ASIC
Australian Securities & Investments Commission

REGULATION IMPACT STATEMENT

Australian market structure: Further proposals

June 2013

About this Regulation Impact Statement

This Regulation Impact Statement (RIS) addresses ASIC's proposed market integrity rules and guidance to address regulatory issues resulting from recent market developments in Australia. It focuses on issues relating to:

- the automated trading environment, including high-frequency trading;
- volatility controls for extreme price movements;
- enhanced data for market surveillance;
- pre-trade transparency and price formation in the market; and
- the fair and efficient operation of crossing systems.

What this Regulation Impact Statement is about

1 This Regulation Impact Statement (RIS) addresses ASIC's proposed market integrity rules and guidance to address regulatory issues resulting from recent market developments in Australia, including:

(a) new risks to market integrity resulting from the growth of automated trading; and

(b) risks to price formation and the quality of the public markets.

2 We are committed to promoting confident and informed investors and financial consumers by ensuring that risks to market integrity are minimised. We are also committed to ensuring that the Australian equity market has effective price formation and provides fair, orderly and transparent trading of financial products for fundamental investors,[1] both small and large. This will in turn facilitate efficient capital raising for companies. By focusing on market integrity, we aim to ensure that:

(a) prices are available;

(b) consumers receive fair prices;

(c) markets operate efficiently and in an orderly way, even when there is volatility; and

(d) the public market continues to be liquid and efficient.

3 We published Consultation Paper 168 *Australian equity market structure: Further proposals* (CP 168) on 20 October 2011 to consult on proposals to address changes in Australia's equity market structure. We received 28 written submissions from stakeholders on the various policy proposals set out in CP 168. We also published Consultation Paper 179 *Australian market structure: Draft market integrity rules and guidance* (CP 179) and Consultation Paper 184 *Australian market structure: Draft market integrity rules and guidance on automated trading* (CP 184) to seek further feedback on the draft rules and guidance proposed in CP 168.

4 In mid-2012, we established two internal taskforces to focus on two specific areas of CP 168: dark liquidity and high-frequency trading. The taskforces jointly published Report 331 *Dark liquidity and high-frequency trading* (REP 331) and Consultation Paper 202 *Dark liquidity and high-frequency trading: Proposals* (CP 202) on 18 March 2013. REP 331 examines the impact of dark liquidity and high-frequency trading on the quality and integrity of Australia's financial markets, while CP 202 outlines proposals to safeguard the efficiency and integrity of our markets by addressing deficiencies in regulation. We received 25 written submissions from

[1] A fundamental investor is a person that buys or sells a security based on an assessment of the intrinsic value of the security.

stakeholders on the various policy proposals set out in CP 202. We also met with industry associations, market participants, market operators and institutional investors. We have taken these submissions into account in preparing this RIS.

5 In developing our final position, we have considered the regulatory and financial impact of our proposals. We are aiming to strike an appropriate balance between:

(a) maintaining and facilitating fair and efficient markets;

(b) promoting confident and informed investors and financial consumers; and

(c) facilitating activity in the financial services industry, including not unreasonably burdening financial services providers and facilitating the international competitiveness of the Australian financial services industry.

6 This RIS sets out our assessment of the regulatory and financial impacts of our proposed policy and our achievement of this balance. It deals with:

(a) the likely compliance costs; and

(b) other impacts, costs and benefits.

Contents

A Introduction

Background

7 Exchange markets are types of execution venues[2] that enable trading in listed products, including via a central limit order book (CLOB). Many exchange markets also offer listing services for companies. They play an important role in business capital formation and household allocation of savings, as do other financial markets, intermediation services and internal finance. Trading also occurs in dark pools[3] and on over-the-counter (OTC) markets.

8 We view the principal function of exchange markets as offering a cost-effective mechanism for companies to raise funds and a venue for fair, orderly and transparent trading of listed securities following their issuance.

9 The Australian equity market comprises two major exchange market operators, ASX and Chi-X, competing for secondary trading in ASX-listed products.[4] To operate a market in Australia, operators must hold an Australian market licence or an exemption: see s791 of the *Corporations Act 2001* (Corporations Act).

10 Further information on the structure of the Australian equity market is contained in Consultation Paper 145 *Australian equity market structure: Proposals* (CP 145), CP 168, Report 215 *Australian equity market structure* (REP 215), CP 202, and REP 331.

11 Trading on these markets is conducted through market participants. Market participants can place orders for trading on the market on behalf of retail investors, institutional investors, principal traders, and for themselves (proprietary trading). Market participants must hold an Australian financial services (AFS) licence from the Australian Securities and Investments Commission (ASIC), and also abide by the rules of the market operator(s).

12 In November 2010, we released CP 145 to consult on market integrity rules we considered necessary to address regulatory issues arising from recent developments in Australian equity markets (including most of the issues in this RIS), and to facilitate the introduction of competition in trading services in 'equity market products'.

13 In April 2011, we made ASIC Market Integrity Rules (Competition in Exchange Markets) 2011, providing a regulatory framework for competition

[2] An execution venue is a facility, service or location on or through which transactions in equity market products are executed and includes each individual order book maintained by a market operator, a crossing system and a market participant executing a client order against its own inventory otherwise than on or through an order book or crossing system.
[3] These can be categorised as non-pre-trade transparent electronically accessible pools of liquidity.
[4] There are a number of other smaller exchange markets and OTC markets that trade other products.

between public exchanges in equity market products. At that time, we also made market integrity rules dealing with the activities or conduct of the public exchange operated by Chi-X (Chi-X market): see ASIC Market Integrity Rules (Chi-X Australia Market) 2011.

> Note 1: In this document, 'ASIC Market Integrity Rules (Competition)' refers to ASIC Market Integrity Rules (Competition in Exchange Markets) 2011, 'ASIC Market Integrity Rules (ASX)' refers to ASIC Market Integrity Rules (ASX Market) 2010 and 'ASIC Market Integrity Rules (Chi-X)' refers to ASIC Market Integrity Rules (Chi-X Australia Market) 2011.
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> Note 2: In this document, 'Rule 4.2.3 (Competition)' for example, refers to a rule of the ASIC Market Integrity Rules (Competition) in this example numbered 4.2.3, 'Rule 5.6.3 (ASX)' for example, refers to a rule of the ASIC Market Integrity Rules (ASX) in this example numbered 5.6.3 and Rule 5.6.3 (Chi-X)' for example, refers to a rule of the ASIC Market Integrity Rules (Chi-X) in this example numbered 5.6.3.

14 We deferred making rules on the wider market structure proposals consulted on in CP 145 to facilitate the introduction of competition and to provide more time to consider some of the proposals. The resulting RIS on competition in exchange markets (April 2011) evaluated the impact of market integrity rules that are aimed at addressing the regulatory issues resulting from the introduction of competition. At the time, we indicated our intension to further consider market integrity rules that deal with market developments and implement those rules at another time.

15 In October 2011, we released CP 168 with our wider market structure proposals, taking into account feedback received in response to CP 145. Consultation on CP 168 closed on 10 February 2012.

16 CP 168 canvassed the further proposals and market integrity rules that were considered to be necessary to keep pace with technological and market developments, and sought views in relation to:

(a) enhanced controls for an increasingly automated trading environment, to require participants to adequately test and filter algorithmic trading messages, have business continuity plans and review processes in relation to their automated order processing (AOP)[5] and set minimum requirements for direct electronic access (DEA)[6] to markets;

(b) refined volatility controls to automatically limit market activity during extreme movements in individual stocks and a new anomalous order entry and volatility controls for futures contracts on the market index;

(c) enhanced regulatory data requirements for ASIC's surveillance capabilities to better monitor potential market abuse to protect investors, and contribute to our analysis of market developments;

[5] Orders generated by a system.
[6] Access to markets via the infrastructure of a market participant.

(d) broadening the scope of best execution so investors have the same protection for both equity and non-equity products listed or quoted on ASX; and

(e) exceptions to pre-trade transparency and mechanisms for promoting pre-trade transparency, such as requiring dark trades to offer meaningful price improvement, to address the impact of dark liquidity on price formation and market quality.

17 The proposals were revised in response to feedback received to CP 168. In response to the feedback received, we are not proceeding with the proposal in paragraph 16(d) to broaden the scope of best execution. We released CP 179 in June 2012 and CP 184 in August 2012. They sought feedback on the drafting of the proposed rules and guidance we intended to proceed with.

18 On 18 March, the Dark liquidity and high-frequency trading taskforces published a joint Report and Consultation Paper on dark liquidity and high-frequency trading (REP 331 & CP 202). The impact of the proposals in CP 168 and 202 will also be examined in this RIS.

Structure of this paper

19 In this RIS we consider various approaches to addressing risks to market integrity in respect to the main issues consulted on in CP 168 and CP 202. While the issues are separately defined, they all relate to contemporaneous developments in trading and market structure that are rapidly shifting the landscape of the Australian market. The core elements are interlinked by our objective to maintain fair, orderly and transparent equity markets in Australia.

20 The issues addressed in this RIS include:

(a) automated trading (see Section B);

(b) extreme price movements (see Section C);

(c) enhanced data for surveillance (see Section D);

(d) pre-trade transparency and price formation (see Section E); and

(e) operations of crossing systems (see Section F).

Developments in the Australian equity market

21 The two key themes that the proposed market integrity rules aim to address are:

(a) new risks to market integrity resulting from the transition to an automated trading environment; and

(b) risks to price formation and the quality of the public markets due to fragmentation of order flow into the dark.

Growth in automated trading

22 Equity markets globally are undergoing considerable change. Technology has also fundamentally changed the way orders are generated and executed by all users of the market. Human decision-making has largely been replaced by computers. Computer algorithms now generate a large proportion of all orders on Australian financial markets.

23 Increased automation has provided an ideal platform for high-frequency traders and other users of algorithmic logic. It has enabled fundamental investors, who are also users of algorithms, to more easily break up larger orders, so as to limit their market impact.

24 In the three-month period from May–July 2012, the traders we defined as high-frequency traders accounted for 27% of total turnover in S&P/ASX 200 securities.[7] This is up from the 3–4% estimated by market participants in 2009 and reported in ASX's February 2010 review, *Algorithmic trading and market access arrangements* (ASX Review).[8] From May–July 2012, these traders accounted for a slightly higher proportion of total trades (32%) and a much larger proportion of total orders (46%), consistent with the finding that high-frequency traders generally have higher order-to-trade ratios.

25 This growth is partly attributable to market fragmentation and ASX's new data centre with enhanced co-location facilities. This is because high-frequency trading strategies are most successful in a low-latency multimarket environment.

26 It is generally understood that these trends are driving market practice. The introduction of competition in exchange markets has provided greater impetus for these changes.

27 Growth in automated trading has contributed to greater efficiency of trading, such as more expeditious execution, faster processing of information and more efficient detection of liquidity. However, it has also introduced new risks to market integrity. In analysing the sudden extreme price decline and rebound on 6 May 2010 in the United States (the 'flash crash'), the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) identified a triggering event and a subsequent confluence of market conditions and trading strategies as the cause of the market disruption.[9]

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[7] Report 331 *Dark liquidity and high-frequency trading* (REP 331), March 2013.
[8] ASX, *Algorithmic trading and market access arrangements*, review, ASX Limited, 8 February 2010.
[9] CFTC–SEC, *Findings regarding the market events of May 6, 2010*, report, CFTC and SEC, 30 September 2010, www.sec.gov/news/studies/2010/marketevents-report.pdf.

28 According to the SEC and CFTC, an automated execution of a large sell order in the E-mini (an equity-based index future traded on the Chicago Mercantile Exchange (CME)) was the trigger for additional trading by high-frequency traders and other traders in the futures market, as well as cross-market arbitrageurs (thereby affecting the equities markets). The cascading effect of the programmed reactions of automated trading systems to the price movements ultimately led to the 'flash crash'.

29 We have seen similar but less dramatic instances of heightened intraday volatility here. In early 2012, a high-frequency trading system entered more than 5,000 identical orders erroneously in an ASX listed company. If executed, these orders would have short sold almost 4% of the issued securities of the company involved.

30 A few months later, a high-frequency trading firm based in Singapore created a disorderly market through an erroneous algorithm that entered sell orders representing 13.8% of an ASX listed company's issued capital. The algorithm executed approximately 3% of the submitted orders despite efforts to cancel erroneous unexecuted sell orders. The filters in place at the market participant were not enabled, effectively allowing naked access into the market.

Growth in fragmentation of order flow into the dark

31 The growth of new execution venues and dark trading in North America and Europe has resulted in significant fragmentation of order flow: see Section D of REP 215 and paragraphs 77–78 of CP 145 for a summary of overseas experience where there is competition for trading services. In Australia, there has been almost a fourfold growth in the number of crossing systems since 2009 to 20. [10] The increase in dark liquidity means that more order flow is migrating to non-pre-trade transparent trading venues, which may result in the erosion of liquidity in pre-trade transparent markets and magnifying surveillance challenges.

32 To the extent that order flow is diverted from the public markets, there is evidence in overseas and domestic markets that at certain levels it does adversely affect the price formation process and execution quality for investors who display their orders in the public markets. This deterioration in pricing efficiency and execution quality will ultimately filter through to dark trading venues where there is reliance on prices in lit markets.

33 To provide a balanced incentive structure to support the pre-trade transparent price formation process, we consider that investors that contribute to the

[10] The number of crossing systems in 2009 was derived from the reports made to ASIC under Rule 4.3.1 of ASIC Market Integrity Rules (Competition) since May 2011. These reports indicated the time at which each crossing system commenced.

price formation process by displaying orders in pre-trade transparent order books should receive priority over dark orders (when below block size).

Affected parties

34 In this RIS, our assessment of impacts includes an analysis of the costs and benefits of each of the options available, and a consideration of how each proposed option will affect the following key stakeholders:

(a) industry (i.e. market operators and market participants);

(b) investors; and

(c) ASIC.

Qualification of impacts described in this RIS

35 In CP 145, CP 168, CP 179, CP 184 and CP 202 we sought feedback from stakeholders on the qualitative and quantitative costs and benefits of the proposed policy changes. In response to both consultation papers, we received very limited quantitative data. Specifically in relation to costs, industry provided little guidance to ASIC to facilitate the assessment of the impact of the proposals on operational budgets.

36 While we recognise that it may be costly and commercially sensitive for industry to obtain and provide data of this nature, a small number of stakeholders did offer us indications of cost of compliance for their business. The costs vary depending on the nature and size of market operators' and market participants' business activities, the extent to which they have already adopted the proposed requirements (many of which reflect international 'best practice'), and other factors.

B Issue 1: Automated trading

37 This section considers options to ensure that the increasing use of automated trading and order processing does not introduce vulnerabilities to the orderly operation of the market.

Context

38 One of the most significant recent developments in Australian and global exchange markets has been the transition to a predominately automated environment. Developments in technology and execution venues have facilitated this growth.

39 Automated trading is typically characterised as electronic trading activity where specific execution outcomes are delivered by predetermined parameters, logic rules and conditions. These parameters may include trading volume, asset price, instrument type, market, volumes on offer for trading, timing and news.[11]

The benefits of automated trading

40 Algorithmic trading is a subset of automated trading that relies on algorithm generated logic to make trading decisions. Algorithmic trading is used for a number of reasons. Algorithms are used for statistical arbitrage, with systems processing a large amount of information and deriving trading strategies to take advantage of pricing discrepancies or the perceived mispricing of assets. Algorithms are often used to supply liquidity. Institutional investors use algorithms to execute large trading orders in a way that minimises adverse price impact. Automated systems are also important in multi-platform environments to determine the best venue in which to execute trades at any given time (smart order routing).

41 In general, automated trading has reduced the cost of trading and contributed to efficiency gains in exchanges. For the most part, research has found that algorithmic trading improves market quality through increasing price efficiency and market liquidity.[12]

42 For example, Hendershott and Riordan (2009) found the effect of algorithms on price formation was broadly positive.[13] They concluded:

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[11] ASX, *Algorithmic trading and market access arrangements,* review, ASX Limited, 8 February 2010.
[12] J Hasbrouck and G Saar, *Low-latency trading*, working paper, December 2012;
T Hendershott and R Riordan, 'Algorithmic trading and the market for liquidity', *Journal of Financial and Quantitative Analysis, Forthcoming,* 11 April 2012.
[13] T Hendershott & R Riordan, 'Algorithmic trading and information', NET Institute Working Paper No. 09-08, September 2009, www.netinst.org/NET_Working_Papers.html.

(a) algorithmic trading improved the efficiency of the price formation mechanism (algorithmic trades imparted 40% more information than human trades); and

(b) that there was no evidence that algorithmic trading contributed to volatility.

43 Similarly, Hendershott, Jones and Menkveld (2011) found that as algorithmic trading in a market increased, liquidity improved—this is shown through reduced quoted and effective spreads (the study also found that quotes become more informative).[14]

High frequency trading

44 One subset of algorithmic trading that has attracted significant industry attention and public concern is high-frequency trading. High-frequency trading is not a technical term, however an objective interpretation of the behavioural characteristics of high frequency trading is outlined in REP 331 and has been used as a working definition. High-frequency trading is a subset of algorithmic trading that has the following general characteristics:

(a) it involves the use of sophisticated technological tools for pursuing a number of different strategies, ranging from market making to arbitrage;

(b) it is a highly quantitative tool that employs algorithms along the whole investment chain:

(i) analysis of market data;

(ii) deployment of appropriate trading strategies;

(iii) minimisation of trading costs; and

(iv) execution of trades;

(c) it is characterised by a high daily portfolio turnover and order-to-trade ratio (i.e. a large number of orders are cancelled in comparison to trades executed);

(d) it usually involves flat or near flat positions at the end of the trading day, meaning that little or no risk is carried overnight, with obvious savings on the cost of capital associated with margined positions;

(e) it is mostly employed by proprietary trading firms or desks; and

(f) it is latency sensitive—the implementation and execution of successful high-frequency trading strategies depend crucially on the ability to be faster than competitors and to take advantage of services such as direct electronic access and co-location.[15]

[14] T Hendershott, C Jones & A Menkveld, 'Does algorithmic trading increase liquidity?', *Journal of Finance*, Vol. 66, No. 1, February 2011.

[15] For more a more detailed definition of high frequency trading (including the distinction between high frequency trading and other forms of automated trading) see: Report 331 *Dark liquidity and high-frequency trading* (REP 331), March 2013.

45 There are automated trading systems that operate with great speed (low latency) but are not classified as high-frequency trading because they do not fulfil all of the characteristics above. One example of these systems are execution algorithms, which use high speed access to the trading platform to fill large orders while attempting to minimise adverse selection and price impact.

46 High-frequency traders usually enter orders of relatively small notional value and alter (amend) them very rapidly and recurrently as fundamental or other factors change. We found that other automated traders are responsible for a large proportion of small orders. This is done to:

(a) exploit passive (limit) orders from other traders;

(b) avoid their own passive orders being exploited by other traders; and

(c) obtain a better position in order book queues than competitors with similar strategies and information.[16]

47 The ultimate goal of these tactics is to profit or minimise risk from:

(a) short lived supply-demand imbalances in the order book;

(b) temporary instances of mispricing of securities (relative to new information); and

(c) other transitory market imperfections.

48 Concerns arising from media coverage, individual investors and buy-side institutions and/or their representative bodies have been raised about high-frequency traders having an unfair level of access to the market, submitting excessive numbers of order messages and engaging in manipulative behaviour. These concerns have been based on overseas experience and anecdotal evidence, although some overestimate the levels of automation in the markets being specifically attributed to high-frequency trading. Recent work performed by ASIC's high-frequency trading taskforce suggest that many of the characteristics typically attributed to high-frequency trading can also be identified in other forms of automated trading.

Potential drawbacks of automated trading

49 Concerns remain about whether the development and increased usage of automated trading has introduced systemic risks to the market. For example, technology has increased the speed, automation and efficiency of trading, but it may have also increased the scope for insufficiently monitored market access arrangements, extreme price movements from algorithms

[16] UK Government Office for Science, Foresight, *Minimum resting times and transaction-to-order ratios – review of amendment 2.3.f and Question 20 – review of MiFID,* 2012.

overreacting and disrupting the market, and algorithmic strategies being used to manipulate markets.

50 Events such as the 6 May 2010 'flash crash', where prices of US stocks declined and suddenly rebounded before the close of the trading day, illustrate the potential risks of disruptive high-speed algorithms, and they provide a salient reminder of the need for greater controls.

51 The events surrounding the experience of US broker Knight Capital Group on 2 August 2012 also highlight some of the risks involved with algorithmic trading. On that day, an algorithm malfunction resulted in losses to Knight Capital of US$440 million due to erroneous trades. The speed in which the malfunctioning algorithm executed trades and the large number or trades filled dislocated prices in 148 stocks in the US market. The New York Stock Exchange (NYSE) cancelled trades in six securities, where prices had fluctuated at least 30% in a period of 45 minutes.

52 Both human-based and computer-based trading systems are susceptible to errors. However, the speed and frequency at which computer systems can process information and generate instructions means that one error can lead to severe losses and distortions—to both the algorithm owner and to the market as a whole. The Knight Capital episode has raised concerns about the appropriateness of existing safeguards against aberrant algorithmic trading in the United States, and highlights the importance of participants having the ability to quickly disable a system or algorithm.[17]

53 It is also in the interests of the Australian market to safeguard against the risk of aberrant automated trading. All stakeholders would benefit from better filters and controls that would preserve the integrity and fairness of Australia's markets, lift investor confidence, and promote greater participation, trading volumes and market liquidity.

Algorithmic trading and DEA

54 Most algorithmic trading strategies are dependent on speed. Traders may employ time-contingent strategies such as those which exploit pricing inefficiencies (arbitrage) or the provision of liquidity (the traders make a two-sided market and profit by capturing the bid–ask spread), and low latency infrastructure plays an important role in allowing risk to be managed effectively.

55 There has been strong demand for direct electronic access (DEA) to markets. DEA refers to access to a market by persons that are not direct participants of an exchange market through another participant's access infrastructure.

[17] 'Wait a second—the latest cock-up on Wall Street shows that more safeguards are needed', *The Economist*, 11 August 2012.

DEA is attractive because it enables clients to transmit their orders directly to a market, giving them greater control over trading decisions and reducing latency. However, DEA has the potential to grant market access to traders outside of the infrastructure and control of local market participants and rules. Unfiltered sponsored access to the market challenges risk management frameworks and hinders surveillance efforts.

56 DEA is relatively common in developed markets. For example, in 2009, it accounted for approximately 60% of daily trading volumes in the United States.[18]

Automated trading in Australia

57 We estimate that at least 99.6% of all trading messages submitted to market over the nine month period in 2012 were sourced from an AOP program.[19] Some of this would be direct electronic access flow (clients sending individual orders through a market participant's AOP system), but most of the trading messages would have originated from the algorithmic programs used by market participants, users of algorithmic trading strategies and buy-side clients.

58 Australia's regulation of automated trading is already robust. For example, unfiltered sponsored access is not permitted. Market participants bear responsibility for all orders submitted through their systems (in addition, the ban on naked short selling and the absence of maker–taker pricing incentives are believed to have contributed to potentially restraining growth in high-frequency trading in Australia).

59 The Australian market has followed the overseas trend of experiencing growth in high-frequency trading. The growth is also partly attributable to the introduction of competition and the development of faster trading capabilities. Multiple low-latency, pre-trade transparent execution venues will create trading opportunities for more algorithms in Australia, particularly high-frequency trading. In overseas markets, a large portion of this high-frequency trading is by electronic liquidity providers. This is also likely to occur in Australia based on experience overseas (indeed, we are already seeing an expansion of electronic market making).

60 The growth in high-frequency trading may lead to further reduction in average order sizes in pre-trade transparent venues; many more orders per trade; increased trading volume; tightening of spreads, although potentially with lower depth at the best prices; and greater deployment of inter-market arbitrage strategies.

