 8.27% |
| 2022 | 107 | 7.99% |
| 2023 | 61 | 6.02% |
| 2024 | 88 | 7.63% |

**Note 1:** The 2024 data is for a six-month period and has been annualised.
**Note 2:** This is the data contained in Figure 10.

**Table 6: Price-based market cleanliness measure by industry sector**

| Sector | 2006–2010 | 2011–2015 | 2016–2018 | 2019–2024 |
|---|---|---|---|---|
| Consumer discretionary | 8.61% | 3.76% | 4.61% | 10.27% |
| Consumer staples | 10.16% | 1.93% | 6.80% | 8.30% |
| Energy | 9.25% | 7.38% | 9.76% | 10.73% |
| Financials | 8.90% | 5.03% | 5.03% | 7.73% |
| Heath care | 9.21% | 6.79% | 8.63% | 9.57% |
| Industrials | 11.20% | 6.00% | 6.85% | 7.16% |
| Information technology | 10.15% | 6.49% | 8.87% | 9.86% |
| Materials | 10.48% | 9.08% | 9.83% | 8.50% |
| Telecommunication services | 9.38% | 5.66% | 10.85% | 9.48% |
| Utilities | 14.68% | 4.62% | 0.00% | 2.90% |

**Note:** This is the data contained in Figure 11.

**Table 7: Price-based market cleanliness measure by market capitalisation quintile**

| Review period | Quintile 1 (smallest) | Quintile 2 | Quintile 3 | Quintile 4 | Quintile 5 (largest) |
|---|---|---|---|---|---|
| 2006–2010 | 11.27% | 10.86% | 10.15% | 9.05% | 8.52% |
| 2011–2015 | 8.33% | 7.63% | 7.10% | 6.74% | 5.11% |
| 2016–2018 | 9.17% | 12.89% | 7.28% | 5.82% | 5.42% |
| 2019–2024 | 10.00% | 11.89% | 10.82% | 9.02% | 5.00% |

**Note:** This is the data contained in Figure 12.

**Table 8: Price-based market cleanliness measure by announcement type**

| Review period | M&A | Non-M&A | Positive | Negative | Scheduled | Unscheduled |
|---|---|---|---|---|---|---|
| 2006–2010 | 2.94% | 10.15% | 9.80% | 10.22% | 4.07% | 10.40% |
| 2011–2015 | 1.25% | 7.09% | 7.33% | 6.53% | 4.48% | 7.50% |
| 2016–2018 | 4.00% | 8.25% | 9.64% | 6.17% | 4.68% | 9.54% |
| 2019–2024 | 2.27% | 9.50% | 11.07% | 7.06% | 4.34% | 11.25% |

**Note:** This is the data contained in Figure 13.

# Appendix 2: Sample company and MPSA summary statistics

Table 9 shows a summary of company and announcement data, which reveals that the overall composition of the sample has not changed dramatically over the relevant period.

**Table 9: Company and announcement summary statistics**

| Year ended 31 Oct | Mean market cap. | Median market cap. | No. M&A | % of M&A | No. positive MPSAs | No. negative MPSAs | No. total MPSAs |
|---|---|---|---|---|---|---|---|
| 2006 | $2,347m | $131m | 31 | 3.16% | 618 | 363 | 981 |
| 2007 | $4,641m | $153m | 24 | 2.31% | 591 | 446 | 1037 |
| 2008 | $9,092m | $159m | 18 | 1.27% | 683 | 729 | 1412 |
| 2009 | $2,161m | $122m | 8 | 1.27% | 373 | 255 | 628 |
| 2010 | $2,172m | $150m | 21 | 4.29% | 286 | 203 | 489 |
| 2011 | $1,705m | $144m | 21 | 2.31% | 538 | 371 | 909 |
| 2012 | $1,272m | $130m | 22 | 2.70% | 453 | 363 | 816 |
| 2013 | $1,608m | $147m | 10 | 1.34% | 403 | 343 | 746 |
| 2014 | $1,845m | $206m | 10 | 1.75% | 298 | 275 | 573 |
| 2015 | $2,671m | $127m | 17 | 2.24% | 396 | 362 | 758 |
| 2016 | $1,619m | $150m | 18 | 2.52% | 426 | 289 | 715 |
| 2017 | $1,422m | $105m | 16 | 2.08% | 423 | 348 | 771 |
| 2018 | $2,208m | $153m | 41 | 4.47% | 500 | 417 | 917 |
| 2019 | $2,486m | $144m | 30 | 2.70% | 619 | 493 | 1112 |
| 2020 | $1,414m | $98m | 19 | 1.49% | 751 | 520 | 1271 |
| 2021 | $2,796m | $154m | 22 | 2.80% | 473 | 313 | 786 |
| 2022 | $1,907m | $114m | 23 | 1.72% | 717 | 622 | 1339 |
| 2023 | $1,735m | $84m | 26 | 2.56% | 578 | 436 | 1014 |
| 2024 | $2,244m | $96m | 12 | 2.08% | 339 | 238 | 577 |
| **Total** | $2,492m | $135m | 389 | 2.31% | 9,465 | 7,386 | 16,851 |