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[18] S Lee, *Land of sponsored access: Where the naked need not apply*, Aite Group, 14 December 2009, www.aitegroup.com/Reports/ReportDetail.aspx?recordItemID=619.
[19] Report 331 *Dark liquidity and high-frequency trading* (REP 331), March 2013.

Current regulatory framework

61 Parts 5.6, 5.7 and 5.9 of ASIC Market Integrity Rules (ASX) and ASIC Market Integrity Rules (Chi-X) require a market participant to ensure that all orders that are submitted through AOP systems to ASX or Chi-X are appropriately filtered, do not interfere with the efficiency and integrity of the market, and do not result in manipulative trading. ASX Market Rules Guidance Notes 19, 21 and 22 outline ASX's previous and—since the transfer of market supervision from ASX to ASIC in August 2010—ASIC's current expectations of market participants in relation to AOP.[20]

62 Market participants are responsible for identifying and implementing controls to manage their risks, including maintaining organisational and technical resources to comply with the market integrity rules.

Automated trading and market failure

63 Ideally, equity prices should reflect 'fundamental' factors, including: information about the company, the competition, the operating environment or the economy in general; and investor sentiment and market conditions.

64 However, equity prices may at times be affected by extraneous influences resulting from a malfunctioning or ill-conceived algorithm misinterpreting data or price signals and acting in a way that diverges from the original intention of the human programmers. For instance, an algorithm may erroneously buy or sell securities in volumes large enough to move prices from levels supported by fundamentals.

65 In some extreme instances, prices move sharply in the absence of any new public information about a stock, the market or the economy. Those instances where prices move for non-fundamental factors arguably represent a breakdown of the price formation process, characterising a market failure.

Examples of disruptions

66 A commonly cited example of algorithms disrupting orderly markets is a strategy known as 'momentum ignition', where an algorithm submits erroneous orders into the market generating specific signals. These signals in turn cause other algorithms to react in a manner that reinforces the overall market disruption.[21] The result is often a high volume of orders, large price dislocations, and potentially unwanted trades.

67 It is possible for algorithms to both:

[20] This has been replaced by Regulatory Guide 241 *Electronic trading* (RG 241).
[21] ASX, *Algorithmic trading and market access arrangements,* review, ASX Limited, 8 February 2010, p. 33.

(a) initiate a market disruption by itself (e.g. a software mistake creating an initial price dislocation from fundamentals);[22] and

(b) propagate and exacerbate a disruption that is already taking place (e.g. from human error—'fat fingers').

68 The SEC has seen cases where order entry errors have suddenly and significantly exposed the US market to potential disruptions. For instance, on 30 September 2008, the price of Google stock became extremely volatile towards the end of the day's trading, dropping 93% in value in a short period of time. This was due to an influx of erroneous orders onto an exchange from a single market participant, which resulted in the cancellation of numerous trades.[23]

69 ASIC took pre-emptive action against 21 cases of potentially disruptive algorithmic programs in 2011.[24] ASIC's market surveillance has identified cases of algorithms causing large disruptions in Australian markets.

70 Research into automated trading shows sudden price movements are relatively frequent: studies by Golub and Keane (2011) and Johnson et al (2011) identified thousands of instances in the past five years where prices for US stocks inexplicably increased or fell by 0.8% in less than 1.5 seconds—a timescale deemed to be outside the reaction time of humans.[25]

71 Whether high frequency trading was the initial source of the sudden price movements was not clear: neither study controlled for prevailing market conditions. However, both studies showed the occurrence of sudden price movements in modern, high-speed markets was remarkably common—the average was more than one per day—and, importantly, the price movements were overwhelmingly at the beginning and end of the day. REP 331 found that such phenomena are not restricted to high-frequency trading but attributable to algorithmic trading in general.

72 The timing of the sudden price movement is significant because if a price movement occurred at a material time (e.g. the final hour of the final day of a trading month), the market would not have enough time to adjust. Investors and firms could incur substantial losses, as market indices are often calculated and portfolios are often valued based on end-of-day pricing.

73 In addition, evidence of a link between automated trading and volatility has been growing: Dichev, Huang and Zhou (2011) found a substantial positive

[22] 'Knight Capital—desperate times', *The Economist*, 3 August 2012.
[23] SEC, *Rule 15c3-5: Risk management controls for brokers or dealers with market access* (Release No.34-63241), rule, November 2010.
[24] Report 277 *ASIC supervision of markets and participants: July to December 2011* (REP 277).
[25] A Golub, J Keane and S Poon (2011) identified 9,766 ultra-fast mini-flash crashes between January 2006 –November 2011. E Johnson et al (2011) identified 18,520 ultra-fast mini-flash crashes on multiple exchanges during the same period. See A Golub, J Keane and S Poon, 'Mini flash crashes', working paper, 15 April 2011; N Johnson et al, 'Financial black swans driven by ultrafast machine ecology', working paper, 12 February 2012.

relationship between trading volumes and stock volatility,[26] while Boehmer, Fong and Wu (2012) found automated trading increased volatility, particularly in small stocks and during days when market making was difficult.[27]

Assessing the problem

74 The problem this section addresses has three components. First, automated trading in Australia has evolved in complexity and scale in ways the existing regulatory framework did not anticipate. The failure to modernise this framework and to clarify ASIC's expectations about testing and management of systems may leave local markets open to the potential for disruption and loss in investor confidence.

75 Second, some market participants have not kept their own control systems up-to-date. This shows the need to mandate regular reviews of AOP systems by participants.

76 Third, attributes associated with algorithmic trading in general, such as high order-to-trade ratios have the potential to create market noise and affect market confidence and ASIC's effectiveness in taking enforcement action against market misconduct.

77 These three components are discussed in more detail below.

Evolution of automated trading beyond current controls

78 Automated trading in Australia has evolved considerably in the past few years and has had a profound impact on the operation of exchange markets in Australia. Automated trading has contributed to an increase in the intensity of trading in Australia.

79 At the same time, the technological innovation of automated trading in Australia (and the rest of the world) has grown considerably. For example, in the early stages of automated trading, buy-side investors developed algorithms to handle orders and reduce market impact. As a result, early algorithmic strategies were relatively simple in their goals and logic. However, over time automated strategies have evolved considerably, and algorithms are now used to implement strategies that mask trade activity and intent. A further evolution has been the development of intelligent logic: more modern algorithms can learn from activity in the market and adjust in

[26] I Dichev, K.Huang & D.Zhou, 'The dark side of trading' Emroy Law and Economics Research Paper No 11-95; 2012 Chicago Meetings Paper; *Emory Public Law Research Paper*, No. 11-143, 4 February 2011.
[27] E. Boehmer, K. Fong & J. Wu, 'International evidence on algorithmic trading', working paper, March 2012.

real-time to what they perceive to be happening in the market, and at times they have been programmed to protect or to 'game' other algorithms.

80 How this greater activity and complexity relates to controls in Australia is best described by the following schematic: market participants and traders have pushed the development and technology of automated trading to create faster and more profitable trading strategies, but there has not been an equivalent evolution in the market's protections and controls. As a result, the existing controls in Australia, although comprehensive, are not ideal; nor do they reflect the operation—and the risks—of modern algorithms. As a result, the controls in place in Australia also need to be updated (the present AOP market rules were introduced in 1998) to better address the risks to market integrity posed by increased levels of automated trading in Australia. It is important that algorithms be tested before use and when there are material changes to ensure compliance with the ASIC market integrity rules and market operating rules. The current ASIC Market Integrity Rules (ASX) and ASIC Market Integrity Rules (Chi-X) do not explicitly require this.

81 In addition, many of the current market controls are reactionary: they tend to be based on post-trade analysis or they take action after an event has occurred. For example, the current market integrity rules require market participants to have the organisational and technical resources to enable trading messages to be submitted to the trading platform without interfering with the efficiency and integrity of the market: see Rule 5.6.3 (ASX) and Rule 5.6.3 (Chi-X). However, these rules only ensure that systems screen orders before placing them; they do not require market participants to have the ability to remove orders already placed, nor do they require market participants to have the ability in real time to disconnect a trading system from an exchange. Ideally, the market needs to move towards proactive and automated controls to better reflect the volume and speed of modern algorithmic trading.

82 The current rules require market participants to use pre-trade controls, including pre-trade filters, to prevent trading messages from interfering with the efficiency and integrity of the market (e.g. an erroneous order). However, market participants are required to consider orders on a single basis only; they are not required to consider (and ultimately limit) the impact on the market of a series of orders.

83 A series of orders may start and exacerbate an abnormal price movement (momentum ignition) even if each order analysed individually passes through existing controls.

84 Since CP 145 was released (November 2010), the International Organisation of Securities Commission (IOSCO) has settled its principles of DEA best

practice;[28] Canadian regulators have published and finalised their market access rules;[29] and the US SEC has approved its rule changes relating to market access.[30]

85 In considering the implications of automated trading, we have been mindful of minimising the potential for cross-border regulatory arbitrage and avoiding the introduction of regulatory requirements that may render Australia a less competitive centre to trade. Accordingly, enhancing controls in Australia would have two impacts:

(a) it would raise our standard to international best practice; and

(b) it would bring Australia into line with other overseas jurisdictions, limiting the likelihood of cross-border arbitrage.

86 All these factors warrant an update to the current automated trading control framework in Australia.

Failure of market participants to upgrade systems

87 Market participants' failure to upgrade their systems and controls is emblematic of the previously discussed problem: algorithms and automated strategies are always evolving, but some market participants have given far less attention to reviewing and updating their controls to ensure compliance with market integrity rules.

88 Algorithmic trading, by nature, can be fluid. The life of any one algorithmic program or strategy may be very short because of the need to adapt to market developments and information (invariably the window of opportunity for traders is very short because competitive pressure can quickly remove any opportunities or discrepancies in the market). As a result, some algorithms in their original form have a life of only a matter of days or weeks, while others adapt to changing market conditions.

89 Under the current rules, market participants are required to continually review and update AOP systems to ensure compliance with market integrity rules (it is also in their interests to minimise the financial and reputational risks of aberrant algorithms). However, we believe some market participants have failed to meet this requirement. We have seen many cases where market participants have failed to update or test their systems for an excessive period of time (e.g. a firm may have failed to update or retrain its staff; it may have failed to test its filters properly; or it may have failed to

[28] Technical Committee of IOSCO, *Principles for direct electronic access to markets* (IOSCOPD332), report, IOSCO, 12 August 2010.
[29] Ontario Securities Commission (OSC), *Proposed National Instrument 23-103 Electronic trading and direct electronic access to marketplaces*, consultation paper, 8 April 2011.
[30] SEC, *Rule 15c3-5: Risk management controls for brokers or dealers with market access* (Release No. 34-63241), rule, November 2010.

update its controls to reflect the development of new algorithms). In one case, we observed a market participant who had not upgraded their systems or automated controls for more than five years.

90 If controls do not keep pace with technology and the types of trading strategies being employed, the risk of an aberrant algorithm slipping through are higher, as are the risks to the orderly operation and integrity of the broader market.

91 Current rules require market participants to provide confirmation or further certification to ASIC each time the participant makes a material change to its AOP system. However, given the breakdown in the certification process, we believe there are a number of problems with the existing rules.

92 First, there is an issue of ambiguity around what constitutes a 'material' change, particularly given how quickly algorithmic programs change.

93 Second, there is the related problem of long-term materiality. If a market participant alters its systems in a small way, it may not consider it to be consequential enough to warrant informing ASIC. However, if these small changes extend over a long period of time, there is the risk that they may eventually represent a 'material' change and a threat to the market system. (This problem has been compounded by a lack of continuity within trading businesses—for example, important staff may leave or internal procedures may change, making it difficult for market participants to review the previous changes holistically.)

94 Third, there is the risk of creating a regulatory 'bottleneck' for market participants. The requirement to certify and notify ASIC of every material change is burdensome and may make it difficult for participants to operate effectively in Australia.

Problems associated with high-frequency and other automated trading

95 ASIC's high-frequency trading taskforce concluded that confidence in market integrity had been disaffected by noisy algorithms. Investors had misinterpreted the behaviour of algorithms managing large numbers of small orders as predatory gaming by high-frequency traders. Problems associated with high-frequency trading were also found to be in other forms of automated trading.

High order-to-trade ratios

96 High order-to-trade ratios may suggest inefficient or ambit pricing. Excessive amendment of orders has the potential to undermine investor confidence in the market, as investors may question the credibility of quoted liquidity.

97 As part of our study, we identified isolated incidences of poorly programmed algorithms, such as algorithms that do not take into account their own impact or effect on the market, or with poorly designed parameters or logic creating modifications and cancellations modifications that do not reflect the execution goal intended. These algorithms have sometimes been responsible for extremely high order-to-trade ratios, creating significant market noise. Noisy algorithms can negatively affect investor confidence and perception of market integrity, as they can be misinterpreted by investors as predatory gaming by high-frequency traders.

98 High-frequency traders have operated with monthly average order-to-trade ratios of between 10:1 and 32:1 over the January–September 2012 period. This compares with ratios of around 4:1 and 5:1 for other traders. We have seen a downward trend in order-to-trade ratios following the inclusion of order messages since the introduction of cost recovery for ASIC market supervision. There is limited data available on order-to-trade ratios on exchange markets overseas, but the data that does exist indicates that the ratios on Australian markets are relatively low. For example, the average order-to-trade ratio on Canada's main exchange market, the Toronto Stock Exchange, was more than 50:1 at the start of 2011, having increased from a little over 10:1 in 2005.[31]

99 As with small and fleeting orders, a very high level of messages relative to trades have the potential to affect the cost of surveillance, increase the uncertainty about the state of the order book, and put undue stress on market infrastructure.

100 High order-to-trade ratios can also mean excessive trade messages, increasing the already large amounts of data that market participants, market operators and ASIC need to store and manage. Where this was allowed to continue the impact of increased processing and data storage requirements to ensure systems' capacity may be costly for the industry.

Manipulative practices

101 There are a number of aggressive trading strategies that are often attributed to high-frequency trading:[32]

(a) layering—the creation of large numbers of orders, often at various price points, to create a false impression of demand or supply. These orders are then deleted, or moved, as they move closer to trading;

[31] W Barker and A Pomeranets, *The growth of high-frequency trading: Implications for financial stability*, Bank of Canada, 30 June 2011, www.bankofcanada.ca/2012/01/fsr-article/the-growth-of-high-frequency-trading/.
[32] See paragraphs 378–395 of Report 331 *Dark liquidity and high frequency trading* (REP 331), March 2013. A more detailed description of predatory strategies can be found in the 'assessing the problem' section.

(b) quote stuffing—a strategy to impede the processing of markets, or participant processes, by overloading an order book with trading messages;

(c) latency arbitrage—a strategy that detects the submission of individual orders and steps ahead of it by using superior speed;

(d) liquidity detection—a strategy that determines the direction of fundamental investor demand and 'front runs' its execution to create higher execution costs for market users; and

(e) momentum ignition—a strategy that drives prices artificially over range.

102 While these strategies are conceptually different from traditional forms of market manipulation, such as front running or insider trading, the emergence and increased use of automated strategies—combined with the speed instructions can now be made to create, amend and cancel orders in the market—can create opportunities to manipulate the market at a microstructure level.

103 Automation and increased computational power offers the ability for a trader to either entice other less intuitive or uninformed trading to take place or impede another firm's decision making abilities and take advantage of the market. The behaviour is manipulative in nature and may also be considered disruptive and disorderly.

104 Any attempt at layering, quote stuffing and momentum ignition would constitute market abuse under existing market integrity rules. Other practices (including latency arbitrage and liquidity detection), if present in our markets, would constitute inefficiencies in our market structure. These market abuses and inefficiencies would translate into higher transaction costs for investors and cost of capital to issuers.

Objectives

105 The objective of our proposals is to manage the risk of adverse events without imposing excessive regulatory burdens on market participants.

106 We believe there are already robust controls in the Australian equity market to mitigate some of the risks from automated trading. However, these controls need to be updated to fully address emerging risks, as well as to align our regime with IOSCO principles and international best practice.

Options

Option 1: Status quo (minimal changes since 1998)

107 Option 1 is to maintain the status quo of ASIC Market Integrity Rules (ASX) and ASIC Market Integrity Rules (Chi-X) to ensure all orders submitted through AOP systems to ASX and Chi-X are appropriately filtered, do not interfere with the efficiency and integrity of the market, and do not result in manipulative trading.

Option 2: Proceed with new framework for automated trading and AOP as proposed in CP 168

108 Option 2 proposes to build on existing ASIC Market Integrity Rules (ASX) and ASIC Market Integrity Rules (Chi-X) with a number of new requirements for AOP and algorithmic programs. These include:

(a) a requirement that market participants test algorithms before they are used for the first time and before they make any material changes;

(b) a requirement that market participants have direct and immediate control over all trading messages submitted through their system, including pre-trade controls, real-time monitoring and post-trade analysis;

(c) a requirement that market participants have in place adequate business continuity arrangements to ensure that connectivity to the trading platform is maintained and that they are able to recover their normal business operations as soon as practicably possible if there is a significant disruption; and

(d) the removal of the requirement that market participants have ASIC confirm new, and material changes to their, AOP systems (market participants must certify and confirm these changes internally instead).

(e) Market participants are also required to annually review their systems and connectivity, and to provide an attestation to ASIC that they have done so.

109 Option 2 also includes minimum standards for DEA. These proposals include a requirement that:

(a) market participants understand the nature of their AOP clients' business and the nature of any proposed delegation to a third party;

(b) AOP clients have the financial resources to meet their financial obligations;

(c) AOP clients have adequate procedures in place to ensure that all persons who use their AOP systems understand the order management

system and the requirements of the dealing rules and/or market operator;

(d) AOP clients have adequate procedures to monitor all trading through their order management systems;

(e) AOP clients' order management systems are tested before use and before any material changes;

(f) all algorithms used through the AOP are tested before use and before any material changes; and

(g) market participants have legally binding agreements with each AOP client that is an Australian financial services (AFS) licensee.

110 Option 2 also includes a proposal to clarify through guidance our expectations for market operator systems and controls.

Option 3: Proceed with the amended CP 168 proposals and the revised propositions outlined in CP 202 (preferred option)

111 Instead of introducing a new market integrity rule to test individual algorithms, we will publish guidance under existing rules to clarify our expectations around testing.

112 The guidance will focus on:

(a) testing systems, filters and controls (rather than individual algorithms);

(b) managing automated trading messages; and

(c) stress testing algorithmic systems.

113 Under this option, we propose to clarify our expectation that authorised persons' systems order flow should be tested against market participant AOP filters. Such testing should occur before use (i.e. at the developmental stage) and before implementing any material changes.

114 We propose to proceed with a new market integrity rule requiring market participants to have direct control over pre-trade filters, including an ability to stop an order (or series of orders) or connectivity to an exchange.

115 We propose to publish guidance clarifying expectations for real-time monitoring and post-trade analysis.

116 For business continuity arrangements, we do not intend to proceed with a new market integrity rule. Instead, we will rely on existing rules and clarify through guidance that we expect business continuity planning to reflect the nature and complexity of market participants' businesses.

117 For annual reviews of AOP systems, we intend to proceed with a new market integrity rule requirement of annual review of systems and

documentation, policies and processes around AOP systems. For annual notifications to ASIC, we propose to proceed with removing the requirement for notification to ASIC following review of material changes, and make a new market integrity rule requiring an AOP system annual notification being submitted to ASIC to demonstrate that an internal review has been conducted.Option 3 also includes the Option 2 proposal to clarify through guidance our expectations for market operator systems and controls.

118 In CP 202, we proposed two further measures to safeguard the quality and efficiency of our market in light of issues associated with high-frequency trading. We propose to:

(a) provide guidance to the market clarifying our expectations regarding market participants obligations to consider and monitor order-to-trade ratios; and

(b) amend market integrity rules to include additional circumstances when considering whether a false or misleading appearance has been created, and include further guidance on manipulative trading to clarify types of misconduct carried out through trading algorithms.

119 The proposals in Option 3 are aimed at building a more robust framework of systems, filters and controls to reduce market noise attributable to inefficient algorithms and to guard against potential disruptions from aberrant algorithms and market misconduct generally. They will not disrupt the operation of the market in normal conditions. The automated trading proposals—such as filters, testing of systems and limiting market noise—would not negate the benefits of automation.

Impact analysis

Impact of Option 1: Status quo (minimal changes since 1998)

Impact on industry and investors

120 Option 1 will not impose any explicit extra costs on market participants, investors, market operators or government, and it will allow the Australian market to continue to evolve under the existing regulatory framework.

121 Our expectation is that the usage of automated trading in Australia will continue to evolve, but it will do so without the benefits of extra protections against aberrant automated trading. The risk of an algorithm disrupting the market will remain unchanged, including the threat of an algorithm-induced chain reaction or ‘flash crash’ triggering a market failure.

122 Without the mitigation of potential disruptions from aberrant automated trading, confidence and participation in Australia's markets may fall if market participants and investors believe they are being exposed to non-compliant or erroneous algorithms and access arrangements.

123 The potential loss of confidence in the efficiency and fairness of Australia's markets would be positively related to the incidences of aberrant trading. Each time an investor or market participant was exposed to aberrant trading (e.g. if they had a trade cancelled against them) the damage would feed back into the market, further lowering investors' confidence and participation.

124 The impact of the 6 May 2010 'flash crash' on confidence in the US markets was substantial. Over 20,000 trades across more than 300 securities were executed at prices more than 60% away from their levels of just moments before.[33] Many of these trades were executed at prices unreasonably low (a 'penny', US$0.01 per share, or less) or unreasonably high (US$100,000 per share) before prices returned to pre-crash levels.

125 Post-crash daily trading volumes in US equities were lower, volumes of off-exchange trading were higher, and investments in domestic US equity mutual funds declined considerably. In the two years since the crash, retail investors have pulled US$273 billion from US domestic equity mutual funds.[34] This compares with US$174 billion withdrawn in the two years (2008 and 2009) before the 'flash crash'.[35] (It is not possible to ascertain whether the difference between the US$273 billion and the US$174 billion was solely due to the 'flash crash'. However, the steep rise in withdrawals is evidence that the disruption had a negative impact on investor confidence on equity markets and probably accelerated the rate of withdrawals from US domestic equity funds.[36] Market commentators have suggested that retail investor sentiment was particularly negatively affected by the crash.[37])

126 According to SEC Chairwoman Mary Schapiro, the extreme volatility of 6 May had undermined investor confidence. She said less than 50% of buy-side professionals—who represent the interests of many millions of individuals who invest directly in the US equity markets—had expressed confidence in the current market structure post the market failure of 6 May 'flash crash'. [38]

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[33] Technical Committee of IOSCO, *Regulatory issues raised by the impact of technological changes on market integrity and efficiency* (IOSCOPD361), IOSCO, October 2011.
[34] T Demos, 'US 'flash crash' measures suffer delays', *Financial Times*, 6 May 2012.
[35] T Demos, 'US 'flash crash' measures suffer delays', *Financial Times*, 6 May 2012.
[36] Withdrawals from equities during 2010 and 2011 were certainly affected by the negative impact on confidence of the global debt crisis. However, in the comparison period of 2008 and 2009, market sentiment was also particularly weak as a result of large corporate failures and the global financial crisis.
[37] M Mackenzie & A Massoudi, 'Flash crash memories spur NYSE to review trading in 148 stocks', *Financial Times*, 2 August 2012; 'Wait a second—the latest cock-up on Wall Street shows that more safeguards are needed', *The Economist*, 11 August 2012; J Zamansky, 'Unlike Knight Capital, retail investors earn no lifeline', *Forbes*, 9 August 2012.
[38] ML Schapiro, *Strengthening our equity market structure*, Address by SEC Chairman, Economic Club of New York, New York, 7 September 2010, www.sec.gov/news/speech/2010/spch090710mls.htm.

127 In the Knight Capital trading event, a malfunctioning algorithm led to a loss of US$440 million by a single trader. Observers believe that the algorithm in question had been 'inadequately tested'.[39]

128 While the likelihood of an equivalent crash in Australia appears to be low, the costs and negative repercussions should such a disruption occur could be substantial.

129 In addition to the risk of significant market disruptions, REPp 331 found that excessive message traffic from some algorithms is damaging the efficiency of the market with excessive noise. Perception of fleeting liquidity is detrimental to market efficiency and investor confidence. High order-to-trade ratios also mean that there are large numbers of trade messages being generated, increasing the processing and data storage costs of related market infrastructures. Developments in technology also pose increasing challenges for ASIC in enforcing market integrity rules against manipulative trading.

Impact of Option 2: Proceed with new framework for automated trading and AOP as proposed in CP 168

Impact on industry and investors

Testing of algorithms

130 Testing systems before connection would benefit investors and industry by reducing the likelihood of an aberrant algorithm creating unwarranted volatility or disorder. It would also reduce the systemic risk of automated trading. Having fewer untested or poorly designed algorithms in Australia would reduce the risk of a multiple flow-on effect, where orders from one algorithm trigger a reaction in other algorithms, dislocating prices from fundamental levels.

131 Testing of algorithms may impose large technology and human costs on market participants due to the requirement for test plans and scripts for each new algorithm (or a materially changed version of an old algorithm). However, in feedback to CP 168, some respondents indicated mandatory testing of algorithms would be expensive (although no estimates of costs were provided to ASIC, despite requests). There was also a strong preference for ASIC to clarify expectations through guidance.

Direct and immediate control over trading message

132 The ability to stop an order—or series of orders—in real time delivers a number of benefits to investors and industry. Currently, market participants must have in place organisational and technical resources to enable messages

[39] Ezra Klein, 'Bloomberg view: Faster, Knight Capital! Kill! Kill!', *Businessweek*, 9 August 2012.

to be submitted to the trading platform without interfering with the efficiency and integrity of the market or the proper functioning of the trading platform: Rule 5.6.3 (ASX) and (Chi-X). We propose to build on this by requiring a market participant to have direct and immediate control over all messages, including an ability to stop an order (or series of orders) or connectivity to an exchange (kill switch).

133 This proposal helps mitigate erroneous order entry and aberrant algorithmic programs. Requirements regarding pre-trade controls have also been extended to a series of trading messages. Market participants will not be able to submit a series of disruptive messages to the market, reducing the risk of disorderly trading and the likelihood of an aberrant chain reaction. Real-time monitoring and post-trade reporting will also increase the responsibility of market participants to monitor and self-deter manipulative behaviour—all benefits to the wider market.

134 The cost to market participants for implementing these changes will depend on their existing systems. Many market participants already have sufficient controls to comply, but others will have to undergo a technological upgrade and will face increased compliance costs from the need to review existing policies and introduce new procedures where necessary. In its feedback to CP 168, industry stressed that most market participants already had extensive filter systems and controls in place, while some respondents indicated real-time monitoring and the ability to control and stop order flow would have a significant impact because of compliance costs (although no cost estimates were submitted to ASIC, despite requests).

Adequate business continuity arrangements and periodic review

135 The proposed rules for business continuity planning and the annual review of systems and connectivity would generate greater accountability and monitoring of AOP systems. Market participants are currently required to review AOP systems before use and after a material change. However, we have seen instances where AOP systems have gone many years without undergoing a formal review. Under our proposal, market participants would continue to be required to submit their initial certification to us, but we have removed the requirement for ASIC to confirm the initial certification. If there is a material change, market participants would continue to be required to certify or confirm these changes internally, but would not be required to notify us of the material change or submit the certification or confirmation to us. This should speed up the deployment of systems and reduce the regulatory burden on market participants.

136 The annual attestation will make the market system safer. We understand from some market participants (those that have many material changes) that it will increase the costs. The new rule will ensure market participants review their systems annually to make sure they remain compliant with the

relevant market integrity rules (irrespective of whether there has been a material change during the year). We regard this as imperative given the pace at which technology is evolving, and because we have seen numerous examples of systems that have not been reviewed for many years (in some cases for more than five years).

137 Industry will incur a periodic full-time equivalent (FTE) staff cost to ensure compliance, and the cost of the annual review is expected to be a function of business. Larger operators with more systems will incur more monitoring costs. However, feedback from industry was typically supportive. Most market participants said they did not regard the annual review requirement as overly expensive, and one large institutional broker indicated that to review, certify and declare a system's regulatory compliance would cost approximately 2–3 weeks FTE, at a rate of $100,000 per annum (or the equivalent of $4,000 to $6,000 per annum).

Minimum standard for DEA

138 The reintroduction of testing of DEA clients' financial resources would benefit the market because it will reduce the ability of DEA clients to significantly trade beyond their means or in a size that is potentially disorderly. The requirement that market operators understand their clients' business will reduce the likelihood of disorderly trading—a benefit for the entire market—and it will assist market participants in the identification of unusual activity and market misconduct.

139 However, the proposed DEA rules will increase compliance costs for market participants because they will have to review existing policies, introduce new procedures and documentation where necessary, and undergo an extensive and costly IT upgrade. Industry will also have to increase its FTE because market participants will need greater resources to implement and monitor the new compliance rules. Industry indicated it was generally opposed to the proposal on the basis that it will be too onerous, costly and could potentially reduce the competitiveness of the Australian market due to added administration (no hard figures were provided about the cost or the risk of market participants exiting the Australian market).

Impact on ASIC

140 The new certification process, where market participants will be required to review their systems annually, rather than when every material change has occurred, will reduce the volume of certifications—and the burden—for ASIC. The annual attestation will also give ASIC a greater understanding of how the market operates because enforcing annual certifications will give ASIC a greater understanding of the algorithms and systems in use, and it should provide a better basis for ASIC to consider the evolution of the market and whether further reforms are necessary.

Impact of Option 3: Proceed with amended CP 168 proposals and revised propositions stipulated in CP 202 (preferred option)

141 The Option 3 proposals will require stakeholders to make some changes in their systems, filters and controls.

142 However, once these changes are implemented, they should not hinder the performance of properly functioning automated trading systems or affect the normal running of markets.

Impact on industry and investors

Testing of systems, filters and controls

143 The proposed rule to test individual algorithms has been replaced with new guidance around the testing of systems, filters and controls; a focus on managing highly automated trading; and the stress testing of flow. However, the revised guidance is expected to help minimise the prevalence of aberrant trading disrupting the market and do so at a lower cost to industry (the testing of systems, filters and controls is a more efficient approach to limiting aberrant automated trading than testing every individual algorithm).

144 Feedback from retail and institutional brokers has been generally positive of the changes. Neither felt the expected cost of the new guidance would be large. However, we are anticipating some costs for industry. All participants will have to review existing policies and put in place new procedures where necessary, resulting in compliance costs.

Direct control over pre-trade filters

145 We intend to proceed with the proposed market integrity rule that requires market participants to have the capability to shut down aberrant order flow. Market participants will be required to have direct control over pre-trade filters, but on real-time monitoring and post-trade analysis we intend to publish guidance clarifying our expectations of the existing rules.

146 It will be mandatory for market participants to have the ability to stop aberrant order flow from disrupting the market once detected. The impacts of the revised proposal are the same as the impacts described in Option 2.

147 Feedback from industry of the revised proposal was positive. Smaller brokers who use third-party vendor solutions for their AOP said they expected that their vendors would provide compliant filter functionality, reducing the expected impact on smaller brokers. Some institutional brokers indicated that they had comprehensive pre-trade filters in place already.

Periodic review of systems

148 We intend to proceed with the proposed rule for annual reviews of systems. Instead of requiring market participants to notify ASIC of every material change to their AOP systems, market participants will be required to provide ASIC with an annual notification demonstrating an internal review of their AOP system (to ensure compliance) has been conducted.

149 The impacts of the proposed rule are as described in Option 2.

Minimum standard for AOP

150 The consolidated and revised guidance of minimum AOP standards will reinforce existing expectations and practice and contribute to the fair and orderly operation of the market, but it will not be as expensive as the proposed rules in Option 2.

151 We expect the revised guidance will involve a one-off cost to all market participants because market participants will have to review existing policies and introduce new procedures where necessary. We believe there may also be a one-off legal cost for introducing a contract between the market participants and their AFS licence holders, to the extent that such agreements are not already in place. While we expect that there will be an impact on staff numbers to initially set participants up to comply with these proposals, we do not expect that the proposals for minimum AOP standards will result in an ongoing impact on headcount costs.

Guidance on order-to-trade ratios

152 This proposal will mainly impact traders that operated with an order-to-trade ratio in excess of 50:1, which include 7% of all high-frequency traders,[40] and 1% of all other traders. The high-frequency traders tended to have higher volumes of orders and trades than other traders, but the pattern of distribution for order-to-trade ratios is similar for both high-frequency traders and all other traders. Most traders, whether high-frequency traders or not, had order-to-trade ratios above 4:1. However, a small number of traders do operate with large order-to-trade ratios. Clusters of traders appear in the range of 200:1 to 100:1. Occasionally, some traders will operate with ratios in excess of 1,000:1.

153 Our proposed guidance will:

(a) remind market participants of their obligations under Rule 7.1.1 (Competition), and s793C of the Corporations Act to adhere to the operating rules of any market; and

[40] In the nine-month period analysed, the traders we designated as high-frequency traders accounted for 27% of total turnover in S&P/ASX 200 securities. See paragraphs 292 of Report 331 *Dark liquidity and high frequency trading* (REP 331), ASIC, March 2013.

(b) clarify how market participants should judge and monitor order-to-trade ratios in accordance with their AOP obligations.

154 The proposed guidance sets out our expectations for market participants to consider order to trade ratios that are reflective of their business, which will promote efficient order management and responsible use of algorithms. It will also increase rigour toward the programming logic of algorithms and the consideration through programming of trading behaviour effects.

155 The main benefit of this proposal is to mitigate the negative impact of noisy algorithms on market confidence. Impaired market confidence and the perception of market abuse can cause uninformed investors to leave the market. This may result in higher transaction costs for investors and higher funding costs of listed companies.[41]

156 We believe using order-to-trade ratios as a consideration is a simple and low cost tool that may be used to identify outliers in trading noise, which will assist ASIC and stakeholders' compliance in targeting areas that warrant further examination.

157 Under the proposal, market participants will need to take into account the following factors when considering the market impact of large numbers of concurrent orders, orders of small executable quantity and AOP systems that react to order book changes:

(a) order-to-trade ratio relative to current market liquidity;

(b) order-to-trade ratio relative to current market volatility;

(c) the impact of the order-to-trade ratio on security trading;

(d) execution goals of the algorithm in light of the order-to-trade ratio; and

(e) the market operator's maximum order-to-trade ratio.

158 One benefit of this measure is to limit message traffic though trading systems, rendering the system less prone to capacity related disruptions as discussed above. There would also be a reduction in overall activity costs as '[r]eceiving, handling and storing messages are costly for exchanges, brokers and regulators'.[42]

159 Very high order-to-trade ratios are often a result of dysfunctional algorithms. Therefore, providing guidance to market participants about compliance with AOP obligations can also have a stabilising impact on the market, reducing the frequency and severity of algorithm malfunctions.

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[41] See footnote 59 for an example of increased cost of capital in our market.
[42] *Economic impact assessments of MiFID II policy measures related to computer trading in financial markets,* Op. cit., page 24.

160 ASIC believes that reprogramming or decommissioning specific examples under the guidelines agreed with industry will not impose major costs and impact on the industry overall but will reduce the costs associated with high message numbers. One large institutional broker estimated that it will incur a one-off cost of $250,000 to implement the system changes and add one-eighth of a head count to ensure on-going compliance.

Addressing manipulative trading practices carried out through trading algorithms

161 We expect this proposal to benefit market integrity by including additional circumstances when considering whether a false or misleading appearance has been created, and clarifying through guidance the types of misconduct carried out through trading algorithms.

162 A framework for addressing market misconduct already exists in the Corporations Act and the ASX and Chi-X operating rules. However, we consider it necessary to amend this framework to address manipulative trading practices that may be affected through trading algorithms.[43] The amendments would also harmonise market manipulation rules between ASX and ASX 24, potentially simplifying the compliance burden for market participants.

163 The capacity to amend orders at very high speeds and frequencies may give the trader the ability to manipulate markets without engaging in the specific behaviours stipulated as characteristics of manipulation in the existing rules.

164 Expanding the factors relevant to include the circumstances of an order that a market participant should consider in its assessment of false or misleading appearance would provide clarity on market misconduct. We expect market participants to incur costs associated with considering and monitoring the proposed additional factors.

165 In addition, market participants would be required to consider the proposed additional circumstances to determine whether such practices have or are likely to have created a false or misleading appearance of active trading.

166 The cost of these changes to the overall industry is likely to be small, as market participants and market operators already have systems in place to detect and curb manipulation. Amending the rules to address potential manipulation via automated trading is likely to result in some participants reprogramming or decommissioning some systems, but it is not likely that the necessary changes will affect industry in a systematic way.

[43] *Changing technology in Capital Markets: a buy side evaluation of HFT and dark trading,* Baseline Capital, Commissioned research for the Financial Services Council, November 2012.

Impact on ASIC

167 The new certification process, where market participants will be required to review their systems annually rather than when every material change has occurred, will reduce the volume of certifications, and the burden, for ASIC.

168 Our proposed guidance would clarify the types of algorithmic trading strategies that may be seen as manipulative trading so that market participants can assess possible misconduct and facilitate the process of prompt referral of suspected misconduct to ASIC. This will help us to effectively pursue manipulative trading matters in a timely and efficient matter.

Conclusion

169 We recommend Option 3 for the reasons discussed below.

170 Option 1 does not address the potential risks of automated trading. The current regulatory rules (which were developed in the early stages of automated trading and are more than a decade old) need to be enhanced to better reflect the risks of today's automated markets.

171 We believe Option 2 would improve Australia's automated trading environment; however, it would result in significant compliance costs for market participants (according to qualitative feedback from industry).

172 Option 3 offers a more balanced outcome.

173 It introduces greater safeguards to limit aberrant automated trading, but it does so without the compliance costs of Option 2. The proposed automated 'kill switch' will mandate market participants to have direct control over pre-trade filters. This will ensure market participants have the ability, in real time, to control and prevent aberrant order flow before it disrupts the market. The consolidated and revised guidance of minimum AOP standards will reinforce existing expectations and practice, and contribute to the fair and orderly operation of the market, but it will not be as expensive as the originally proposed rules.

174 In addition, Option 3 will seek to reduce market noise and enhance enforceability against market misconduct.

175 Given the rapid development in automated and high-frequency trading, we consider it necessary to safe guard market integrity and investor confidence to limit market noise and inefficiency as well as provide regulatory clarity around manipulative trading practices that may be affected through trading algorithms.

C Issue 2: Extreme price movements

176 This section considers options to ensure that markets operate efficiently and in an orderly way, even in the presence of high volatility.

177 Issue 1 in Section B dealt with the risk of market disruptions stemming from malfunctioning automated trading programs. It proposes a first line of defence against potentially disruptive orders placed by abnormal automated activity. However, market disruptions can still be caused by factors other than malfunctioning algorithms, and, for that reason, additional market-level measures are needed. The options in this section build on existing volatility controls that were implemented in October 2011.

Context

Price formation

178 Movements in share prices should reflect fundamental factors, such as economic developments, company-specific events and market forces (e.g. the cost and availability of investment funds, investor appetite for risk). These factors are the foundation of 'price formation'—the mechanism through which prices reflect all relevant information.

179 Stock prices should change over time to reflect the different fundamental influences affecting company valuations. In this context, price volatility in itself is not a problem. Rather, it is the mechanism through which equity prices reflect the ever-changing evaluation of the company and the economy.

Externalities and market failure

180 However, share prices are sometimes disturbed by factors other than fundamentals. Examples of such externalities are price movements as a result of malfunctioning algorithms (e.g. trade execution, strategy implementation, arbitrage) or erroneous entry of orders ('fat-finger' errors). For instance, an algorithm that executes an excessive number of sell orders because of a logical fault in the programming may bring the price of a stock below the level supported by fundamental market forces.[44] Similarly, human

[44] An example of a malfunctioning trade execution program disrupting markets is the 'flash-crash' price dislocation in the United States on 6 May 2010. It was triggered by an algorithm that placed large quantities of a futures contract for sale in a short period of time. The original goal of the algorithm was to minimise price impact—that is, to reduce the price decline caused by its own selling. However, a poorly designed feature of the algorithm meant that the high trading volumes observed early in 6 May 2010 in E-mini futures contracts allowed the algorithm to place a large volume of contracts for sale in a relatively short period of time—causing prices to decline: see CFTC–SEC, *Findings regarding the market events of May 6, 2010*, report, CFTC and SEC, 30 September 2010, www.sec.gov/news/studies/2010/marketevents-report.pdf.

error in entering order details may cause temporary price distortions as the market reacts to the erroneous input.[45]

181 Another example of price changes resulting from non-fundamental factors is the reaction of investors to incomplete or false information. Ideally, information would be disseminated throughout markets immediately it is produced. Rational investors would study the information available and obtain a clear picture of the accuracy and implications of the new information in order to react in a measured way. In practice, however, this does not always occur.

182 For example, during severe crises (such as the failure of major institutions, the release of bad economic data, natural catastrophes, geopolitical emergencies), it may be difficult or impossible for markets to distinguish true and relevant information from false information, rumours or deliberate fabrications. This is particularly true when crisis events occur in rapid succession. Faced with a breakdown of the usual price discovery mechanism and an inability to value specific assets with confidence, the rational investor may choose to exit (or minimise exposure to) the whole market indiscriminately.[46] This could generate a rapid sale of assets leading to price declines that will be most likely self-reinforcing.[47] This process may lead to very large losses that could be incurred even before the market has had the time and the means to assess whether the selling pressure was warranted or not.

183 Whether caused by malfunctioning algorithms, human error or investors' unconsidered and misinformed response to a crisis, disruptions in the price formation mechanism constitute a market failure.

An example of the cost of externalities

184 As an illustration of the impact of severe price volatility, consider the use of stop-loss orders during the 6 May 'flash crash'. Stop-loss orders are designed to help limit losses by automatically selling a stock after it drops below a specified price (many individual investors use stop-loss orders as a safety tool to protect against a sudden downturn in the market).

[45] On 30 April 2012, for instance, what is thought to have been a human ('fat-finger') error caused a sudden reduction of almost 1% in the price of highly traded gold futures contracts in the CME.
[46] The crisis of September 2008 in the United States and Europe is a case in point. Unsure about which banks were exposed to credit derivative losses, investors chose to sell stock in most major US and European financial institutions indiscriminately. Another example was the market disruption that took place in the United States after the terrorist attacks of 11 September 2001.
[47] The tendency of uninformed trading—or trading based on human emotions such as panic—is sometimes called 'animal spirits'. Some academics and practitioners suggest that equity markets sometimes operate erratically because investor decisions are influenced by emotional factors. This means that investors do not always trade in a completely rational and perfectly informed way.

185 The fundamental premise of stop-loss orders is to rely on the integrity of the market prices to signal when the investor should sell a holding. However, during the 6 May 'flash crash', investors' confidence in the appropriateness of stop losses was shaken. According to SEC Chairwoman Mary Schapiro, US$2 billion worth of stop-loss orders were estimated to have been triggered during the half hour between 2.30 pm and 3 pm on 6 May 2010. Ms Schapiro said, as a hypothetical illustration, if each of those orders was executed at 10% less than the closing price (a very conservative estimate), then those individual investors suffered losses of more than US$200 million compared to the closing price on that day.[48]

Extreme price movements and externalities

186 In an ideal market, rational investors would not act in a misinformed way. Trading would only respond to fundamental market signals. If investors were unable to distinguish between fundamental and extraneous signals, trading should ideally pause to allow time for analysis. Alternatively, if an error by a trader triggers an undue price dislocation, rational arbitrage by all other investors should quickly restore price equilibrium.

187 In practice, however, these idealised self-stabilising mechanisms do not always work as theory suggests. Investors do not always act in a fully informed and rational manner. Destabilising errors do occur and the price dislocations caused by them are not always 'arbitraged away'. Because of this, prices in real markets can move sharply due to fundamental but also non-fundamental reasons (externalities).

188 In practice, it is often impossible to ascertain in real time whether a sharp price dislocation was a result of a fundamental factor or an externality. In some cases, even the *ex-post* analysis is complex and protracted.[49] For this reason it is impossible to set up market-wide controls that would operate only on those dislocations caused by externalities. The only practical solution is that controls refer to the effect—extreme price movements—rather than the cause.

189 This opens the possibility that a control could be (erroneously) activated in a circumstance where the price dislocation was caused by fundamental factors. However, if market prices have a good reason to change abruptly, it is expected that this movement or trend would resume after the control is lifted.

[48] ML Schapiro, *Strengthening our equity market structure*, Address by SEC Chairman, Economic Club of New York, New York, 7 September 2010, www.sec.gov/news/speech/2010/spch090710mls.htm.
[49] As an illustration, the US regulators needed a comprehensive and lengthy investigation to ascertain the cause and mechanisms of dissemination of the 6 May 2010 'flash crash'. Their full report was only released in September that year.

Competition

190 In a monopoly framework, the incumbent exchange market has an incentive to provide controls for extreme price movements. Preserving investor confidence will avoid declines in turnover and fee income.

191 However, in a competitive scenario, the incentives for rival markets may not always lead to the best overall outcome. For instance, there may be incentives for one market to continue to trade while another is in a trading pause. If a trading pause occurred as a result of excessive price declines, continued trading by the competitor may lead to further prices falls. The first market operator to impose a trading pause runs the risk of incurring a cost (i.e. loss of market share and fee revenue) without obtaining the benefit (e.g. stabilisation of prices).

192 The rational outcome of such first-mover-disadvantage interaction between competitors is that no trading halt would be called and the original externality would be allowed to inflict maximum disruption in markets.

193 A study conducted on behalf of ASIC by the Capital Markets Cooperative Research Centre (CMCRC) confirms the observation that extreme price movements do occur in our market.[50] The analysis found that from 2006–10, there were 72 instances where the price of large market capitalisation stocks changed by 20% or more over a period of five minutes. This equates to an average of 14 instances per year. Under the proposed market integrity rules, these instances of extreme price fluctuation would trigger an automatic trading pause.

194 While market operators are required to have some controls for extreme price movements (e.g. Chapter 2 of ASIC Market Integrity Rules (Competition) on anomalous order thresholds and the extreme cancellation range), there is not currently a requirement for a trade prevention control. ASX and Chi-X have, however, implemented the extreme cancellation range by preventing trades from occurring in the range. Such preventative controls are important for managing extreme price movements, but if automated trade prevention controls are not mandatory it opens the possibility that future market operator entrants may choose not to implement them or that circumstances in the years ahead may prompt current market operators to relax their controls.

195 A further deficiency is the lack of automated controls on ASX 24. The response to extreme price movement controls in the ASX SPI 200 futures contract is currently manual and determined on a discretionary basis.[51] In

[50] CMCRC Limited, *A study of abnormal price movement on the ASX*, 9 December 2010, published in CP 168.
[51] There have been a number of instances where the Australian futures index has experienced sudden and extreme movements. For example, in December 2008 the SFE SPI 200 futures contract rallied 207 points and fell back 129 points moments before the trading close. The index rallied the next day and fell immediately by 352 points. A number of trades were cancelled: see REP 215.

addition, the lack of automated controls opens the door to cross-market contagion, where an error in the futures market could flow through and disrupt the cash market (or vice versa).

Volatility

196 Share markets have always been volatile, with sharp movements in prices being observed regularly throughout history. Schwert (2011) conducted a 200-year survey of stock returns in the United States to find that volatility (the standard deviation of rates of return) has been relatively stable over the period.[52] The study found that, on average, volatility has not increased over time, although there have been periods of spikes, such as 1929, 1987 and 2008.

197 Unlike the volatility (measured by relatively low frequency observations) referred to in Schwert (2011), this section contemplates intraday extreme price movements (measured tick by tick) not explained by fundamental economic factors—in particular, volatility driven by anomalous trading activity, especially disruptions caused by algorithmic trading, which is a relatively recent phenomenon. (Examples include the 'flash crash' of 6 May 2010 and the abnormal algorithmic trading by Knight Capital in 2012.)