**Note:** The data for 2024 spans the six months to the end of April 2024.

# Appendix 3: Detailed methodology

This appendix provides more detailed technical information on the calculation of the account-based and price-based market cleanliness methodologies. Further information is also available in REP 487.

## Account-based market cleanliness methodology

We measured the extent and intensity of anomalous trading by specific accounts ahead of MPSAs.

This was done by systematically identifying timely buying or selling, profitability, the ratio of trading in the relevant security to an account's entire portfolio during the pre-period compared with the reference period, and abnormal trading volume.

The metric can be constructed in two ways, by calculating the percentage of accounts trading before MPSAs that demonstrate timely, profitable and unusual trading, and the percentage of volume they traded:

$$Anomalous\ accounts\ \% = \frac{No.\ of\ accounts\ with\ anomalous\ trading\ ahead\ of\ MPSA_i}{Trading\ no.\ of\ accounts\ ahead\ of\ MPSA_i}$$

$$Anomalous\ volume\ \% = \frac{Volume\ traded\ by\ anomalous\ accounts\ ahead\ of\ MPSA_i}{Single-sided\ total\ volume\ ahead\ of\ MPSA_i}$$

This measure is subject to the strictness of our quantitative filters and parameters that classify trading patterns as timely, profitable and unusual, which are informed by ASIC's day-to-day market surveillance activities. We have conducted various sensitivity and robustness checks by altering some of the parameters and applying different model specifications in our day-to-day surveillance.

Like APPMs in the price-based market cleanliness methodology, the internal account-based measure provides an indication of possible undesirable activity (e.g. insider trading and private information leaks) while not asserting that all anomalous trading volume identified is attributable to misconduct. To ensure comparability and consistency of the metric, the same values for the filter parameters are applied over time.

## Price-based market cleanliness measure

The price-based market cleanliness measure is calculated as the percentage of material price-sensitive announcements that were preceded by abnormal pre-announcement price movements.

$$Percentage\ of\ APPMs = \frac{No.\ of\ MSPAs\ with\ APPMs}{Total\ number\ of\ MPSAs}$$

Price movements are considered abnormal if they were in the same direction as the announcement (i.e. price increases ahead of positive announcements) and exceeded the normal market volatility expected for that stock. A lower percentage of APPMs indicates that markets are cleaner, whereas a higher percentage of APPMs indicates that markets are less clean.

# Appendix 4: Comparison of international market cleanliness studies

Table 10 presents a comparison of market cleanliness studies conducted internationally, including by securities regulators and academic researchers. We have examined the different design features of each of these studies to inform our approach for measuring market cleanliness.

**Table 10: Comparison of international market cleanliness studies**

| Study design features | ASIC | UK FCA | NZ FMA | SS&C Intralinks | Academia |
|---|---|---|---|---|---|
| Announcement types | MPSA | M&A only | MPSA | M&A only | Either MPSA or M&A only |
| Time range | 2006–present | 2002–present | 2010–2016 | 2009–present | 1990s–present |
| Cross-sectional comparisons | • Market cap<br>• Industry<br>• Announcement types | • Industry<br>• Takeover characteristics<br>• Relevant period | • Australia<br>• Relevant period | • Geographic<br>• Industry<br>• Takeover characteristics | • Company characteristics<br>• Relevant period<br>• Takeover characteristics<br>• Announcement types |
| Methodology | • Price run-ups<br>• Anomalous trading | • Price run-ups<br>• Anomalous trading | • Price run-ups | • Price run-ups | • Price run-ups |

**Note:** See ASIC, REP 623 and REP 487; UK FCA, Market cleanliness statistics 2022/23; NZ FMA, NZ equity market cleanliness for the years 2010-2016; SS&C Intralinks, New research reveals how M&A deal leaks evolved during the pandemic.