198 There has been a growing body of literature that suggests the increasing incidence of automated trading may have contributed to heightened levels of stock return volatility in recent times. For example, Dichev, Huang and Zhou (2011) found a substantial positive relationship between trading volumes and stock volatility;[53] Boehmer, Fong and Wu (2012) found automated trading increased volatility, particularly in small stocks and during days when market making was difficult;[54] and Zhang (2010) found a positive correlation between high-frequency trading and price volatility, and he argued that high-frequency trading hindered the incorporation of fundamental information into asset prices, causing stock prices to overreact to fundamental news.[55]

Assessing the problem

199 Australia's existing market integrity rules regarding volatility controls do not include automated trade prevention controls and do not address the risk of cross-product contagion. Therefore, they may not sufficiently protect the integrity of the market from extreme price movements.

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[52] G Schwert, 'Stock volatility during the recent financial crisis', *European Financial Management*, Vol. 17, No.5, 2011, pp. 789–805.
[53] I Dichev, K Huang & D Zhou, 'The dark side of trading' Emroy Law and Economics Research Paper No 11-95; 2012 Chicago Meetings Paper; Emory Public Law Research Paper No. 11-143, 4 February 2011.
[54] E Boehmer, K Fong & J Wu, 'International evidence on algorithmic trading', working paper, March 2012.
[55] XF Zhang, 'The effect of high-frequency trading on stock volatility and price discovery', working paper, December 2010.

Excessive volatility

200 It is difficult to ascertain what level of volatility is 'acceptable' and what level is excessive. However, after consultation with industry, academia and foreign regulators, and independent analysis of historical data, we have formed a view about what level of volatility is clearly disruptive and represents an unambiguous breakdown of the price formation mechanism. This view is the basis of the proposed reforms detailed in the section under 'Options' below.

Objectives

201 The objective of the extreme price movement rules is to minimise the incidence and impact of sudden price distortions from non-fundamental factors and to ensure markets remain orderly and are able to cope with periods of volatility without major disruptions.

202 We believe, given the speed of automated trading, that the market requires an automated response to extreme price movements in addition to the existing controls. This is because order entry controls (e.g. filters) may not screen out every order or series of orders from disrupting the orderly operation of the market. In addition, market participants have said the cancellation of trades should be minimised. Therefore, implementing automated volatility controls that prevent trades from occurring will deliver a more immediate and fair response to sudden price movements and it will provide greater certainty and comfort to investors because the controls will mitigate the occurrence of unwarranted volatility disrupting the market (e.g. episodes of volatility that follow a 'fat finger' error).

203 In addition, implementing mandatory and standardised preventative volatility controls will remove any potential inconsistencies or incentives for Australia's current and future exchanges to operate with diluted or sub-optimal volatility controls.

Options

Option 1: Status quo

204 Option 1 is to maintain the existing extreme cancellation range, in conjunction with the anomalous order thresholds, to limit short-term price dislocation in equity market products. The current manual and discretionary processes for the ASX SPI 200 futures contracts would remain.

Option 2: Limit up–limit down volatility control

205 Option 2 proposes new market integrity rules to require market operators to implement an automated limit up–limit down volatility control to prevent trades from occurring outside a specified price band:

(a) for S&P/ASX 200 products and associated domestic-index EFTs—15% above and below the average price of the product over the preceding five-minute period; and

(b) for the S&P ASX SPI 200 Index Future (SPI Future)—250 points above and below the average price of the index future over the preceding five-minute period.

206 In each case, if order book equilibrium is not restored in one minute, trading should pause for five minutes. Limit prices would be determined by a dynamic reference price rather than a static reference price.

207 For the SPI Future, we propose market integrity rules to require market operators to implement anomalous order thresholds.

Option 3: Build on existing rule framework (preferred option)

208 Rather than the limit up–limit down proposal of Option 2, we are proposing to introduce:

(a) a requirement that market operators have an automated trade prevention control in equity market products that would prevent trades from executing beyond a specified range (the extreme trade range) (see draft Part 2.2 of ASIC Market Integrity Rules (Competition) and Section B of draft updated Regulatory Guide 223 *Guidance on ASIC market integrity rules for competition in exchange markets* (draft updated RG 223)); and

(b) a requirement for ASX 24 to introduce an anomalous order threshold and an extreme trade range to prevent trades in the ASX SPI 200 futures contract from executing beyond a specified range (see draft Parts 2.1 and 2.2 of ASIC Market Integrity Rules (Competition) and Section B of draft updated RG 223).

Impact analysis

Option 1: Status quo

Impact on industry and investors

209 Option 1 will impose no explicit costs on ASX or Chi-X. However, the downside will be that instead of introducing proactive volatility controls,

Australia's market operators will remain reactive. They would continue to rely on the cancellation powers of the existing rules to reverse erroneous trades *ex post*, without limiting contemporaneous price volatility.

210 As it stands, technology has evolved beyond the existing market rules. Both ASX and Chi-X have automated controls that go beyond the current market integrity rules. Therefore, if the status quo were to be maintained, Australia would effectively have a sub-optimal outcome. New entrants would be allowed to subsist with controls inferior to what is currently available, and future market operators would still be able to rely on trade cancellations to control volatility, instead of being mandated to use proactive and preventative controls—one of ASIC's stated priorities.

211 In addition, while ASX and Chi-X may have trade prevention controls for equity market products, there is the implicit risk that without mandatory automated controls:

(a) ASX and Chi-X may relax their approach and revert back to just cancelling trades in the extreme cancellation range, rather than preventing anomalous orders; and

(b) new entrants may adopt minimum standards and rely on the extreme cancellation approach rather than introducing preventative controls.

212 The status quo would also not remove the potential costs of manual controls in the futures index. The risk of cross-market contagion would therefore remain. An error in the futures market could still potentially spread across to Australia's equities markets and create damaging price volatility. Estimating the costs of cross-market contagion is difficult, but we believe they could be very large. Consider the dramatic decline in investor confidence after the 6 May 2010 'flash crash': average daily trading volumes in US equities after the crash are lower; volumes of off-exchange trading are higher; and investments in domestic US equity mutual funds are considerably lower. In the two years since the flash crash, retail investors have pulled $273 billion from US domestic equity mutual funds, versus $174 billion in the two years before the 'flash crash', according to figures from the Investment Company Institute.[56]

Option 2: Limit up–limit down volatility control

Impact on industry and investors

213 Introducing a limit up–limit down control would change how the market currently deals with volatility. Market operators will have to establish new systems, policies and procedures to prevent trades from occurring outside the price bands and to implement any resulting limit state and trading pause. As

[56] T Demos, 'US 'flash crash' measures suffer delays', *Financial Times*, 6 May 2012.

a result, market operators will face material costs because they will have to replace the existing regime—which the market agreed to during a market-wide review in 2010—with the new controls (quantifying the expected cost was not possible because no hard figures were provided to ASIC).

214 Consultation with industry indicated most respondents were generally supportive of the proposed measures. However, based on the submissions received, there was no consensus on the 15% limit band or the one-minute limit state for an automated limit up–limit down volatility control. The introduction of the limit up–limit down controls—despite their expected costs—would benefit the orderliness of the market substantially. No trades would occur in any S&P/ASX 200 product and associated domestic index EFTs outside a specified price band if there was a significant price movement during a short period of time. However, trading could continue within the band, limiting the disruption. Similarly, the automated limit up–limit down controls (in conjunction with an automated anomalous order threshold) would prevent anomalous trades in the SPI Future, reducing price volatility and the risks of cross-market contagion.

215 We believe reducing price volatility benefits all investors and market participants. It mitigates the risks of disorderly trading; it promotes transparency by removing human discretion from volatility controls on the futures index (this is increasingly important given the growing and expected intensity of high-frequency trading in Australia); it minimises the risk of cross-market contagion; and it boosts confidence among investors and market participants because it reduces trading mistakes and cancellations from creating price volatility.

Impact on ASIC

216 If implemented, we would need to do a one-off review of the new controls and may do so periodically; and we would have to monitor the effectiveness and appropriateness of the controls, including the limit band and the limit state.

Option 3: Build on existing rule framework (preferred option)

Impact on industry and investors

217 Anticipated costs for market participants are expected to be negligible for two reasons. Firstly, any costs involved with mandating an extreme cancellation range would occur at the exchange level. Secondly, market participants have their own controls in place already—they are not supposed to rely on exchanges' controls cancellation ranges to prevent trading mistakes. Therefore, market participants are not expected to incur any substantial costs from the proposals.

218 The proposed extreme cancellation range trade prevention control will have minimal impact on ASX and Chi-X because both operators have automated preventative controls already (with the exception of one order type on ASX which will need to change). The aim of Option 3 is not to impose new costs on industry, but to bring the existing rules in line with the controls and technology of ASX and Chi-X (importantly, ASX and Chi-X have both said they support the proposed extreme cancellation range regime).

219 However, if a new market operator does enter the Australian market, the benefits to the market of a mandatory extreme cancellation range would be substantial. Every new market operator would have to comply with the revised rules, ensuring consistent and effective extreme price movement controls. For a potential new entrant, the cost of implementing the proposed extreme cancellation range regime would be insignificant compared to all of the other set-up costs associated with establishing a trading platform; nor would it amount to a barrier to entry in Australia.

220 Introducing an automated extreme cancellation range for the ASX SPI 200 futures will protect Australia's public markets from damaging trading errors, and it will help ensure that our markets operate efficiently and in an orderly way, even when there is volatility. Building an automated extreme cancellation range into the futures market will improve consistency between index stocks and SPI products, and it will minimise extreme price contagion in these products.

221 In addition, although some investors or market participants may adjust their systems or strategies to deal with the proposed extreme cancellation range, we believe this cost will be marginal given the proposed extreme cancellation range is already being used in the market. The most substantial impact for introducing a preventative extreme cancellation range will accrue to ASX and Chi-X. However, because both operators already have an automated extreme cancellation range in place, residual costs are expected to be negligible. Finally, we believe the expected future cost to new entrants will be, as we have argued above, insignificant relative to the cost of setting up an additional trading platform in Australia.

222 We do not believe the proposed extreme cancellation range will interfere with, or impede, legitimate price discovery in the market (a potential cost) because given the width of the extreme cancellation range's parameters (and the presence of anomalous order thresholds), we think the chances of a legitimate order being placed outside these ranges are remote. In addition, an automated extreme cancellation range offers, compared to the current human-based protections in the futures market, a more immediate, transparent and fair process to deal with extreme volatility. Finally, it gives markets the benefit of a unified guide on the extreme cancellation range frameworks, potentially avoiding discrepancies and duplication of systems.

223 Market operators and participants will benefit from the automated extreme cancellation range because it will mitigate the likelihood of an extreme price movement event occurring, which economic theory suggests would lift investor confidence and thereby encourage greater market participation. In addition, the automated extreme cancellation range would benefit market participants because it will enable them to more efficiently manage their risk because they will have greater certainty of avoiding one side of their hedge being cancelled.

Impact on ASIC

224 If implemented, we would need to do a one-off review of the new controls and may do so periodically, and we would have to monitor the effectiveness and appropriateness of the controls.

Conclusion

225 We recommend Option 3 for the following reasons.

226 Option 1 does not address the potential risks. Without clear, transparent and harmonised controls, including across index equity-linked products and the index future, the risk of one market operator failing to pause could still lead to large price disruptions. The same risk applies to any potential new entrant.

227 We believe the limit up–limit down proposal under Option 2 would reduce the expected cost to markets of extreme price movements, but we expect—after industry consultation—that the implementation costs would be material and outweigh the benefits to our market at this stage.

228 We believe Option 3 offers a more cost-effective outcome. Having a standardised and mandated control reduces the risk of extreme price movements. Since most of the infrastructure is in place already (for equity market products at least), the expected costs to market operators are predicted to be substantially less than Option 2.

D Issue 3: Enhanced data for surveillance

229 This section considers options to ensure that ASIC has sufficient data to perform surveillance, in an environment where the volume and speed of trading is increasing, to fulfil our function and promote the ongoing integrity of the Australian financial market.

Context

230 Market integrity is a fundamental pillar of a well-developed financial market. Investor confidence in market integrity can provide incentives for other investors to participate, contributing to liquidity and stimulating more competitive pricing. In markets where investors perceive that they are at an unfair disadvantage, they usually protect themselves by reducing their exposure to the markets. Akerlof (1970) studied the relationship between information asymmetry and market failure, and concluded that market participants would withdraw from the market if they faced severe adverse selection.[57] Reduced investor participation in the market will cause lower turnover, higher costs of trading and an inefficient allocation of capital from savers to borrowers (issuers).

231 ASIC is responsible for supervising trading activity of market participants on Australia's domestic licensed markets. One of the factors that influences our capacity to perform surveillance is the quality of the data we receive. Our surveillance capability needs to keep pace with new trading strategies and changing market structure.

Assessing the problem

232 The essential problem is that developments in trading technology and market fragmentation have increased the complexity and speed of trading, making it increasingly difficult for regulators to detect market misconduct. To promote market integrity, ASIC needs to adapt to this changing market environment by improving our market surveillance capabilities, through introducing enhanced data.

Market development and surveillance data availability

233 Currently, we have limited real-time visibility of:

[57] G Akerlof, 'The market for 'lemons': Quality uncertainty and the market mechanism', *Quarterly Journal of Economics*, vol. 84 (3), 1970, pp. 488–500.

(a) where trades are being executed, when done off a market operator's order book;

(b) the source of trading instructions, which has direct relevance to market manipulation, insider trading and account hacking;

(c) whether trading is done as principal or agent and on behalf of a wholesale or retail client;

(d) whether orders and trades originate with an indirect market participant; and

(e) whether trading is computer or human generated.

234 Given the rapid developments and innovations in trading such as automated trading and dark liquidity, our surveillance capability requires more granular information about trading. Lack of information on the trading venue and origin of order impede the detection of the strategies used by those engaged in market misconduct (such as insider trading and market manipulation). In supervising increasingly complex and technologically advanced markets, we need appropriate access to surveillance data to be able to support ongoing market integrity. As the market evolves, data requirements for surveillance have changed. For example:

(a) additional data are required for surveillance, as the use of complex trading strategies grows;

(b) data processing and analysis capabilities will need to be enhanced to process the data into forms meaningful to achieve our objectives as order volumes and speeds increase; and

(c) the interconnections and associations of traders, markets and trading events have become more complex.

235 To stay abreast of developments in market structure, including off-order book liquidity (or liquidity in 'dark pools'), we believe it is important to uniquely identify the execution venue for transactions executed off-order book.

236 Origin-of-order information allows regulators to detect and investigate market manipulation and insider trading with greater efficiency. Without origin-of-order information, our surveillance and deterrence functions may be constrained at the client level, in Australia's rapidly developing market.

237 Over recent years, the number of indirect market participants has grown significantly and information relating to this segment's contribution to the market is limited. Identification of indirect market participants on transactions will allow ASIC to better monitor this important market segment and provide efficiencies for our trading inquiries.

Inconsistent standards of time measurement

238 In today's market, orders are being entered, modified, cancelled and executed at extraordinary speed. This applies pressure on market operators and market participants' clocks to be more granular in their measurement of time, especially in trade and reporting data systems.

239 An improved standard of time measurement by market operators will assist our surveillance of the market to keep pace with market developments such as high-frequency trading. The lack of consistency in time measurement may also impede our deterrence and prosecution of microsecond level manipulations in the market. In addition, the accurate and efficient creation of a national best bid and offer (NBBO) will rely on a high standard of accuracy and precision of time-stamped orders by market operators.

Objectives

240 The objective of obtaining enhanced data for surveillance is to ensure that we are able to obtain sufficient and appropriate market data in a timely and efficient manner. Obtaining sufficient and appropriate data will ensure we are able to continue to monitor and detect market misconduct in light of rapidly developing technology and increasingly complex strategies.

241 This will assist ASIC to preserve market integrity and promote fair, orderly and transparent Australian equity markets. It is important that the Australian obligations are consistent with international standards and that Australia is able to maintain international competitiveness and continue to attract business from investors and issuers.

242 There have been various initiatives from security regulators around the world (such as IOSCO, SEC and European Commission) on enhanced data requirements for market supervision. We believe that the enhanced regulatory data reflects a range of steps that are important for maintaining market confidence and for setting future market structure policies. These would bring Australia more in line with arrangements overseas, while having substantially less impact on market participants (i.e. provision of information that market participants already routinely capture about their clients).

Options

Option 1: Status quo

243 Option 1 is to maintain the status quo under which we would continue to rely on the existing regulatory data to conduct market surveillance.

Option 2: Proceed with the enhanced data, clock synchronisation regulation proposed in CP 168

244 Option 2 proposes to introduce new market integrity rules to require market participants to provide additional regulatory data on order messages and/or trade reports to market operators and require market operators to pass it to ASIC (information visible only to ASIC). This proposal seeks to address the problem of insufficient real-time order and trade-level information for market surveillance. The data requirement includes:

(a) the execution venue;

(b) the category of client (specifying whether the trade is principal or agency and whether it is wholesale or retail);

(c) the origin of the order (i.e. client account identifier);

(d) the AFS licensed intermediary (AFS licence number); and

(e) the algorithm that generated the order.

245 Under this option, we would also require market operators to improve the precision and accuracy of their synchronised clocks for trading, supervision and reporting systems to a precision of one microsecond and accuracy of +/– one millisecond. Market participants would be required to synchronise their co-located trading, compliance monitoring and reporting system clocks to a precision of one microsecond and accuracy of +/– one millisecond, and other clocks to a precision of one millisecond and accuracy of +/– 20 milliseconds. This proposal seeks to address the problem of inconsistent standard of time measurement.

Option 3: Proceed with enhanced data proposals, with amendments (preferred option)

246 Option 3 proposes to introduce new market integrity rules to require market participants to provide additional regulatory data on order messages and/or trade reports to market operators and require market operators to pass it to ASIC (information visible only to ASIC). Under this option, the content of enhanced data is revised to ensure the information required will be easier to source. The data requirement includes:

(a) the execution venue;

(b) the capacity of participant (principal or agent only);

(c) a reference indicating the origin of the order, to the extent that information is available to a market participant taking reasonable steps to ascertain it;

(d) the AFS licence number where an order originates from an indirect market participant and the information is readily available; and

(e) flagging for directed wholesale orders.

247 Under this option, we would propose no new rule regarding the synchronisation of system clocks.

Impact analysis

Option 1: Status quo

Impact on industry and consumers

248 Under Option 1, there will be no immediate impact to industry or consumers that is directly attributable to this option.

249 However, in the absence of enhanced data for market surveillance, both industry and consumers would have less robust assurance in market integrity in the longer term. Investor confidence may suffer if investors perceive that the regulator's market surveillance capabilities are limited by the availability of data to better detect market abusive behaviour (such as insider trading or market manipulation), which would lead to a reduction in trading revenue of market participants.

250 This may also result in higher cost of capital for companies raising funds if investor confidence is lacking. Empirical evidence presented in the *Journal of Finance* paper, 'The world price of insider trades', suggested that the mere existence of insider trading laws did not lower costs of capital. Rather, the evidence pointed to the actual enforcement of insider trading laws as the factor leading to significant reduction in cost of capital for listed companies.[58] In a sample of 103 countries, effective insider trading enforcement was associated with a decrease in cost of capital ranging from 0.3% to 7%.[59] Although enhanced data for surveillance is not the means to an end of improving market integrity, effective detection is a vital early step to effective enforcement.

251 Furthermore, Atkin and Harris (2011) suggest that insider trading and information leakage costs Australian markets the equivalent to 6.4 basis points (bps) of turnover every year.[60] This figure represents the average annual abnormal profits earned by insider and information-leakage trading from 2003–09 on ASX. Applying this proportion to a hypothetical scenario of constant market turnover of $1.4 trillion per year, the total 'rent' extracted from the economy by inside traders would equate to almost $900 million per

[58] U Bhattacharya & H Daouk, 'The world price of insider trading', *Journal of Finance*, vol. LVII, no. 1, 2002.
[59] Dollar cost of capital equals market capitalisation multiplied by the percentage cost of capital (e.g. for a market worth $1.2 trillion (approximately the size of the Australian equity market) a change of 0.1% to cost of capital would translate into $1.2 billion per year.
[60] M Aitken & F Harris, 'Evidence-based policy making for financial markets: A fairness and efficiency framework for assessing market quality', *Journal of Trading*, Summer 2011.

year—or a total of $4.5 billion (in FY2011 dollar terms) from FY2011 to FY2015.

Impact on ASIC

252 There will be no immediate impact to ASIC that is directly attributable to this option.

253 The developments and innovations of trading in financial markets pose challenges for the market surveillance functions of the regulator. In the absence of enhanced data feeds, ASIC may not adapt to offer the most effective market surveillance solution to achieving its priority of ensuring fair and efficient financial markets.

Option 2: Proceed with the enhanced data, clock synchronisation regulation proposed in CP 168

Impact on industry and consumers

Enhanced data requirements

254 Under this option, we anticipate data to be routed to market operators and then to ASIC for surveillance. Order management systems, order routing systems, trade validation systems, data feeds, storage capacity and network capacity will all be affected. The enhancement of data will also increase the demand on storage and network capacity.

255 We anticipate market participants will need to amend their current data feed, order management and other systems to be able to collect and report the required enhanced surveillance information to ASIC. These changes to market participants' systems will impose costs to market participants. Despite the relatively simple change of adding new data fields to an order message, we recognise that the scope of the change may be significant in relation to the order management systems because it is an end-to-end change that involves the entire lifecycle of the order. The enhanced order information may require additional network and storage capacity. It has been suggested that it may slow down messages, resulting in certain latency-sensitive participants needing wider bandwidth to maintain minimal latency.

256 Changes will also be required to IT systems and infrastructure of market operators through which the order information is routed. ASX and Chi-X currently provide a live feed of market data to ASIC for surveillance purposes in the cash equities market. They will need to provide additional data fields for the provision of additional order information. ASX has indicated that adding new data fields is a significant change to its systems.

257 To minimise the impact on market participants and other stakeholders, and to preserve confidentiality of client details, order-origin data required by

ASIC is to be provided in new 'ASIC only' data fields on orders and trade reports.

258 We also recognise that it may not always be possible to identify a single client responsible for an order and intend to provide guidance on the treatment of 'basket orders' and orders booked to a market participant 'suspense account'.

259 The enhanced data for surveillance will support the data mining and relationship mapping functions of our surveillance systems. More effective detection of market misconduct would in turn benefit the wider market through improvements in market integrity.

Clock synchronisation

260 In this option, market operators will need to amend their clock synchronisation requirements to ensure the precision and accuracy of time stamps for pre-trade and post-trade information. There will be an initial cost to market operators to embed new synchronised clock technology into market operator systems. One market operator estimates the implementation cost to be $200,000. One data vendor estimated that the implementation cost would be $10,000, while another estimated that the cost would be $25,000 plus ongoing costs. [61]

261 Market operators and market participants will need to synchronise their system clocks to the legal reference time in Australia, maintained by the National Measurement Institute (NMI). The NMI uses network time protocol (NTP) servers and rubidium clocks to provide a means for market operators and market participants to satisfy the clock synchronisation rules under this option. Access to the NTP servers is free and provides traceable accuracy of around 20 milliseconds. A rubidium clock, which would be required by market operators and co-located participants, costs around $25,000 and provides accuracy to around 0.5 milliseconds (500 microseconds) with fewer synchronisations.

262 The promotion of more accurate consolidation and correct sequencing of orders and trades within very short periods of time will be beneficial for data vendors in their consolidation and dissemination of market data. Further, the accurate and efficient creation of a national best bid and offer (NBBO) will benefit from a high standard of accuracy and precision of time-stamped orders by market operators.

[61] Data vendor responses to CP 145 outline the cost of the equipment.

Impact on ASIC

Enhanced data requirements

263 We will incur costs in making changes to our current data feed and surveillance systems to be able to accept and process the data. Integration testing and end-to-end testing will need to be performed. We are currently upgrading our surveillance system, and expect to incorporate enhanced data feed and analysis functions as part of the upgrade.

(a) For market users to be confident in the integrity of the market, there must be adequate surveillance to detect unlawful trading behaviour. The enhancement of surveillance data will allow ASIC to more effectively fulfil our statutory obligations to detect, investigate and deter misconduct. The proposal will benefit surveillance functions by improving the ability to conduct timely and accurate trading analysis for market reconstructions and perform more complex surveillance tasks. Timely pursuit of potential violations can be important in, among other things, seeking to freeze and recover any profits received from illegal activity. The proposed enhancements to surveillance data such as origin of order, order type and algorithmic trading data will strengthen our oversight of markets and enable us to: quickly identify persons making trading decisions and to systematically detect misconduct by these persons;

(b) more efficiently assess market trends and the impact of certain types of trading activity on the market; and

(c) respond to parties trading in and around market crashes or other extreme price movements (e.g. the 6 May 2010 ‘flash crash’).

Clock synchronisation

264 This proposal will not impose any cost on ASIC; however, the promotion of more accurate consolidation and correct sequencing of orders and trades within very short periods of time will allow ASIC to better deter and prosecute microsecond level manipulations in the market.

Option 3: Proceed with enhanced data proposals with amendments (preferred option)

Impact on industry and consumers

265 Under this option, we revised our requirements for enhanced data, following consultation with industry. We recognise that changes to market participants’ order management and trading systems were material. The anticipated impact to industry for the revised set of enhanced data surveillance rules is expected to be less than Option 2 because the data requirements are now more readily available and practical to collate.

266 We will no longer require client classification to distinguish between retail and wholesale. We recognise that the provision of origin-of-order data may not always be possible (e.g. some may bundle clients' orders, to achieve volume-weighted average price (VWAP) execution). To minimise the impact on market participants and other stakeholders, we require much of the enhanced data to be provided to the extent that it is reasonable to do so, and propose a staggered implementation approach to allow sufficient time for market participants to upgrade their systems. We require the AFS licence number where an order originates from an indirect market participant and the information is readily available. A directed wholesale flag (a dummy variable indicating whether or not the order is wholesale direct) will be required in lieu of an algorithm identifier.

267 Further, we do not propose to make a new market integrity rule requiring clock synchronisation, which will lower the compliance costs to industry compared to Option 2.

268 Smaller brokers that use vendor solutions for their order management systems will not incur direct systems costs associated with enhanced data for surveillance. A large institutional broker indicated that the change would cost 12 months of internal FTE, charging $200,000 per annum to implement. Market operators are expected to provide new data fields and system capacity for enhanced surveillance data.

269 The requirement to provide the new data requirements on the current real-time data feed avoids the expense of implementing new regulatory reporting infrastructure specifically for this purpose.

Impact on ASIC

270 The revised policy proposals will aid ASIC in our efforts to limit abusive market behaviour such as insider trading and manipulation of security prices. We believe the proposed rules will help to preserve the integrity of the Australian equity market, by enhancing our surveillance capabilities to keep up with the developments in AOP and the proliferation of trading venues. We expect improved market efficiency to increase investor confidence, and potentially benefit market liquidity and capital formation. The cost to ASIC will be qualitatively similar to that of Option 2.

Conclusion

271 We recommend Option 3 for the following reasons.

272 Option 1 does not deliver enhanced data for surveillance. In the absence of enhanced data feeds, we may not adapt to offer the most effective market

surveillance solution to achieving our priority of ensuring a fair, orderly and transparent market.

273 We do not recommend Option 2 because it imposes relatively higher compliance burdens on market participants due to the nature of data required and the additional obligation of clock synchronisation. Following consultation with stakeholders, we believe that the majority of benefits from the proposed rules to enhance data for surveillance can be achieved with lower compliance costs imposed on industry.

274 Option 3 is the most reasonable option because it provides ASIC with considerably more useful information that it has today to enhance our surveillance functions but with lower compliance costs imposed on industry. Option 3 incorporates feedback from CP 168 and revises the data required to information that is more readily available, with some data to be provided where possible rather than mandated.

E Issue 4: Pre-trade transparency and price formation

275 This section considers options to protect price formation and the quality of the public markets. Recognising the important role that dark liquidity plays in the market, we consider alternatives to the current regulatory framework around pre-trade transparency to ensure:

(a) the price discovery process is efficient; and

(b) displayed liquidity is protected in order to encourage pre-trade transparent limit orders and ensure a liquid market.

Context

276 Pre-trade transparency refers to information about orders being made publicly available before trades occur. It enables investors to identify trading opportunities, contributing to investor confidence that they will be able to execute a trade. Investor confidence in a market can provide incentive to other investors to participate, contributing to liquidity and stimulating more competitive pricing. Pre-trade transparency also plays an important role in supporting lit market quality, which is crucial for listed companies in valuing their assets and their ability to raise further funds, and it contributes to market participants' ability to achieve and evidence best execution.

277 In markets with multiple execution venues, transparency is even more important than in markets with a single execution venue. Where liquidity is fragmented across multiple venues, transparency is essential to ensure that investors are able to obtain a consolidated view of the multiple sources of liquidity. This allows investors to more efficiently search for and access liquidity. Consolidated information also allows issuers to monitor trading activity in their stocks.

278 There have always been rules in the Australian market requiring market participants to transact on an order book of a licensed market with pre-trade transparency, subject to exceptions for large orders. This is based on the notion that prices are most efficient when all orders are reflected in the demand and supply of a stock in the CLOB observed by all investors. This process is important because it establishes a reference price, which in addition to its role in trading is important for capital allocation decisions and capital raising, as well as creating a deeper pool of 'accessible' liquidity to minimise spreads and transaction costs.

279 Various forms of non-pre-trade transparent trading mechanisms have long been a necessary part of our market structure. The existence of dark liquidity dates back to 'upstairs trading', where a trade is negotiated between the

counterparties directly through their brokers, instead of executed on the stock exchange.

280 The main benefit of dark trading is that it allows market participants to conceal their trading intentions from the public market in order to minimise information leakage and price impact of block transactions. Disclosure of orders that are large in size (relative to the liquidity of the security) attracts imitation and front running by opportunistic and predatory traders, who seek to make short-term profits from the price impact of the large orders.

281 This can not only increase transaction costs and reduce investment returns of the large order, but may also increase volatility, and affect the price formation and orderliness of the market. It can cause considerable disruptions and increase the costs for entities that need to legitimately conduct larger trades because they will not be able to enter larger orders without causing a price impact and incurring significant transaction costs. Therefore, there is a need for the ability for investors to execute large orders with pre-trade transparency exceptions.[62]

282 For example, when the portfolio of a large passive fund is rebalanced for reasons unrelated to the fundamental value of securities (e.g. a change in reference index composition or liquidity reasons), imitation and front running by opportunistic and predatory traders seeking short-term profits, along with the price impact of the large orders, may push prices away from their fundamentals.

283 Our policy proposals in this RIS are designed to strike the appropriate balance between accessible liquidity in the market, transparency in the price formation process and the orderly facilitation of large transactions.

Recent trends

284 What has changed in recent years is that:

(a) new technologies and trading strategies have made it more efficient from the perspective of the market participant to execute transactions without displaying them on a pre-trade transparent order book, and for market participants to operate their own trading facilities—this has resulted in significant growth in the number of non-pre-trade transparent electronically accessible pools of orders, such as crossing systems;

(b) the removal in 2009 of the 10-second exposure requirement of the priority crossing rule also means that crossings are no longer exposed to

[62] Before November 2009, ASX Market Rule 17.2.4 required orders to appear on market for at least 10 seconds before priority crossing could be executed, allowing interaction with other lit orders.

the market before being crossed internally on the books of a market participant;[63]

(c) participants can offer more timely trading to their own clients and better prices in some cases (typically in less liquid stocks), albeit at the expense of orders queuing in the lit market; and

(d) participants can benefit from lower exchange fees, from trading as principal with clients and by avoiding the message-based supervision fee.

285 There has been evidence suggesting that dark liquidity in Australia has reached the point where liquidity and price formation on exchange markets are being affected.[64] We are concerned that the situation can deteriorate rapidly as market share of dark liquidity continues to grow. Already we see trends that are concerning:

(a) We see significant growth of dark trading in smaller orders, including trades on behalf of retail investors on dark pools. The number of dark trades below block size increased to 15% of total trades in September 2012, up from 8% in September 2009. This suggests dark liquidity is no longer just being used for its original purpose for managing larger orders.

(b) There has been significant growth in the number of dark pools—market-participant-operated dark pools have quadrupled since 2009 to 20 (operated by 16 market participants). They account for around 4% of trading value as of mid-2012, up from 2% in mid-2011. ASX operates one dark pool and Chi-X permits fully dark orders to interact with lit orders on its order book. This confirms there are increased avenues for trading in the dark.

(c) Anecdotal evidence suggests that there has been a shift of fundamental investors away from lit exchange markets into the dark.[65] This is masked by an increase in trading by entities using high-frequency trading strategies on lit exchange markets. As a result, the proportion of dark liquidity in terms of total trading has remained about the same (25–30%) but there have been changes in who is using dark liquidity. We believe fundamental investors are contributing less to pre-trade price formation on the lit exchange market than they used to.

(d) Analysis of the market participants that deal with the vast majority of trading by retail investors shows that there has been a significant

[63] The 10-second priority crossing rule is a now-repealed rule that only permitted a priority crossing to be effected when the second bid or offer was entered into the execution venue at least 10 seconds after the first.
[64] Carole Comerton-Forde & Talis J Putnins, *Dark trading and price discovery*, 26 November 2012. Available at SSRN: http://ssrn.com/abstract=2183392 or http://dx.doi.org/10.2139/ssrn.2183392. The sample period of this study was 1 February 2008 to 30 October 2011.
[65] Fundamental investors are telling us that they are turning away from lit exchange markets in favour of dark venues for the perceived 'safety' from entities deploying high-frequency trading strategies.

increase in their use of dark liquidity in below block size. Below block size dark trades by these market participants rose from 4% to 11% of their total turnover between September 2010 and September 2012. We can therefore infer that market participants are executing more retail orders in the dark than they used to.

286 Together, this evidence points to the growth of dark liquidity and a shift away from its traditional functions of minimising price impact for large trades. Our market is in the process of transformation. As the number and sophistication of dark pools grow further, there may be greater resistance to new regulation once there has been serious investment in dark pool technology.

International developments

287 The proliferation of dark pools and the growth in dark liquidity internationally have generated a great deal of public debate and regulatory scrutiny. Regulators in the United States, Canada and Europe are all considering the impact of dark liquidity on price formation, including price volatility and spreads, and the functioning of markets more generally.[66] In addition, IOSCO has released draft principles to address regulatory concerns about trading in dark pools and other dark orders. [67]

288 In general terms, the regulatory debate has focused on the impact of dark liquidity on:

(a) ensuring sufficient displayed liquidity;

(b) the price formation process where there is a substantial volume of trading executed on dark pools and/or internalised;

(c) the potential fragmentation of information and greater liquidity search costs; and

(d) market integrity due to possible differences in access to markets and information.

289 It is standard practice here and abroad (including by IOSCO principles)[68] that orders should be executed based on:

(a) *price–time priority*, where the order entered earliest at a given price executes first; and

[66] SEC, *Equity market structure* (Release No. 34-613358), concept release, 13 January 2010; Investment Industry Regulatory Organization of Canada (IIROC), *Update on forum to discuss CSA/IIROC Joint Consultation Paper 23-404—'Dark pools, dark orders and other developments in market structure in Canada' and next steps* (10-0156), notice, 28 May 2010; Council of European Securities Regulators (CESR), *CESR technical advice to European Commission in the context of the MiFID Review—Equity markets* (CESR/10-802), technical advice, 29 July 2010; CSA–IIROC, *Dark pools, dark orders, and other developments in market structure in Canada* (23-404), joint consultation paper, CSA and IIROC, 30 September 2009.
[67] Technical Committee of IOSCO, *Principles of dark liquidity* (IOSCOPD353), final report, IOSCO, May 2011.
[68] Technical Committee of IOSCO, *Principles of dark liquidity* (IOSCOPD353), final report, IOSCO, May 2011.

(b) *lit order priority*, where pre-trade transparent orders execute before dark orders at the same price, even if the dark order was entered earlier.

290 In October 2012, Canadian regulators implemented new rules for trading in dark pools (covering alternative trading system but not other broker internalisation), following two years of study and consultation. If a trade is to be executed in the dark on one of these venues, it must offer meaningful (i.e. one tick size or half a tick if the stock is trading at minimum tick) price improvement over the best prices on displayed markets.[69] Visible orders must have priority over dark orders on the same venue. There is an exception for trades of 50 or more standard trading units or C$100,000 or more (whichever is smaller). The proportion of overall equity trading in Canada that took place in dark pools was around 40% lower in November 2012 (3.8%) after the new rule took effect, compared with September 2012 (6.4%)—the month prior to the commencement of the rule.

291 Like regulators internationally, we are concerned about the importance of balancing pre-trade transparent liquidity and dark liquidity so as not to undermine the price formation process on public markets. We note the inherent tension between the short-term private advantages for a subset of the market of trading in the dark (e.g. lower exchange fees) and the long-term public good of contributing to the price formation process, which gives investors confidence and promotes the interests of issuers and the broader community through an efficient secondary market for equities.

Assessing the problem

292 The essential problems are that:

(a) The proliferation of dark liquidity below block size reduces the overall pre-trade transparency of the market, which may impair the efficient price formation process of the market.

(b) The migration of order flow away from pre-trade transparent venues into the dark can also reduce liquidity and increase transaction costs for the wider market.

(c) As the regulation currently stands, dark orders are allowed to take time priority over lit orders in the limit order book at the same price without offering price improvement. This is contrary to the fairness of time priority principles and discourages the submission of lit orders which contribute to price formation and market liquidity.

[69] That is, the price must be set at a certain level within the bid–ask spread. 'Meaningful' is defined by ASIC and IIROC as one minimum tick or half a tick if the stock is already trading at minimum tick.

Reduced efficiency of price formation

293 Market efficiency refers to the ability of market participants to transact business easily and at a price that reflects all available market information.[70] Price formation is the process through which the security prices are established from the supply of and demand for the security. Available market information about the security is impounded into its price through the interaction between buy and sell orders. If enough orders are not transparent to investors, or there is unequal or incomplete information about orders, there may be insufficient information about prices for investors to identify trading opportunities. This hinders the efficiency of the price formation process, which may result in market prices that are not reflective of the fundamental valuations of companies.

294 When executed in the dark, orders contribute substantially less to price discovery. One academic study that analysed securities in the S&P/ASX 200, during 2000, estimated that pre-trade information (both at the best bid and offer prices and other orders in an order book) accounted for 77% of the price discovery, while post-trade information accounted for only 23%.[71]

295 This is because the dark orders are not reflected in the demand and supply of stocks in the CLOB observed by all investors. If this information is incomplete (because a growing portion of the trading takes place in the dark) the quality of prices in the market may be diminished. Because dark orders contribute little to pre-trade price formation, there may also be concerns about whether they free-ride on the revealed intentions of other participants in the market.[72]

296 The original intention for the introduction of dark pools and dark order types was to manage information leakage and price impact of large orders. In our market, we are seeing a sudden and significant change in the nature of dark liquidity, away from its original purpose of facilitating the execution of large orders.[73] While we recognise the benefits of dark liquidity for managing the price impact costs of larger orders, the increasing usage of dark liquidity for smaller orders is not attributable to the need to manage price impact. As a greater number of smaller orders migrate into dark trading venues, the public price formation process may be negatively affected due to further decreases in pre-trade transparent liquidity.

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[70] Factors considered when determining if a market is efficient include liquidity, price discovery and transparency: see Technical Committee of IOSCO, *Regulatory issues raised by the impact of technological changes on market integrity and efficiency*, final report, IOSCO, October 2011, p. 9.

[71] C Cao, O Hansch & X Wang, 'The information content of an open limit-order book', *Journal of Futures Markets*, vol. 29, 2009, pp. 16–41. The paper assess the contribution to price discovery made by the last traded price (23%), the best bid and ask prices (54.5%) and the orders in book at 2–10 price steps away from the midpoint (22.5%).

[72] Technical Committee of IOSCO, *Principles of dark liquidity* (IOSCOPD353), final report, IOSCO, May 2011.

[73] There has been a strong decline in the average size of dark trades below block size, from $14,775 in September 2009 to $9,405 in July 2011. The median size of these dark trades below block size is extremely small, at just $1,540 in September 2009, falling to $814 in June 2011.

297 If confidence is lacking in the pricing efficiency of the market, the rational response of an investor (concerned about buying or selling a share at the wrong price) is to diminish the amount of trading. Therefore, a lowering in the effectiveness of the price formation mechanism may lead to a reduction in liquidity and increase in overall transaction costs.

298 A study of the decision by the off-market crossing service US ECN Island (Island) to 'go dark' in three actively traded exchange-traded funds (ETFs) in 2002 showed that price formation declined and transaction costs increased following the decision. ETF prices adjusted more slowly to new information when Island went 'dark', particularly compared to the corresponding futures market. Trading costs on Island increased, while trading costs of the same ETFs traded on other platforms remained stable—the net effect was an increase in overall costs.[74] When Island later redisplayed its orders a year later, price formation and market quality improved as a result of increased transparency.

Impact of dark liquidity on market quality

299 The proliferation of dark trading venues has increasingly attracted order flow away from the lit exchanges' CLOBs. There is evidence to suggest that too high a proportion of liquidity being diverted from pre-trade transparent order books results in wider spreads and worse prices for trades transacted both on pre-trade transparent order books and in the dark. This is because spreads in pre-trade transparent order books are likely to widen in response to there being fewer uninformed traders placing transparent orders (i.e. because traders want to avoid trading with informed traders to reduce the risk of the market moving against them after they enter into a position).[75] Deterioration in on-market liquidity is also associated with a higher cost of capital for companies seeking to raise funds.[76]

300 Wider spreads mean worse prices on pre-trade transparent order books, as well as for those transacting in the dark, because off-order book trades reference prices on pre-trade transparent order books. This will be detrimental to market quality in general, and increase the transaction costs of the investing public. This is a classic case of a collective action problem, where individual incentives conflict with what would be a better outcome for all.

301 There is relatively scant literature that defines the precise volume threshold at which dark liquidity will have a serious negative impact on liquidity and

[74] Hendershott & C Jones, 'Island goes dark: Transparency, fragmentation and regulation', *Review of Financial Studies*, vol. 18, 2005, pp. 743–93.
[75] D Easley, NM Keifer & M O'Hara, 'Cream-skimming or profit sharing? The curious role of purchased order flow', *Journal of Finance*, vol. 51, 1996, pp. 811–33.
[76] Y Amihud & H Mendelson, 'Asset pricing and the bid–ask spread', *Journal of Financial Economics* vol 17, 1986, pp. 223–49.

price formation, but empirical evidence suggests that the relationship between dark liquidity and market quality is not a linear one. Experience in overseas jurisdictions where dark liquidity has proliferated generally indicates that:

(a) dark liquidity can exist at low levels without causing harm to liquidity and price formation;

(b) there is a tipping point that once dark liquidity achieves a certain market share, liquidity and price formation will be materially impaired;[77]

(c) market quality starts to degenerate when dark liquidity below block size reaches 10% of consolidated trading volume;[78] and

(d) pre-emptive regulatory action should be taken before the structural change occurs.

Dark orders jumping the queue of the lit market

302 The existing rules on pre-trade transparency for non-block size trades permit trading to occur in the dark at the prevailing best bid and offer on lit markets: see Rule 4.2.3 on trades at or within the spread in ASIC Market Integrity Rules (Competition). These dark trades take time priority over lit orders at the best bid and offer. This means that dark orders are effectively jumping the queue of investors whose orders are displayed on an order book.

303 Dark trading has existed under pre-trade transparency exceptions[79] that were designed to ensure an appropriate balance between exposure of trading on the market and facilitating large transactions. The current regulatory failure is partly an inadvertent consequence of the removal (in 2009) of the '10-second priority crossing rule' that required priority crossing participants to appear in the CLOB for 10 seconds before the crossing could be executed.

304 This results in investors that display liquidity waiting longer for their orders to be executed, which exposes their orders to greater risk of non-execution and adverse price movements. Dark trades at the spread may therefore undermine confidence in public markets if investors believe their orders will frequently be stepped ahead of by dark orders at the same price. We consider this unfair and it promotes order migration into the dark.

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[77] J D'Antona, Jr, 'Nasdaq frets over internalization', *TradersMagazine.com*, 24 February 2010, www.tradersmagazine.com/news/nasdaq-internalization-dark-pools-level-direct-edge-sec-105265-1.html; F Hatheway, 'Testimony of Dr Frank Hatheway, Chief Economist, Nasdaq OMX', presented to the Securities, Insurance and Investment Subcommittee of the US Senate Banking, Housing and Urban Affairs Committee, 28 October 2009.

[78] Carole Comerton-Forde & Talis J Putnins, *Dark trading and price discovery*, 26 November 2012. Available at SSRN: http://ssrn.com/abstract=2183392 or http://dx.doi.org/10.2139/ssrn.2183392. The sample period of this study was 1 February 2008–30 October 2011

[79] Before November 2009, ASX Market Rule 17.2.4 required orders to appear on market for at least 10 seconds before priority crossing could be executed, allowing interaction with other lit orders.

305 It is a widely accepted principle among international securities regulators that transparent orders should take time priority over dark orders. The current regulation does not require dark orders to follow the IOSCO principles of price–time priority or lit order priority, thereby putting price formation and investor confidence at risk.

306 If dark orders are allowed to jump the time priority queue at the same price, investors would be discouraged from placing lit orders on market. In turn, this would further reduce pre-trade transparency and harm market quality and the price formation process.

Conflict of interest of market participants when dealing with client order flow (off-market)

307 A conflict of interest arises when the interests of a market participant diverge from those of its client. Conflicts may arise when a market participant is acting as agent for a client, but particularly when trading with a client against its own account (known as principal trading or internalisation).

308 Conflicts of interest become more acute when there are information asymmetries between the market participant and the client. For example, when a market participant receives an order from a client, it obtains an informational advantage over other market participants and investors because it has private information about the client's trading intentions. The market participant must ensure that it does not use this information to its own advantage, or to the advantage of another client. For example, trading ahead of client interests or designing principal trading algorithms to take advantage of client execution algorithms. If these conflicts are not managed appropriately, there is a risk that clients may be disadvantaged and lose confidence in the market. This may discourage them from participating, impacting the volume of supply and demand.

309 The market participant (or other clients) could extract profits from clients placing comparatively uninformed orders in its off-market trading, called 'cream skimming'. The dark liquidity taskforce identified instances where market participants provided certain clients with more favourable treatment than other clients.

310 The obligation to manage conflicts of interests that might compromise a client's interests is set out in the Corporations Act for AFS licensees (including crossing system operators) to do all things necessary to ensure that the financial services covered by their AFS licence are provided efficiently, honestly and fairly. They are also required to have in place adequate arrangements for the management of conflicts of interest: s912A of the Corporations Act. Currently, these provisions do not have associated guidance specific to internalisation and the operation of crossing systems.

311 One development in industry practice overseas that is of particular concern to us is the payment for order flow, where a market participant or other trader receives a payment from another securities dealer, in exchange for sending its clients' order flow to them. The incentives can take various forms including direct cash payment and soft dollar incentives.

312 Securities dealers have a strong incentive to route orders to market participants that provide the best incentives. However, directing orders in return for some benefit represents a conflict of interest if a securities dealer places its own interests ahead of its clients' interests. It also compromises best execution because it may result in a client receiving a worse outcome. Although direct cash payments for order flow are not prominent in the Australian market, they are used to a limited extent. Some market participants' terms of business contain clauses that allow for this type of payment.