# Appendix 5: Intralinks study on abnormal trading preceding M&A deal announcements by country

Table 11 presents results from a research study on abnormal trading preceding M&A deal announcements by financial technology firm, SS&C Intralinks and the M&A Research Centre at City, University of London. The study compares 10 international peer jurisdictions and examines the percentage of M&A deals preceded by abnormal share price increases (2009 to 2022). The findings show that Australian listed equity markets have consistently been among the cleanest in the world. A previous version of this study, with data up to 2019, is available from the Intralinks website.

**Table 11: Percentage of abnormal trading preceding M&A deal announcements (rankings are in parentheses)**

| Target listing location | 2020 (%) | 2021 (%) | 2022 (%) | Average from 2009–2022 (%) |
|---|---|---|---|---|
| France | 3.1 (9) | 0.0 (10) | 22.2 (1) | 5.2 (9) |
| South Korea | 12.8 (1) | 19.4 (1) | 12.8 (2) | 11.9 (2) |
| Japan | 5.9 (7) | 8.8 (6) | 11.5 (3) | 6.7 (7) |
| Hong Kong | 9.7 (3) | 15.5 (2) | 10.8 (4) | 14.1 (1) |
| United States | 8.1 (4) | 6.1 (8) | 10.0 (5) | 7.8 (6) |
| Germany | 6.3 (6) | 11.5 (4) | 7.1 (6) | 9.2 (5) |
| India | 10.8 (2) | 12.0 (3) | 7.1 (7) | 11.2 (3) |
| United Kingdom | 5.0 (8) | 9.2 (5) | 4.8 (8) | 9.5 (4) |
| Australia | 1.7 (10) | 6.3 (7) | 4.5 (9) | 3.8 (10) |
| Canada | 8.0 (5) | 5.7 (9) | 2.5 (10) | 5.9 (8) |

**Source:** Adapted from unpublished research conducted by SS&C Intralinks and the M&A Research Centre at City, University of London. Reproduced with permission.

# Key terms

| | |
|---|---|
| **account (origin of order ID)** | For an order or each side (buy and/or sell) of a trade where the participant acts as agent for a client, a unique notation, code or number used by the participant to identify the person on whose instructions the order is submitted, or transaction was executed |
| **account-based market cleanliness measure** | Market cleanliness measure based on anomalous trading behaviour by specific identified accounts in the security ahead of MPSAs |
| **anomalous trading** | Trading activity by a particular account that is identified by the account-based market cleanliness measure as being timely, profitable and unusual |
| **APPM** | Abnormal pre-announcement price move |
| **ASIC** | Australian Securities and Investments Commission |
| **ASX** | ASX Limited or the exchange market operated by ASX Limited |
| **ATO** | Australian Taxation Office |
| **Cboe Australia** | Cboe Australia Pty Limited or the exchange market operated by Cboe Australia Pty Limited |
| **current review period** | The five and a half year period from 1 November 2018 to 30 April 2024, over which this report examines market cleanliness measures and compares results with observations for 2006 to 2018 previously published in REP 487 and REP 623 |
| **FCA** | Financial Conduct Authority (UK) |
| **GICS** | Global Industry Classification Standard, an industry taxonomy developed in 1999 by MSCI Inc. and Standard & Poor's Financial Services LLC |
| **INFO 269 (for example)** | An ASIC information sheet (in this example numbered 269) |
| **MAI** | ASIC's Market Analysis and Intelligence surveillance system |
| **M&As** | Mergers and acquisitions |
| **market cleanliness** | Measure of market integrity based on indicators of potential insider trading or information leaks ahead of MPSAs |
| **MPSA** | Material, price-sensitive announcement |
| **price-based market cleanliness measure** | Market cleanliness measure based on APPMs observed in the security ahead of MPSAs |
| **REP 623 (for example)** | An ASIC report (in this example numbered 623) |
| **RG 73 (for example)** | An ASIC regulatory guide (in this example numbered 73) |