313 Another industry development with the potential to cause conflict of interest in the use of indications of interest (IOI). An IOI is a non-binding electronic expression of trading interest that may contain information such as the security name, capacity (agency or principal), volume and price instructions. An IOI is a mechanism to identify potential counterparties, usually disseminated through a fund manager's or market participant's own systems to selected clients or by means of a third-party service provider.

314 IOIs may give rise to conflicts of interest. For example, market participants that conduct principal and client trading may misrepresent the nature of the liquidity to attract liquidity (e.g. genuine natural client order flows versus proprietary interests), which in turn attracts more liquidity and boosts market share of trading volumes.

315 The use of IOIs may result in information leakage for clients with genuine trading intentions, which can result in a worse outcome for the client. For example, recipients may trade ahead of the person issuing the IOI leading to an adverse price movement. They may not be backed by a genuine client or principal liquidity, and instead aimed to gather information on trading interests through the responses received to the IOIs. This raises questions about whether the client's best interests are being served through the use of IOIs and whether clients should provide specific consent before communication of their trading intentions through an IOI.

Objectives

316 With the proposed pre-trade transparency and price formation rules, we seek to promote investor confidence and allow market prices to reflect the maximum amount of information about market conditions. This would promote our objectives of ensuring:

(a) the price discovery process is efficient; and

(b) displayed liquidity is protected in order to encourage investors to post limit orders—therefore, ensuring a liquid market.

317 Our aim is to balance the benefits of dark liquidity for larger sized orders against protecting the pre-trade price formation process, and the overall quality of the Australian market. In particular, our focus has been to:

(a) continue to enable institutional investors with large orders to manage their market impact costs through the use of dark liquidity;

(b) maximise pre-trade transparency through incentives to display orders;

(c) protect displayed limit orders by requiring that dark orders below block size to offer meaningful price improvement. This will also ensure investors at least get a better price outcome when their orders are executed in the dark; and

(d) treat similar activity consistently across lit exchanges and dark forms of execution.

Options

Option 1: Status quo

318 Option 1 is to maintain the status quo under which we would continue to rely on the existing regulation for pre-trade transparency exceptions to regulate dark liquidity.

Option 2: Proceed with the pre-trade transparency and price formation rules proposed in CP 168

319 Option 2 proposes:

(a) to amend the 'at or within the spread' exception to pre-trade transparency to require dark trades below block size to provide meaningful price improvement (of one tick or at midpoint). This proposal seeks to address the impact of dark liquidity on price formation and market quality, and the time priority of dark orders over lit orders at the same price;

(b) that if dark liquidity below 'block size' grows by 50% within three years from July 2011, to amend the existing minimum threshold for dark trades in the market integrity rules from $0 to $50,000 and apply it to passive (limit) orders. This proposal seeks to address the problem of migration of smaller order flow to trade in the dark;

(c) to amend the 'block trade' exception to pre-trade transparency from a static $1 million to a tiered threshold structure of $1 million for the most liquid equity market products, $500,000 for comparatively liquid equity market products and $200,000 for all other equity market products. This proposal aligns the block order threshold with the

different liquidity profiles of listed stocks and is a concession for part (a) of the proposal; and

(d) other minor adjustments to the market integrity rules to align the rules with industry practice.

Option 3: Proceed with pre-trade transparency and price formation proposals (a), (c) and (d) in CP 168, while enhancing conflict of interest management for market participant when dealing with client order flow (preferred option)

320 Option 3 proposes to proceed with proposals (a), (c) and (d) in Option 2, while enhancing conflict of interest management for market participants dealing in the dark.

321 In Option 3 we propose to enhance conflict of interest obligations for market participants when dealing with client order flow by:

(a) prohibiting market participants to intentionally interpose principal trading between client trades that would otherwise have crossed;

(b) prohibiting the charging of commissions for retail client trades against related body corporates;

(c) prohibiting negative commissions for client order flow; and

(d) enhancing conflict of interest guidance around the use of IOIs.

Impact analysis

Option 1: Status quo

Impact on industry and investors

322 As Option 1 maintains the existing market integrity rules for the regulation of dark liquidity, there will be no immediate impact to industry or consumers that is directly attributable to this option.

323 Recent studies on dark liquidity from both abroad and Australia provide evidence on the impacts that dark liquidity has on bid–ask spreads and price formation.

324 An academic study by Dan Weaver of Rutgers University examining the impact of internalisation and dark liquidity on price formation on the NYSE, Nasdaq and AMEX in October 2009 showed that the increasing proportion of off-order book trading has adversely affected price formation in the

United States.[80] It has also led to a widening of spreads and a reduction of depth in the market (i.e. the volume of orders at each price point). He found that stocks with 40% of their volume traded in the dark will on average have a dollar spread that is $0.0128 wider than a similar stock with minimal dark trading. This amounts to a transaction cost difference of around $3.9 million per stock per year to investors.[81]

325 Weaver re-ran the study based on October 2010 data. The results showed an even stronger adverse impact on price formation than the earlier study. Consistent with Weaver, studies by Nasdaq suggest that market quality begins to degenerate when internalisation levels reach 40% or more.[82]

326 Research by the CFA Institute found that the tipping point where dark liquidity[83] starts to impair market quality in the United States varies by liquidity of a security (i.e. 13–23% of total volume for large-to-medium-size securities and 44–64% for smaller securities). The CFA Institute also noted that when most orders are filled away from lit exchange markets, investors could be inclined to withdraw displayed quotes because of the reduced likelihood of those orders being filled.[84] The paper recommends meaningful price improvement, better reporting and disclosure by dark pool operators, and additional measures from regulators if dark liquidity grows excessively.[85]

327 Other international studies provide additional empirical evidence on the impact of dark liquidity on market quality, and show that internalisation at best is neutral and at worst harmful to market quality.[86] For example, Nimalendran and Ray from the University of Florida find that following dark pool transactions, bid–ask spreads tend to widen and price impact tends to increase, especially if the relative bid–ask spreads are already wide.[87] Easley,

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[80] D Weaver, *Off-exchange reporting and market quality in a fragmented market structure*, Comment on Concept Release *Equity market structure* (Release No. 34-61358), 16 April 2010, www.sec.gov/comments/s7-02-10/s70210-127.pdf; D Weaver, *Off-exchange reporting and market quality in a fragmented market structure,* Rutgers Business School, Rutgers University working paper, 2 May 2011.

[81] Given that the average NYSE stock traded 2,431,640 shares a day during October, and assuming that trades occur at the quotes and that investors pay one half of the spread, this would result in investors paying $15,562.49 extra per day per stock (2,431,640 multiplied by half of $0. 0.0128) or $3,890,624 per year per stock (250 multiplied by $15,563.49) due to dark liquidity.

[82] J D'Antona, Jr, 'Nasdaq frets over internalization', *TradersMagazine.com*, 24 February 2010, www.tradersmagazine.com/news/nasdaq-internalization-dark-pools-level-direct-edge-sec-105265-1.html; F Hatheway, 'Testimony of Dr Frank Hatheway, Chief Economist, Nasdaq OMX', presented to the Securities, Insurance and Investment Subcommittee of the US Senate Banking, Housing and Urban Affairs Committee, 28 October 2009.

[83] Rhodri Preece, *Dark pools, internalization and equity market quality,* October 2012, CFA Institute capital markets policy paper.

[84] www.cfapubs.org/doi/pdf/10.2469/ccb.v2012.n5.1.

[85] Rhodri Preece, *Dark pools, internalization and equity market quality,* October 2012, CFA Institute capital markets policy paper

[86] See for example, B Battalio, J Greene & R Jennings, 'Order flow distribution, bid–ask spreads and liquidity costs: Merrill Lynch's decision to cease routinely routing orders to regional stock exchanges', *Journal of Financial Intermediation*, vol. 7, 1998, pp. 338–58; HK Chung, C Chuwonganant & DT McCormick, 'Order preferencing and market quality on Nasdaq before and after decimalization', *Journal of Financial Economics*, vol. 71, 2004, pp. 581–612.

[87] M Nimalendran & S Ray, 'Informational linkages between dark and lit trading venues', University of Florida, working paper, 2011.

Keifer and O'Hara show that spreads widen in response to there being fewer uninformed traders placing lit orders (i.e. because traders want to avoid trading with informed traders to reduce the risk of the market moving against them after they enter into a position).[88]

328 In Australia, Comerton-Forde and Putnins (2012) reached similar conclusions, although at different thresholds. Their research suggests that the migration of order flow into the dark removes valuable information from the price formation process, and leads to increased adverse selection, larger bid–offer spreads and larger price impacts on ASX.[89] They found that dark liquidity was associated with a decline in the quality of the lit exchange market once dark trading below block size exceeded 10% of total dollar volume after controlling for other security characteristics. The changes in market quality are economically meaningful in magnitude.[90]

329 We conducted our own analysis as part of the dark liquidity taskforce. We identified securities with greater than 10% below block size dark liquidity, and assessed whether there had been an impact on the market quality for those securities. We found that securities with higher levels of below block size dark liquidity tended to exhibit a widening in bid-offer spreads (i.e. worsening prices), which means higher transaction costs for investors.

330 We compared data from the 2011 September quarter with the 2012 September quarter for four groups of securities in the S&P/ASX 300, we found:

a) spreads narrowed for all securities that went from having more than 10% below block size dark liquidity in the first period to less than 10% in the second period;

b) spreads predominantly narrowed for securities with less than 10% of below block size dark liquidity for both periods (63% of securities);

c) the majority of securities that went from having less than 10% below block size dark liquidity in the first period to more than 10% in the second period (39 out of 63, or 62%) experienced a widening of spreads; and

d) the majority of securities having above 10% in both periods (49 out of 57, or 86%) experienced a widening of spreads.

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[88] D Easley, NM Keifer & M O'Hara, 'Cream-skimming or profit sharing? The curious role of purchased order flow', *Journal of Finance*, vol. 51, 1996, pp. 811–33.

[89] Carole Comerton-Forde & Talis J Putnins, *Dark trading and price discovery*, 26 November 2012. Available at SSRN: http://ssrn.com/abstract=2183392 or http://dx.doi.org/10.2139/ssrn.2183392. The sample period of this study was 1 February 2008– 30 October 2011.

[90] The paper reports that a large increase in below block size dark trading from 10%–20% of dollar volume is estimated to increase the informational inefficiency measures by 10%–15% of a standard deviation. A more modest increase in below block size dark trading from 10%–12.5% of dollar volume is expected to increase the informational inefficiency measures by 2%–4% of a standard deviation.

331 The median increase in spread for groups c) and d) was 0.027 and 0.025 minimum ticks, respectively.

332 Current market integrity rules allow dark orders below block size to execute 'at or within the spread'. This means that under this option, dark orders will continue to be executed before lit orders at the spread. This undermines confidence in public markets if investors believe their orders will be stepped ahead of by dark orders at the same price. As investors in the lit market are left waiting longer for execution, they are discouraged from displaying liquidity and may migrate into the dark causing further impairment to price formation and market quality.

Impact on ASIC

333 There will be no immediate impact on ASIC that is directly attributable to this option.

334 Given the rapid developments of dark liquidity in the financial market, our current policies may no longer offer the most effective solution to achieving our priority of ensuring fair and efficient financial markets.

335 The growth in dark trading means that there is more activity away from the market where it is increasingly difficult to perform market surveillance.

Option 2: Proceed with the pre-trade transparency and price formation rules proposed in CP 168

Impact on industry and investors

Meaningful price improvement

336 Market operators will need to make one-off amendments to their systems (potentially trading and post-trade reporting systems) to reflect the requirement that dark trades below block size must only be executed with meaningful price improvement by referencing the NBBO. For ASX, this means changes to, or the removal of, the on-market priority crossing functionality and changing the reference price of Centre Point to the NBBO. Chi-X hidden orders already reference the NBBO.

337 For both ASX and Chi-X, it means amendments to their off-market reporting function. They will need to amend their validation criteria for hidden orders and off-book trades to require price improvement. Market operators may also need to update the parameters of their trade rejection technology.

338 Market participants operating dark pools that do not already meet the meaningful price improvement proposal will need to make one-off changes to their order routing systems and matching algorithms to only match and execute orders in the dark when there is meaningful price improvement.

Market participants that cross trades off-market (but not through automated means—that is, not a dark pool) will need to amend their policies and procedures to reflect the proposed requirement. Market participants that use the meaningful price improvement exception will need to amend their validation criteria for these off-book trades to require price improvement.

339 We received the following information on costs from soft soundings with a number of market participants:

(a) One retail broker suggested that systems costs directly attributable to the meaningful price improvement rule are limited due to the limited circumstances in which they conduct dark trades below block size. They have manual processes for crossing orders and would only need to make minor changes to internal policies and procedures to ensure that they comply with the new rule. The cost of these changes is not expected to be material.

(b) One large institutional broker that operates a dark pool indicated that its systems already cater for the requirement of price improvement for dark orders, and will need to make minor adjustments to central configuration parameters. It indicated that the change would require approximately one month of internal system development work, at a cost of around $17,000. It also indicated that economic costs would be medium to small because most crossings within its dark pool already occur at the midpoint.

(c) Another large institutional broker indicated that changes would be required to its smart order router, crossing engine and execution algorithms. It anticipates the changes will take ‘many months’, involving a team of internal development staff, charging up to $2000 per day to implement.

340 Since the meaningful price improvement rule would apply to dark trades below block size, it will have a greater impact on dark pools with a great proportion of non-block size trades, while continuing to allow the price of block trades to be negotiated between counterparties at any price.

341 Under this option, dark trades between clients away from a lit order book would need to provide meaningful price improvement (by one tick size or the midpoint) upon the prevailing NBBO for both counterparties. Otherwise, the order must be routed to a lit order book where the order will follow ordinary price–time priority (i.e. go to the back of the queue at that price). Both counterparties would receive a better price than they would receive if they were to submit a market order and cross the spread. However, neither of them would be able to capture the whole spread while gaining time priority over existing displayed liquidity, which improves the fairness of our market as a whole.

342 One impact to existing market practice is that market participants that currently cross client flow below block size and capture the spread themselves, including facilitated trades, would be required to share the spread with their clients or route the order to a lit order book. This will affect the participant's profit margin from crossed trades. Soft soundings with two large institutional brokers indicated that 60–80% of crossings already occur at midpoint, and indicated that the impact to their broader business would be limited. This means the client will receive a better price than they would today if the market participant currently crosses at the best price and does not offer price improvement.

343 Clients that have benefited from receiving time priority by having their orders crossed by a market participant off-market at the spread (i.e. 'jumping the queue') will no longer be able to do so. We believe that it is important for there to be sufficient and complementary incentives in place for investors to display limit orders because limit orders drive the price formation process on market, which is important for capital allocation decisions and capital raising. The price in the underlying market may also feed back into the non-transparent market as part of the pricing process. Therefore, for orders executing in dark venues to gain priority over pre-trade transparent orders, they should offer meaningful price improvement.

344 This is expected to result in more orders being routed to a lit order book, and consequently improve price formation and liquidity on market. Market participants may incur higher aggregate exchange fees because the cost of executing an order on market is generally higher than the cost of reporting a crossing.[91] The actual cost to each market participant would depend on the volume of order migration from the dark to the lit market.

345 It is worth noting that the impact on competition between exchanges and crossing systems is expected to be limited, because the proposed rule does not limit access to dark pools and applies equally to broker-operated and exchange-operated dark pools. It also applies to hidden order on lit exchanges. It promotes fair competition by requiring meaningful price improvement for trades in the dark that currently takes time priority over limit orders in the lit market at the same price. Not allowing dark orders to bypass queues in the limit order book at the same price is consistent with the fairness of order priority principles and removes this unfair competitive advantage of dark pools.

346 Given the smaller market participants typically conduct fewer crossings and do not operate crossing systems, we expect the impact on smaller brokers would be minimal.

[91] The ASX on-market trading fee is 0.15 bps and the NBBO crossing reporting fee is 0.10 bps. The Chi-X on-market trading fee is 0.12 bps for aggressive orders and 0.06 bps for passive orders (average 0.09 bps), and the NBBO crossing reporting fee is 0.08 bps.

347 The proposal will primarily affect market participants operating crossings systems (which on average account for a relatively small part of their business) and is not expected to have a material impact on the competitive dynamics of the industry.

348 This new rule is designed to encourage more trading to occur on lit exchange markets. Indeed, this has been the outcome in Canada, where a similar price improvement rule (for dark pools only) took effect in October 2012 (see paragraph 290).

349 We expect the proposal to result in more liquidity interacting on public markets, helping to limit unexplained volatility, and ensure that prices are determined on the maximum information. This means prices relied on by broader society for valuing assets and superannuation, for example, are more representative of actual trading interests and are as accurate as possible.

350 This proposal will provide a balanced incentive structure to support the pre-trade transparent price formation process, because investors that contribute to the price formation process by displaying orders in pre-trade transparent order books will receive time priority over dark orders below block size at the spread. Under this proposal, orders that are displayed in an order book will no longer be stepped ahead of by trades executing at the same price in the dark. This should encourage more investors to display their orders, to gain time priority, contributing to price formation and narrowing of spreads, which ultimately means more accurate valuation and lower transaction costs.

351 This has been demonstrated in academic research. For instance, Larrymore and Murphy conducted a study on the impact of disallowing internalisation without price improvement on the Toronto Stock Exchange's Price Improvement Rule in 1998. The results show that when the price improvement requirement is introduced, there is an increase in the price improvement rate, sharp declines in both quoted and effective spreads, lower return volatility, greater market depth, and higher overall market quality as measured by pricing error.[92]

352 The authors also note that in markets with high levels of internalised retail order flow, the adverse selection in the market increases to reflect the greater risk of trading against informed order flow. The outcome of improved market quality implies that market makers could compete more aggressively for order flow following the rule change, as more limit orders came back on to the order book, thereby reducing adverse selection risk as reflected in the narrowing of spreads.

[92] NL Larrymore & AJ Murphy, 'Internalization and market quality: An empirical investigation', *Journal of Financial Research*, Fall, 2009, vol 32(3), pp. 337–63.

353 We expect that the proposed rule for dark orders below block size to offer meaningful price improvement will enhance the fairness and transparency of the Australian equity market by achieving qualitatively similar results.

354 One industry representative group has suggested that the price improvement requirement will reduce the value of the order flow of retail brokers. Retail order flow is valuable because it is considered as relatively uninformed by market participants and institutional investors. In some jurisdictions, this has led to brokers selling their retail clients' order flow.

355 This issue is under close scrutiny in the United States and Europe. We see considerable risks in allowing such payment for order flow (PFOF). PFOF creates a clear conflict of interest between the participant and the client. It risks compromising a client's right to best execution (e.g. a broker may direct client orders based on who pays the most) and may be contrary to the ban that the Future of Financial Reforms (FOFA) will introduce on conflicted remuneration structures for advisers. The UK FSA has said that PFOF is a cost that may:

> … have a number of adverse implications for the operation of a market and for the end users of the market. It may result in spreads being wider than might otherwise be the case. It may make firms less willing to narrow their quoted spreads than would otherwise be the case. Additionally, it may reduce the incentive of brokers receiving payments to seek price improvements over a displayed quote.

Minimum order threshold of dark orders

356 Under this option, we propose to increase the minimum threshold from $0 to $50,000 for dark orders below 'block size',[93] if dark liquidity below 'block size' grows by 50% within three years of July 2011. This proposal seeks to address the problem of migration of order flow to dark execution venues and the shrinking average size of dark orders. While we recognise the benefits of dark liquidity for managing the price impact costs of larger orders, the increasing usage of dark order types for smaller orders is not attributable to the need to manage price impact.

357 If the 50% trigger is met, passive orders (e.g. limit orders) below $50,000 would need to be directed to pre-trade transparent order books, and would be protected against other dark orders below block size from stepping ahead of them.[94]

358 If the minimum threshold for dark orders is increased to $50,000, trading activity off-order book would be impacted because a proportion of current trading does not satisfy this size threshold. A threshold of $50,000 would

[93] The block size threshold is currently $1 million. We propose a tiered structure in the next section.
[94] Passive orders are orders that are not immediately matched when they are received by a market operator—they rest in an order book (e.g. a limit order priced away from the best bid or offer). In contrast, aggressive orders are those that are immediately matched (e.g. market orders).

mean that 69.2% (6.2%) of aggressive dark orders and 44.1% (4.2%) of passive dark orders by value (number of orders) would satisfy the proposed criterion during the month of May 2011 (sample period in CP 168: see Table 27 in CP 168, Appendix 2).

359 In response to the proposed increase in minimum order threshold, we expect that some smaller dark orders (such as child orders of sizable parent orders) would not be sliced into sizes below the threshold, limiting the impact of the policy on institutional investors. The exact dynamics of such changes would also depend on other factors, including the compounding effects of the meaningful price improvement rule and the tiered block threshold. Non-pre-trade transparent orders of a size below the threshold would not be allowed to be done in the dark. The threshold would not only limit the migration of order flow away from pre-trade transparent markets, but would also restrict smaller orders from becoming dark.

360 The expected order migration from the dark into lit exchanges may benefit exchange market operators. We do not expect exchange market operators to abuse this benefit, because there is competition between exchange markets that applies downward pressure on exchange trading fees and allows new entrants (including brokers and dark pool operators) to establish lit exchange markets in Australia.

361 In assessing the impact on business and competition, it is important to balance the trade-off between the short-term private advantages for a subset of the market of trading in dark venues (e.g. lower exchange fees) and the long-term public good of contributing to the price formation process, which gives investors confidence and promotes the interests of issuers and the broader community through an efficient secondary market for equities.

362 Operationally, market operators and market participants will need to make one-off changes to their systems to ensure only trades exceeding the minimum size threshold can be executed in the dark. Market operators and participants will need to amend their validation criteria for hidden orders and off-book trades to satisfy the minimum threshold. Market operators may also need to update the parameters of their trade rejection technology.

363 Market participants that cross trades off-market (but not through automated means—that is, not a dark pool) will need to amend their policies and procedures to reflect the proposed requirement. A threshold for dark order size currently exists under Rules 4.1.5 and 4.2.3 of ASIC Market Integrity Ruled (Competition) but is set at $0. We have warned the industry since November 2010 of the possibility of increasing this threshold from $0. For example, in RG 223 we have said at RG 223.182: ‘Market participants should anticipate that a threshold greater than zero may apply in the future and should factor this into their business plans and system development’. We

expect market participants to have built their systems with this in mind and, therefore, the cost for any further change is likely to be minor.

Tiered block order threshold

364 To implement this change, the configuration parameters within the order management systems of market participants and trade validation and rejection systems of market operators need to be changed to reflect the new tiered thresholds. The cost is not likely to pose a significant compliance burden. One large institutional broker that executes block crossings manually indicated that the change would result in two weeks of internal FTE (around $10,000) to undertake staff training and configure system checks for block crossings. Another large institutional broker indicated that the proposal would not result in a mandatory change to systems and it would not necessarily make the change. But if it did choose to make the change, the change would cost six months of internal development (around $100,000).

365 Market operators may need to amend their validation of post-trade information reported to them to reflect the tiered threshold.

366 Market participants have expressed strong support for the tiered block size threshold structure. Market participants will have more flexibility in how they manage large orders as the price impact of large orders decreases. The proposed tiered threshold structure will take into account the difference in size and liquidity of the listed stocks. This makes the block-sized exceptions to pre-trade transparency more relevant and effective.

367 We expect the tiered thresholds will allow more trading to take place in block size in less liquid stocks than is currently the case. To date, the use of block-sized crossing has been largely restricted to the most liquid stocks in the ASX universe. A $1 million threshold for block-sized crossings is not practical for listed stocks for small companies with lower trading volume. For small cap/illiquid stocks, orders much smaller than $1 million could have significant market impact. Therefore, this threshold would be more effective at allowing investors to minimise market impact if tiered based on liquidity.

368 It will enable market participants facilitating trades to better manage their risk by trading in block sizes off market. In addition, this creates new opportunities for market participants to trade in size, without pre-trade transparency. To the extent that large orders above the proposed new thresholds but below the current $1 million are taken off market, the reduction in pre-trade transparency may detract somewhat from the price formation process, but this is balanced against the expected benefits of the meaningful price improvement proposal.

369 The tiered block size thresholds need to be viewed together with the meaningful price improvement rule. This will mitigate, to a significant

extent, the impact of the meaningful price improvement rule on market participants by allowing more trades to be classified as block specials and take place off book. We believe the proposed rules, taken together, will strike the right balance between dark liquidity's traditional function of minimising information leakage and price impact of block orders, and protecting efficient price formation, fair time priority and liquidity of the wider market.

370 The rules also strike a balance between large and small traders. Institutional traders will be able to continue to execute large orders with 'minimal market impact', while investors with smaller orders will receive 'meaningful price improvement' when they trade with dark orders.

371 Existing trade validation and rejection technologies of market operators are by and large compliant with the proposed rules. However, it has been suggested that real-time validation and rejection of facilitated large principal trades and large portfolio trades may be costly to implement for at least one market operator. The cost is mainly associated with a lack of economies of scale and difficulties in identifying stocks in trading suspensions. Given the feedback we received, we have modified our expectations for facilitated large principle trades and large portfolio trades to require post-trade validation instead of real-time validation. We also decided to pursue a simple method of determining meaningful price improvement (i.e. not volume weighted NBBO reference).[95]

Impact on ASIC

372 The proposed rules regarding 'meaningful price improvement' and 'minimal size threshold for dark orders below block size' will have minimal impact on ASIC. The processes in place for overseeing compliance with the 'at or within the spread' rule will be amended to reflect price improvement.

373 Under the proposed tiered block size threshold, the list of stocks that fall within each tier will need to be updated periodically. We will identify the stocks that fall within each tier based on their average daily value—market operators and participants will need to incorporate these lists into their systems. We also need to monitor and identify when the dark volume has reached the point where the $50,000 threshold would be applied. Monitoring and development of dark liquidity will be conducted with a view to evaluating how a minimum threshold should apply; and at what level it should be set. We will also need to undertake staff training about the new rules and adjust our supervisory processes.

[95] Real-time validation by a market operator of trades reported to it can impose significant costs (particularly with regard to system complexity) for limited benefit if the exception conditions are overly complex (e.g. being required to calculate a volume-weighted NBBO) or allow a margin or tolerance for error. A much simpler and more effective system would involve a validation process based on the top of order book NBBO at the time of reporting of the trade.

Option 3: Proceed with pre-trade transparency and price formation proposals (a), (c) and (d) in CP 168, while enhancing conflict of interest management for market participants when dealing with client order flow (preferred option)

Impact on industry and investors

374 This option includes the 'meaningful price improvement' and 'tiered block order threshold' described under Option 2, the impacts of which are the same as described in Option 2. We believe that, at this stage, the meaningful price improvement rule will continue to allow innovation, while protecting lit orders and the price formation process.

Conflict of interest when dealing with client order flow

375 The proposals strengthen conflicts of interest obligations. They would help to limit information leakage on client orders and manage conflicts that may arise through third-party outsourcing.

376 Prohibiting market participants from intentionally interposing principal trading between client trades that would otherwise have crossed would have very limited impact on business models of market participants as this is already market practice for most market participants. It may require market participants who currently conduct principal trading in such a manner to make minor amendments to their systems. We have not received any feedback which indicates that this work would be substantive.

377 Prohibiting the charging of commissions for retail client trades against associated entities would have very limited impact on business models, as this is currently industry best practice in the Australian market. This proposal seeks to clarify this in the market integrity rules.

378 The prohibition on payment for client order flow (in the form of a ban on negative commissions, excluding client facilitation) will have limited impact on business models of market participants. Industry feedback suggests that use of these payment models are rare in the Australian market, outside of client facilitation. This proposal seeks to prevent it from becoming prevalent, which has been shown to create the wrong incentives for order routing decisions in overseas markets and undermining client outcomes.

379 The proposed guidance on IOIs would clarify our expectations to AFS licensees in relation to the fair and efficient use of IOIs that effectively manage of conflicts of interest and information leakage. We seek to discourage fictitious IOIs that are not backed by genuine trading interest, and the misrepresentation of the nature of liquidity behind IOIs. We expect this guidance will reinforce industry best practice and have no material impact on business models and compliance obligations of AFS licensees.

Impact on ASIC

380 The impacts on ASIC are the same as under Option 2, except we would need to monitor the development and impact of dark liquidity, as well as the impact of our policies on the market.

Conclusion

381 We recommend Option 3 for the following reasons.

382 Option 1 does not address the risks that the proliferation of dark liquidity poses on maintaining a fair, orderly and transparent market. It also fails to address concerns associated with dark orders being allowed to step ahead of lit orders at the same price.

383 The impact of Option 2 on market participants' business models, as it currently stands, may outweigh the benefits with regards to the minimum dark order threshold rule.

384 Finally, the basis of our proposals in Option 3 is to get the incentives right for displaying liquidity to support the price formation process. Australia's financial markets should operate with maximum transparency and fairness to investors—to give investors confidence and promote the interests of issuers and the broader community through an efficient secondary market. Our proposed meaningful price improvement rule protects those that display liquidity from being traded through by a dark order at the same price (i.e. to reward them for contributing to pre-trade price formation). At this stage, we propose to monitor the impact of the price improvement rule and developments in dark liquidity to evaluate whether a minimum threshold may be required in the future.

385 Based on industry feedback and analysis conducted by the dark liquidity taskforce, Option 3 will strengthen the conflicts of interest obligations between market participants and their clients.

F Issue 5: Crossing systems

386 This section considers options to introduce obligations for crossing systems to reflect their 'market-like' nature. We see the need to consider benchmark operating standards for crossing systems.

Context

387 A crossing system is currently defined in Rule 1.4.3 of ASIC Market Integrity Rules (Competition) as:

> any automated service provided by a Participant to its clients which matches or executes Client Orders with Orders of:
>
> (a) the Participant; or
>
> (b) other clients of the Participant,
>
> otherwise than on an Order Book.[96]

388 They include systems that have resting orders (often referred to as a 'dark pool') and systems that check new orders for a match with the market participant's existing orders on an exchange market.[97]

389 Crossing systems are growing in number. There are currently 20 crossing systems operated by 16 market participants, up from five in 2009. The growing number of crossing systems gives investors access to a greater variety of services. However, it increases fragmentation of the financial market and makes it more difficult, and potentially more costly, to find liquidity.

390 Most crossing systems have characteristics of financial markets within the meaning of s767A(1) of the Corporations Act. These types of venues are regulated as markets in some other jurisdictions (e.g. as alternative trading systems in the United States and Canada and multilateral trading facilities in Europe). The Australian market licensing regime was designed in 2001 with public exchanges in mind, and did not anticipate the extent of financial market evolution that has occurred since. Our policy position has been to regulate crossing system operators as market participants subject to market integrity rules and operating rules of the exchange.

[96] For an amended definition of 'crossing system' that reflects recent developments in the operation of crossing systems, see draft Rule 1.4.3 (Competition) in the attachment to this paper.
[97] We expect much of the latter to fall away now that the new trade with price improvement rule has commenced. This is because it will not be possible to trade in the dark at the same price as the price displayed on a lit exchange market.

391 In Australia, the Government has asked Treasury to conduct a review of the market licensing regime, including the appropriate licensing of 'dark pools'.[98]

Crossing systems becoming more 'market-like'

392 Market participants have been responding to developments in technology through innovation and investment in crossing system technology. On the whole, these developments are improving the efficiency of trading for these market participants and their clients. One of the trends that has emerged is that crossing systems are becoming even more 'market-like'. Initially, access was mostly limited to institutional clients and internal trading desks. More recently, we have seen market participants executing more retail client orders in their crossing systems. High-frequency traders, market makers and other market participants are also accessing crossing systems.

393 Crossing systems are increasingly becoming interconnected through bilateral connection arrangements and aggregators that transmit orders between multiple crossing systems. There are at least two aggregators operating in the Australian market, and at least another five crossing system operators are connected to these aggregator services and receive orders from them. A number of crossing system operators are also considering direct bilateral connections between their systems.

394 As such, many crossing systems are becoming multilateral and are no longer just a facility for matching their own client orders. Industry feedback suggests that this interconnectedness may increase the risk of adverse selection and information leakage—that is, it may lead to a worse price outcome because some of the information about an order may be revealed by others as orders pass through more venues. It was also suggested that it is difficult for clients to control and monitor whether their instructions are being met —such as the types of counterparties they wish to interact with— because they are one or more steps removed from the execution process.

395 It also raises questions about what duty a crossing system operator owes, or should owe, to users of its facility and their clients. Crossing system operators regulated as market participants are subject to market integrity rules and operating rules of the exchange. However, they are not subject to wider market operator obligations, such as transparency and fairness of operations and monitoring.

[98] Treasury, *Australia's financial market licensing regime: Addressing market evolution*, consultation paper, November 2012. www.treasury.gov.au/ConsultationsandReviews/Submissions/2012/Australias-financial-market-regime-Addressing-market-evolution.

Assessing the problem

396 The increase in number, interconnectedness and sophistication of crossing systems means that they are becoming more 'market-like'. However, there are currently minimal obligations that regulate how crossing systems are operated and minimal control over the conduct within them, potentially exposing areas of the Australian financial market to misconduct. Specifically, the dark liquidity taskforce has identified problems with how some crossing systems operate that are inconsistent with maintaining a fair, orderly and transparent market, including:

(a) a widespread lack of transparency and instances of potentially misleading disclosure about the way they operate and their constituent order flow;

(b) isolated instances of apparent unfair treatment of certain clients or groups of clients;

(c) isolated instances of inhibited client choice to opt-out of using the crossing system;

(d) lack of visibility by ASIC into conduct within the crossing system and general lack of monitoring of conduct by crossing system operators; and

(e) evidence suggesting that some crossing systems may struggle during stressed market conditions.

Transparency and disclosure about crossing systems

397 There is very little information available to the wider market (and to clients) about crossing systems—such as access requirements, nature of liquidity and operation. The information that ASIC receives when a crossing system initially 'registers', and in the monthly aggregate reports (required under Part 4.3 (Competition)), is not made publicly available.

398 This means that end clients may be unaware of how their orders are being handled and executed, and listed companies may be unaware of how and where their securities are being traded. The lack of transparency and consistency in disclosure makes it difficult for users and potential users to identify sources of liquidity and assess execution options. It also means that crossing systems are competing with each other by providing clients with inadequate information, which may result in clients choosing the wrong crossing system for their orders execution needs, as well as inefficient order routing and execution outcomes for investors.

399 There are also concerns in overseas markets about the lack of transparency about crossing systems. For instance, in the testimony before the US Senate Subcommittee Hearing on Computerized Trading, Tabb Group CEO Larry Tabb suggested that the following should be made public:

> [C]oncrete examples of how these order types in crossing systems work, how fees/rebates are generated, where they show up in the book queue, how and when they route out to other venues and how these order types change under various market conditions.

400 There appears to be a general deficiency in information provided by crossing system operators to their clients/users. During 2012, many fund managers issued questionnaires to the market participants that they use, to obtain information about their process, the operation of their crossing system, the nature of liquidity in the system, other parties that access the system and what functionality (if any) can be tailored to the user.

Misleading representation about order flow in crossing systems (e.g. high-frequency trading)

401 The nature of liquidity in a crossing system is important for some users. It has been suggested that interaction with certain types of counterparties can affect execution quality, signal trading intentions and lead to adverse selection.

402 Generally, retail and institutional order flow is considered 'fundamental' or 'natural' order flow. In contrast, high-frequency trading and proprietary order flow is considered to be less desirable order flow, because they may trade based on price movements and market information gathered from other orders and trades in the market (as opposed to fundamental reasons). This concerns some fundamental investors because it can give others an insight into their trading intentions. Many fundamental investors are also concerned about the conflicts involved when a market participant trades with them as principal.

403 In response to notices issued by ASIC in the third quarter of 2012, all operators indicated that the majority of their clients were fund managers, hedge funds and other wholesale investors, and that most operators permit principal trading or trading by associated entities (which accounts for 38.6% of trading in the crossing systems that permit principal trading—mostly related to facilitation and/or hedging). Most crossing system operators have stated that they do not allow high-frequency trading in their crossing systems. However, our data analysis suggests that the majority do in fact have user accounts with high-frequency trading characteristics. This indicates that there may have been selective or misleading disclosure to clients and to ASIC.

Wholesale clients are exerting more control over order execution decisions, while retail clients have limited control

404 It used to be the case that clients accessed crossing systems through a market participant's execution algorithm rather than specifically accessing the

crossing system. This is changing, and wholesale clients are beginning to exercise greater choice about where their orders are routed and how they are executed. In some cases, clients have established direct connections to a crossing system and route their orders directly to the system themselves (e.g. by controlling the algorithms they use themselves).

405 On the other hand, retail clients have limited control or even knowledge that their orders are routed to a crossing system. For orders that a crossing system operator has discretion over (i.e. they can determine when and how to execute the order), all but one crossing system operator routes client orders by default through its crossing system before routing it to a lit exchange market.

406 Although crossing system operators allow clients to opt-out of using the crossing system, one crossing system operator allowed retail clients to opt-out only by telephone, which attracts a substantially higher commission. The same crossing system operator allows favoured institutional clients to rest in its crossing system to interact with aggressive retail orders with minimal price improvement. We are concerned that the lack of control by retail clients of the use of crossing systems combined with the lack of disclosure that their orders are actually routed into and executed in a crossing system are resulting in unfair outcomes for them.

407 We are also concerned that retail investors are not aware of how their orders are being executed. The best execution rules (Part 3.3 (Competition)) require market participants to disclose to clients the venues where their orders may be executed. However, the rules do not require disclosure on trade confirmations of the particular crossing system where the trade was executed, they only require a disclosure as to when a trade involved a crossing.

Monitoring of activity on crossing systems

408 There is a gap in the monitoring of trading in crossing systems. ASIC does not receive or monitor orders in crossing systems and market participants are not explicitly required to monitor such trading.

409 Overseas jurisdictions typically require alternative trading venues to have real-time monitoring arrangements in place to detect misconduct. For example, in Europe multilateral trading facilities are required to monitor market participant's conduct and compliance with the multilateral trading facility's rules. They are required to report to the regulator any breaches of the operator's rules, disorderly trading conditions, and conduct that may involve market abuse. In the United States and Canada, alternative trading systems are responsible for monitoring compliance with their rules. Broader market participant and market abuse monitoring is performed by industry regulatory bodies.

410 In contrast, we currently only require market participants to report suspicious activity on an exchange market when they become aware of such activity: Part 5.11 (ASX) and (Chi-X). By extending the suspicious activity requirements for ASX and Chi-X to crossing system operators and activity in a crossing system, this proposal is expected to benefit market integrity.

411 Currently, crossing system operators tend to monitor firm-wide activity and for commercial drivers such as system performance and execution quality, rather than for detection of misconduct. This means that there may be a degree of improper behaviour or activity going on undetected. This may include pinging, slowing the system through excessive order placement and engaging in inappropriate conduct on lit exchange markets to obtain an advantage in a crossing system, particularly for less liquid securities where spreads are wider or where there are only one-sided prices. As such, various forms of activity that may amount to market manipulation is not being monitored, detected or reported.

Systems and controls

412 Some crossing system operators are buying crossing system technology off-the-shelf without understanding the system. This is concerning because we expect all market participants to understand and be able to control their systems.

413 Another concern is that crossing systems may not have adequate systems and controls built into them to deal with market stress, evidenced by the negative correlation between crossing system volume and market volatility,[99] as traders migrate to exchanges with robust systems during stressed market conditions. Crossing system operators have indicated that they have processes in place for managing market conditions that may result in system outages. However, there are some deficiencies in the ability of many to inform clients of the problem, route orders to other venues or operate a back-up system.

414 As crossing systems grow in number and prominence, the risk of inadequate technological resources and arrangements for ensuring continuity of operations becomes increasingly systemically significant. Our regulatory regime is out of step with that of the United States and Canada, where alternative trading systems are required to have such arrangements.

Objectives

415 The main objectives of the crossing systems proposals are to ensure:

[99] Rosenblatt Securities Inc, *Trading talk: Let there be light*, February 2013.

(a) crossing systems operate in a fair and efficient manner;

(b) investors are adequately informed about how they operate; and

(c) the regulatory framework caters for future developments.

416 It is important that the Australian regulations are in line with international standards, and that crossing system operations are based on a set of established and transparent standards. As crossing systems become more 'market-like', the proposals will assist ASIC to preserve a fair, orderly and transparent Australian equity market.

417 In light of the concerns highlighted by ASIC's dark liquidity taskforce regarding crossing systems, the proposals would ensure that crossing systems are regulated in a way that is more consistent with their increasing 'market-like' characteristics.

Options

Option 1: Status quo

418 Option 1 is to maintain the status quo and continue to rely on the existing legislative framework and market integrity rules to regulate crossing systems.

Option 2: Proceed with introducing 'market-like' obligations for crossing systems operators proposed in CP 202

419 Option 2 proposes that crossing system operators:

(a) have appropriate transparency procedures about the nature of their crossing system made public on their website using a standardised format, and disclose to users:

(i) the operations of the crossing system;

(ii) the nature of liquidity;

(iii) the users' obligations,

(iv) instances where the counterparty was principal, on a trade-by-trade basis; and

(v) identify matching venues (exchange market or crossing system) on trade confirmations to retail clients and to the public in course-of-sales reports three days after each transaction; and

(b) provide clients with the ability to opt-out of using the crossing system at no additional cost and with no additional operational or administrative requirements;

(c) are operated by a common set of procedures, which do not unduly discriminate between users—crossing systems that are currently structured in a way that unduly discriminates against certain users will need to be adjusted to be structured in a fair way;

(d) monitor orders and transactions in the crossing system against its own rules and procedures and report breaches and suspicious activity to ASIC; and

(e) maintain adequate systems and controls and notify users and ASIC about system issues within 60 minutes of detection.

420 This option also proposes enhancements to record-keeping obligations, which will facilitate surveillance and enforcement by ASIC. Crossing system operators will be required to make records about all orders (including the parameters set for each order) in the crossing system and retain these for seven years

Option 3: Proceed with CP 202 proposals with revisions following industry consultation

421 Option 3 proposes to proceed with the amended proposals in Option 2 to achieve our regulatory objectives while minimising impact on industry. We propose to:

(a) make minor technical adjustments, in light of industry feedback, to strike a more appropriate balance between transparency and disclosure obligations:

(i) by requiring order types and fees to only be disclosed to clients instead of being made publicly available;

(ii) by removing the requirement to publish aggregate turnover statistics and information regarding connected crossing systems; and

(iii) by relying on the current condition codes to indentify whether a trade was crossed instead of requiring matching venues (exchange market or crossing system) to be identified on trade confirmations to retail clients; and

(b) remove the ‘at no additional cost’ requirement from Option 2 given all crossing systems allow opting-out except for one (that does so at a higher commission rate), and work bilaterally with this crossing system operator to devise a solution;

(c) proceed with the proposal in paragraph 419(c) of Option 2 without change;

(d) limit crossing system’s monitoring obligations and proceed with enhanced suspicious activity reporting to ASIC, in light of industry

feedback regarding the excessive cost involved in enhanced record keeping; and

(e) only require notification to users that may be affected by system outages and remove the 60 minute requirement.

Impact analysis

Option 1: status quo

Impact on industry and investors

422 Option 1 will not impose any explicit extra costs on market participants, investors, market operators or government, and it will allow the Australian market to continue to evolve under the existing regulatory framework.

423 The recent work conducted by ASIC's dark liquidity taskforce identified problems with the way some crossing systems operated. As crossing systems increase in number, interconnectedness and sophistication, gaps in the current regulatory regime that the taskforce identified would not be addressed under Option 1.

424 Under Option 1 market users will lack the consistent information needed to compare the operations of crossing systems, understand the nature and risks of trading in the dark and inform themselves about which crossing system may better meet their investment needs. Greater transparency around the way crossing systems operate would benefit all users of crossing systems.

425 Institutional clients may not understand the capacity in which the crossing system operator has filled the order, particularly where they have traded as principal. This is evidenced by the recent surveys that buy-side firms have conducted on crossing system operators.

426 Unfair treatment of clients would undermine confidence in our financial markets. ASIC's lack of visibility of orders resting in or passing through crossing systems means that crossing systems will not be subject to monitoring and surveillance. As a result, various forms of misconduct may not be identified.

427 The lack of requirements around systems and controls may cause situations where poorly programmed algorithms that trade in a crossing system, interfere with a lit exchange market as a result of the trades being reported to the lit market and made publicly available. While there have been discrete instances of heightened volatility and market distress, this has not translated into crossing system operators adopting more robust systems and controls.

428 We do not envisage that trading in Australian securities by Australian investors will migrate offshore if we were to proceed with Option 1.

Impact on ASIC

429 Under Option 1 there will be minimal impact on ASIC, however our ability to regulate this growing sector and to monitor and detect market misconduct will be limited.

Option 2: Rules framework as proposed in CP 202

Impact on industry and investors

Transparency for the wider market and disclosure to users

430 Option 2 will bring Australia more in line with the IOSCO *Principles of dark liquidity*,[100] while having limited impact on market participants (i.e. provision of information that market participants already routinely capture about their system and processes).

431 The proposed disclosures to users will better equip most crossing systems' users to properly understand the risks and rewards of a particular crossing system, and promote confidence in users of crossing systems.

432 The proposed rules would improve transparency of the wider market and standardise disclosure practices among all operators of crossing systems. The proposal to include the crossing system venue on trade confirmations for retail and wholesale clients enables all clients of a market participant to understand where trades have been executed.

433 It will also create a more level playing field with licensed market operators and ensure market users and listed companies are more informed about Australian market structure and where dealings in financial products may be executed.

434 Most crossing system operators are likely to incur minor additional compliance costs in providing transparency to the wider market and enhancing disclosure to clients about the way in which they operate. One market participant suggested that they would incur an on-going cost of around $1,000 per month to update and make public information on their website, while enhanced disclosure to all clients will result in a one-off cost. We consider this to be a necessary cost to improve understanding of crossing systems by clients as well as the wider market.

435 Market participants may incur costs associated with changes to systems and procedures under the proposal to identify principal trades and trades in

[100] Technical Committee of IOSCO, *Principles of dark liquidity* (IOSCOPD353), final report, IOSCO, May 2011.

crossing systems in trade confirmations to their institutional clients. We understand that many market participants are doing this already through FIX tags 29 and 30. For market participants that need to introduce changes to their back office systems, there will be an additional cost.

436 In terms of disclosure to individual clients, market participants are largely compliant in their dealings with institutional clients. However, ongoing disclosure to retail clients on trade confirmations will cost around $250,000–$500,000. This may make the retail business of some market participants no longer economically viable.

437 The proposal to mandate disclosure of course-of-sales three days after each transaction would reinforce post-trade transparency by ensuring that both market participants and investors continue to have access to course-of-sales information and would be able to analyse trading in crossing systems. It will also assist market participants and investors to find liquidity and assess execution quality.

438 Operationally, we expect no change for market participants and minimal change for market operators to comply with the course-of-sales proposal. The proposed new data field (venue) is already required to be provided by market participants to market operators from March 2014 when Chapter 5A (Competition) on enhanced regulatory data takes effect. Market operators may need to amend their reporting systems.

439 One major crossing system operator estimated the total set-up cost to comply with the disclosure regime to be around $300,000.

Fairness to all users

440 We expect this proposal to benefit the fairness of the market by ensuring that users of a crossing system are governed by a common set of procedures, which balances the interests of all users, and does not unfairly discriminate between them. This proposal will achieve a balance in allowing crossing system operators to retain discretion on how they execute orders in the best interests of their clients while ensuring fair treatment of client orders, especially for retail clients.

441 The proposal will only impact crossing system operators that currently have arrangements in place that may systematically result in less favourable outcomes for particular users. They may incur some one-off costs to amend their systems, policies and procedures. The cost will vary depending on the nature of the discrimination that needs rectifying.

Opting out

442 The proposed rule would ensure clients' flexibility to exercise choice in whether they participate in a crossing system, while allowing market participants to meet their best execution obligations.

443 All crossing system operators indicated that they allow clients to opt-out of using the crossing system. They differed on whether this was possible on a trade-by-trade or batch basis. One crossing system operator allowed retail clients to opt-out only by telephone, which attracts a substantially higher commission. This crossing system operator would incur compliance costs to amend their systems, policies and procedures.

444 ASIC has received some feedback regarding the costs of implementing the rules that allow clients to opt-out of trading in a crossing system. The crossing system operator suggested that it would take approximately four weeks to implement the changes in their systems at a cost of around $100,000.

445 Market participants in general have only received minimal requests to opt-out. The proposal will ensure a level playing field and give comfort to market participants who operate a crossing system that they can still comply with their best execution obligations if clients do choose to opt-out.

Monitoring and record keeping

446 Since ASIC currently has no visibility of orders resting in or passing through crossing systems, the proposal will help to fill the information gap. Under the proposal to replicate the rules on suspicious activity reporting (Part 5.11 (ASX) and (Chi-X)), market participants who operate a crossing system would be required to notify ASIC of certain suspicious trading activity that occurs in their crossing system.

447 Some crossing system operators are likely to incur additional compliance costs when conducting monitoring of orders in their crossing systems. However, there are some crossing system operators that are already monitoring orders and will not incur any additional costs under this proposal.

448 In response to CP 202, one crossing system operator suggested the reform would require one additional headcount per market participant to monitor all orders in the required manner. For those participants whose systems do not already have compliance monitoring capabilities, it could cost at least $150,000 to perform the necessary system upgrade. Market participant compliance teams and data storage systems may also have to make changes to their systems depending on the existing structure of each participant.

449 One major crossing system operator suggested that compliance with this proposal would require one half of a head count, costing $120,000 per annum.

450 We expect the record keeping proposal would lead to a more consistent approach to order entry for a crossing system as compared to lit exchange markets. The maintenance of a clear trail of orders will promote market integrity by allowing us to properly assess any potential misconduct that a user of a crossing system may be involved with.

451 We expect that crossing system operators should be able to determine what orders are resting in their crossing system at a particular point in time. This is fundamental to their ability to appropriately monitor conduct in the system as well as to be able to meet the best execution obligations in Part 3.1 (Competition).

452 One major crossing system operator suggested that it is already largely compliant with this proposal, which currently requires one head count, costing $175,000 per annum. However, the information about the lifecycle of an order is stored across multiple systems (including the order management system, the crossing system and the algorithmic trading system). The capability to replay events in the crossing system at any given point in time would cost multi-millions of dollars to develop.

Systems and controls

453 The proposed guidance on crossing systems would reinforce existing expectations and practice, and contribute to the fair and orderly operation of the market. It may involve a one-off cost to market participants, as they review and adjust existing systems and controls to ensure that they are adequate, given the nature and complexity of the crossing system.

454 As the Australian market experiences a proliferation of crossing systems, the proposal will ensure that they are managed in a manner that does not undermine its ongoing stability. Currently, there is only one crossing system operator that will be brought into AOP by this proposal.

455 The proposal to amend the rules for AOP ensures that there is a requirement for crossing system operators to maintain adequate systems and controls, and to ensure that they operate an efficient and robust crossing system. It will also ensure that client orders are not held back and will route to the lit exchange in case of a crossing system failure.

Impact on ASIC

456 The proposed rules regarding the operating standards of crossing systems and the introduction of 'market-like' obligations will have minimal impact on ASIC.

Option 3: Revised propositions of CP 202 post industry consultation

Impact on industry and investors

457 The amended proposals under Option 3 are expected to reduce the cost impacts on industry, while delivering the regulatory benefits of 'market-like' obligations.

458 The compliance costs associated with transparency and disclosure will be substantively the same as they are under Option 2, while the impact on crossing system operators' business is expected to be lower. The proposed amendments will strike a better balance between transparency and disclosure of commercially sensitive information. The removal of the requirement for ongoing disclosure of crossing systems through trade confirmations to retail investors from Option 2 will also reduce costly implementation of system changes. At the same time, Option 3 seeks to minimise implementation costs and avoid duplicating disclosure requirements.

459 This will bring Australia in line with the IOSCO *Principles of dark liquidity* to provide participants with sufficient information so that they can understand the manner in which their orders are handled and executed. Compared to our proposal, Canada and Europe, for example, already have transparency obligations for products traded, access criteria, system operations and rules and procedures for fair and orderly trading for alternative dark trading venues.

460 Compared to Option 2, lower costs are also achieved by streamlining monitoring obligations. Expanding suspicious activity reporting obligations from only including reporting market orders and trades to include activity within the crossing system is expected to result in minor costs to industry.

461 This will bring Australia in line with international regulatory standards, while imposing lower compliance burdens. Overseas jurisdictions place broader requirements on alternative trading venues to monitor trading in the venue. For example, multilateral trading facilities (MTFs) are required to monitor conduct of participants and compliance with the rules of the MTF. In the US and Canada, alternative trading systems (ATSs) are responsible for monitoring compliance with their rules.

462 Given that around 80% of the crossing systems are operated by international banks and securities firms, we expect some cost synergies in complying with our proposed obligations.

463 Option 3 alleviates the significant cost associated with additional record keeping obligations. We are satisfied with industry feedback that the current record keeping practices are sufficient to comply with ASIC investigation

and enforcement requirements. This would result in substantially lower compliance cost requirements compared to Option 2.

464 The costs associated with notification of system issues to clients are reduced compared to Option 2 by only requiring crossing system operators to notify clients that may be affected instead of all clients. Removing the requirement to notify within 60 minutes will afford the crossing system operators with more flexibility. Depending on the nature of the issue, time and resources may be better utilised in addressing the issue and notifying the relevant stakeholders rather than notifying all clients within a certain time frame.

465 The impacts related to fair treatment of crossing system users will be largely the same as under Option 2. The impact of the opt-out proposal will be lower than Option 2 as Option 3 does not impose cost constraints.

Impact on ASIC

466 The impacts on ASIC are the same as under Option 2.

Conclusion

467 We recommend Option 3 for the following reasons:

(a) Option 1 does not address the risks that developments in crossing systems pose for maintaining a fair, orderly and transparent market—it fails to address concerns associated with client's lack of understanding of crossing systems and the ways crossing systems operate;

(b) Option 2, as it currently stands, may potentially be improved by minimising implementation costs and moderating its impact on market participants' systems, while addressing the issues with crossing systems 'market-like' nature; and

(c) Option 3 ensures that crossing systems, as an important part of Australia's financial market, operate with transparency and fairness to investors—to give investors confidence and promote the interests of issuers and the broader community through an efficient secondary market.

G Consultation

Consultation Paper 145 *Australian equity market structure: Proposals*

468 On 4 November 2010, we released a consultation package on enhancing regulation of Australia's equity markets, including proposals to address risks associated with the introduction of competition between exchange markets and from recent market developments.

469 The consultation package included a detailed consultation paper, Consultation Paper 145 *Australian equity market structure: Proposals* (CP 145), an overview summary document (reproducing Part 1 of the consultation paper), draft market integrity rules and a supporting economic report on Australian equity market structure, Report 215 *Australian equity market structure* (REP 215) (November 2010).

470 On 3 March 2011, we released Media Release (11-38MR) *ASIC announces timetable for the introduction of market competition,* which included a summary of the intended market integrity rule framework that would apply, as well as a preliminary summary of the submissions to CP 145.

Consultation Paper 168 *Australian equity market structure: Further proposals*

471 On 20 October 2011, ASIC released a second-phase consultation package which looks at equity market structure issues arising from developments in Australia's financial markets. The consultation package included:

(a) Consultation Paper 168 *Australian equity market structure: Further proposals* (CP 168); and

(b) *Australian equity market structure: Further draft market integrity rules*.

472 CP 168 built on the findings of CP 145, and canvassed a number of proposals and market integrity rules that were considered to be necessary to keep pace with technological and market developments, and sought views in relation to:

(a) enhanced controls for an increasingly automated trading environment;

(b) volatility controls to automatically limit market activity during extreme market movements;

(c) enhanced regulatory data requirements for ASIC's surveillance capability;

(d) broadening the scope of best execution so investors have the same protection for both equity and non-equity products listed or quoted on ASX; and

(e) exceptions to pre-trade transparency and mechanisms for promoting pre-trade transparency to address the impact of dark liquidity on the price formation process.

473 The key issues that arose out of the submissions received to CP 168 and our responses to those issues are summarised in Report 290 *Response to submissions on CP 168 Australian equity market structure: Further proposals* (REP 290).

Responses to CP 168, CP179 and CP 184

474 The submissions provided valuable feedback and suggestions. We have considered concerns about the interpretation and practical application of the market integrity rule. We have consulted with a range of stakeholders since receiving the submissions to seek further comment and to provide some background and guidance to the proposed rule.

475 We received 28 written submissions to CP 168 from a broad range of stakeholders, including market operators, market participants, fund managers, associations, high-frequency trading firms, law firms and a data vendor and technology firm.

476 We had over 50 meetings with stakeholders since the consultation paper was published on 20 October 2011 and held information sessions for members of the Australian Financial Markets Association (AFMA), the Financial Services Council (FSC) and the Stockbrokers Association of Australia (SAA).

477 For a list of the non-confidential respondents to CP 168, see REP 290. Copies of these submissions are available on the ASIC website at www.asic.gov.au/cp under CP 168.

478 We received 10 responses to CP 179 and 16 responses to CP 184 from a range of stakeholders including market operators, market participants, associations, superannuation funds, proprietary trading firms and a high-frequency trading firm.

479 For a list of the non-confidential respondents to CP 179 and CP 184, see Report 311 *Response to submissions on CP 179 and CP 184 Australian market structure: Draft market integrity rules and guidance* (REP 311). Copies of these submissions are available on the ASIC website at www.asic.gov.au/cp under CP 184.

Overview of feedback to CP 168, CP179 and CP 184

480 Respondents were generally appreciative of our holistic approach to consulting on the market structure framework. Some respondents commended ASIC on the breadth of our vision for the regulatory reform of Australia's financial markets and for engaging with a variety of stakeholders and global financial markets.

481 There was widespread support for ASIC to focus on the rules most necessary considering the current financial pressure in the industry, and for ASIC to issue guidance rather than make new rules where possible.

482 Respondents were generally supportive of measures to address risks created by the increasingly high-speed and automated nature of markets. However, they also stressed that such measures should be straightforward, transparent and flexible, to ensure legitimate trading is not inhibited, and suggested that we should continue to monitor developments in the market and respond where necessary. On some proposals, respondents suggested that competition between exchange markets should be allowed to develop further before introducing further regulatory change.

483 Some submissions stated that the proposals are likely to impose a significant cost burden in an environment where there is already financial pressure on industry. A number of respondents questioned the impact of some proposals on Australia's international competitiveness and questioned whether the benefits of our proposed approach outweighed the costs.

484 Respondents also sought certainty via a public timetable to allow them to allocate resources and to prepare for the proposed changes. The majority of market participant respondents suggested they require more than six months after the rules are settled to prepare for the changes required by the rules.

485 There was limited feedback received on the appropriate maximum penalty to be imposed for the proposed new market integrity rules. Responses received were generally in agreement with the maximum penalty, although one respondent noted that it was inappropriate to apply the same maximum penalty across the board for rules that apply to market operators and those for market participants, as incentives to breach the rules were not the same.

486 Some respondents continued to express caution about the pace of change in the Australian market and, in particular, the impact of high-frequency trading and dark pools on the fair and efficient functioning of the market.

487 There was general support from respondents for the proposals arising from CP 179 and CP 184. This reflects the fact that the draft rules and guidance (stemming from CP 168) are a result of considerable consultation with industry, which began in November 2010.

488 Respondents were generally supportive of where we settled on our policies regarding automated trading. One submission noted that the technical measures proposed would, when combined with controls already in place at the market operator level, provide a robust and clear operational compliance framework to manage the risk of aberrant automated trading activity. There was also strong support for the proposed requirement for a market participant to have direct control over filters and provide annual notifications to ASIC.

489 A number of the responses received to CP 184 focused on the impact on market structure of high-frequency trading and execution of trades in dark pools. For example, responses from a number of superannuation funds cautioned that high-frequency trading may undermine the efficiency of the market. Another respondent advocated that appropriate rules and boundaries should be established for dark pools.

Consultation Paper 202 *Dark liquidity and high-frequency trading: Proposals*

On 18 March 2013, ASIC released a second-phase consultation package which looks at equity market structure issues arising from developments in Australia's financial markets. The consultation package included CP 202 and REP 331.

490 CP 202 built on the findings of CP 168 and Rep 331, and canvassed a number of proposals and market integrity rules that were considered to be necessary to keep pace with technological and market developments, and sought views in relation to:

(a) guidance on order-to-trade ratios and enhanced enforceability of market manipulation market integrity rules in an increasingly automated trading environment;

(b) enhanced conflicts of interest management regulation for market participants dealing in the dark; and

(c) new regulation for the operation of crossing systems to reflect their more 'market like' nature.

491 The key issues that arose out of the submissions received to CP 202 and our responses to those issues are summarised below.

Responses to CP 202

492 The submissions provided valuable feedback and suggestions. We have considered concerns about the interpretation and practical application of the

market integrity rules. We have consulted with a range of stakeholders since receiving the submissions to better understand their comments and identify costs.

493 We received 25 written submissions in response to CP 202 from a broad range of stakeholders, including market operators, market participants, fund managers, super funds, industry associations, high-frequency trading firms, law firms and retail investors.

494 We also held information sessions for members of the Australian Financial Markets Association (AFMA), the Financial Services Council (FSC) and the Stockbrokers Association of Australia (SAA).

Overview of feedback to CP 202

495 Respondents were broadly supportive of ASIC's vision to ensure the quality and integrity of Australian markets and generally commended ASIC's evidence-driven approach to its review of dark liquidity and high-frequency trading. There was widespread support for the way in which ASIC had engaged with stakeholders throughout the process.

496 Many respondents requested for ASIC to focus on the rules most necessary considering the current financial pressure in the industry, and for ASIC to monitor developments rather than make new rules at this stage.

497 The majority of respondents called for ASIC to wait and assess the impact of the new meaningful price improvement rule before introducing rules to address migration of liquidity to the dark.

498 In relation to our proposals for crossing system operators, respondents such as market operators, fund managers, super funds and retail generally supported greater transparency and disclosure requirements whilst the crossing system operators challenged the need for these requirements. Most respondents supported fairness to all users and opting out rules.

499 Some respondents did not believe there was a need to address order-to-trade ratios at this time. However, there was no opposition to issuance of guidance.

500 The majority of respondents supported all of our proposals in relation to market manipulation rules except for the proposal to remove 'materiality' on the basis that the costs of system development to enable effective monitoring was prohibitive and concerns were raised that ASIC could progress matters for any order that had an impact, material or not, regardless of intent.

501 Some submissions stated that the proposals are likely to impose a significant cost burden in an environment where there is already financial pressure on industry. A number of respondents questioned the impact of some proposals

on Australia's international competitiveness and questioned whether the benefits of our proposed approach outweighed the costs.

502 Some respondents continued to express caution about the pace of change in the Australian market and, in particular, the impact of high-frequency trading and dark pools on the fair and efficient functioning of the market.

Table 1: Summary of industry feedback on main policy issues and our proposed amended approach

Issue	Industry feedback	Our proposed amended approach
Testing of systems before connection	Respondents supported a greater focus on the quality and integrity of filters as opposed to targeting algorithms. Filters can more efficiently control for a broader range of activity and inhibit orders that might disrupt the market, irrespective of where and how those orders are entered. It is impractical to expect market participants to test algorithms for every possible scenario, especially scenarios that depend on the responses of other algorithms, systems or traders, or unforseen market events. Other respondents expressed concern about the complexity and limitations of a testing environment where not every scenario can be tested. Some respondents submitted that regulatory requirements in this area must be in line with other jurisdictions, especially regions in which Australia's markets compete.	We will not proceed with a new rule on testing of algorithms. Instead, we intend to publish guidance under existing rules to clarify our expectations for testing of systems. The guidance will focus on: testing systems, filters and controls (rather than individual algorithms); managing highly automated trading; and stress testing of flow. We intend to clarify our expectation that authorised persons' systems order flow should be tested against market participant AOP filters. Such testing should occur before use (i.e. at the developmental stage) and before implementing any material changes.
Direct control over messages and monitoring	There were mixed views on this proposal. Some respondents supported it, noting that comprehensive trading filter systems and controls were already in place: see Rule 5.6.3 of the ASIC Market Integrity Rules (ASX) and ASIC Market Integrity Rules (Chi-X). Other respondents thought the requirements placed a monitoring burden on market participants in an environment where their resources are already stretched. A number of respondents thought that the existing rule framework is adequate. Many respondents suggested ASIC publish guidance to clarify our expectations of conduct under the existing rules, rather than make new rules. In particular, guidance was requested to elaborate on recommended practices for pre-trade controls and filter settings, real-time monitoring and post-trade analysis.	We intend to proceed with a market integrity rule requiring direct control over pre-trade filters. We will not make a new rule for real-time monitoring and post-trade analysis. Rather, we intend to publish guidance clarifying our expectations for these trading system controls under existing rules.

Issue	Industry feedback	Our proposed amended approach
Guidance on order-to-trade ratio and amendment of market manipulation rule	Industry largely agreed order-to-trade was not at problematic levels and therefore that a rule was not appropriate. Some systems development and resourcing cost would be required for monitoring but this does not appear to be too significant. Industry did not support removing 'material' from the market manipulation market integrity rule on the basis that: • costs of systems development to enable effective monitoring was prohibitive; and • concern throughout industry that ASIC could progress a manipulative trading case for any order that had an impact, material or not, and regardless of intent.	We plan to proceed with the order-to-trade proposal as planned with additional guidance on factors to consider. We have reconsidered the impact of the proposals and feel that a adequate solution would be reached by including in our guidance that market participants should consider impact of any order, not only those that are material.
Controls for extreme price movements in equities and futures index	Many respondents were supportive of measures to address risks associated with the increasing use of technology in trading in equities. Based on the submissions received, there was no consensus on the 15% limit band and one-minute limit state for an automated limit up–limit down volatility control. Most agreed with the five-minute trading pause. Respondents who did not support the proposal said existing order limit and extreme cancellation range controls should be monitored before introducing more complex controls and costs. They also said the Australian market has not reached the point where volatility controls are required, and the proposal was overly complicated and needed to be simplified. In relation to anomalous order entry controls for the ASX SPI 200 Future, there was general support for this proposal. Reasons included that it maintained consistency with equities, and was easy to understand and implement. There were a number of respondents who suggested it was more appropriate to implement a percentage price movement rather than a fixed limit as a parameter. Those respondents who did not support the proposal submitted that order entry controls along with a dynamic extreme cancellation range reference price is a more appropriate volatility control for the futures market and is less complex.	We do not intend to proceed with the limit up–limit down proposal. Instead, we intend to amend existing rules on anomalous order thresholds and extreme cancellation range to require that market operators should effectively minimise the incidence of transactions executing in this range (i.e. the process will be preventative rather than reactive). The rules now refer to 'extreme trade range' rather than 'extreme cancellation range'. We intend to extend the amended rules for anomalous order thresholds and extreme trade range to the ASX SPI 200 Future: see draft rules in Chapter 2 of ASIC Market Integrity Rules (Competition) and Section B of draft updated RG 223.

Issue	Industry feedback	Our proposed amended approach
Data to assist ASIC with surveillance	While there was in-principle support to have more efficient data to assist ASIC's market monitoring function, many respondents raised concerns about costs involved and the amount of time required to implement the proposal. Other issues raised included administrative difficulties, privacy concerns, drag on innovation and the likely impact on performance and capacity, particularly around speed of execution. A number of respondents suggested that additional data could be provided on a post-trade basis, which would be more cost effective and aligned with most international practice. Industry noted its willingness to work with ASIC to provide additional data that could be readily provided. To reduce the cost of implementation for market participants, one respondent suggested the proposal be deferred to take advantage of global initiatives such as the Global Legal Entity Identifier standard of identification. Another respondent suggested that ASIC review the new suspicious activity reporting regime before requiring market participants to invest in significant technology requirements.	We intend to proceed with a rule to require a smaller set of data and client information to the extent it is available. The data requirement include: • execution venue; • capacity of participant (e.g. principal or agent only); • a reference indicating the origin of the order, to the extent that information is available to a market participant taking reasonable steps to ascertain it; • the AFS licence number where an order originates from an indirect market participant and the information is readily available; and • flagging for directed wholesale orders.
Meaningful price improvement	There was support from some respondents, particularly market operators, for the meaningful price improvement proposal. One market operator suggested an acceptable price improvement would be a minimum of half a tick and agreed that the regulatory framework should support an outcome where both buyer and seller meet their trading objectives on a lit venue with meaningful price improvement (including dark orders on lit venues). Feedback received from market participants was mixed. While some respondents agreed there should be price improvement, others did not concur with the proposed one tick size. There were also suggestions that minimum price improvement should only apply to orders executed by way of a dark venue and an exemption should apply for instances where a market participant executes as principal against a client order for facilitation purposes. Market participants that rejected the proposal stated it was unnecessary to displace the current 'at or within the spread' exception, and that there was no compelling argument to support dark liquidity intervention at this point in time. The majority of respondents preferred meaningful price improvement to refer to top-of-book rather than volume-weighted averaging, suggesting that volume-weighted averaging would be too complex, costly and susceptible to gaming.	We intend to proceed with replacing the 'at or within the spread' exception with a requirement to obtain price improvement of one tick size or midpoint. The reference price for both on-order book hidden orders and off-order book transactions will be the top-of- book national best and bid offer (NBBO): see draft Rule 4.2.3 of the ASIC Market Integrity Rules (Competition) and Section D of draft updated RG 223. We intend to continue to engage with the industry on tick sizes, including considering whether there are certain products that would benefit from smaller tick sizes to minimise incentives to trade in the dark.

Issue	Industry feedback	Our proposed amended approach
Minimum size for dark orders	There were widely divergent views with respect to the appropriate minimum size threshold. Market operators expressed strong support for the threshold. However, some respondents disagreed with the proposal on the basis that it would conflict with best execution obligations, introduce ongoing and unjustified uncertainty and may make dark pools unviable. Others did not consider there to be supporting evidence of actual deterioration of pre-trade price formation or market quality in the Australian market and suggested that the proposal should be given further consideration at a later time when the need for intervention becomes more definitive.	We do not intend to proceed with this proposal at this stage. We will continue to monitor developments in the Australian market and abroad, including the impact of the new meaningful price improvement rule. We will also continue to discuss with industry potential triggers for future application of an increased minimum size threshold for dark orders.
Enhance conflicts of interest regulation	Industry expressed the challenge in avoiding interaction with client orders that may have otherwise crossed as many times there are incidental crossings where different desks don't know what other desks are doing. There was general agreement with discouraging hard dollar payments for order flow, while some questioned our pre-emptive action given the practice is not yet prevalent in Australia.	We amended our proposal to only prohibit the market participant to intentionally interpose itself between client crossing trades. The risks to market integrity and the impact to industry practice will be much higher if we wait until hard dollar payments become an entrenched part of our market structure.
Crossing system operation	Crossing system operators questioned the need for transparency. They raised the concern that order types and fees may contain proprietary information. Market operators, fund managers, super funds and retail support greater transparency. There is some industry resistance, based on the understanding that the current draft rule may require system builds to monitor 'orders entered and trades matched' in crossing systems for compliance with user obligations and operating procedures, and that this may require real-time monitoring. There are also concerns about excessive costs associated with additional record keeping obligations. Industry expressed that the 60 minute time frame for notification of crossing system failure is too prescriptive and doesn't take account of the type of outage. They also viewed notifying 'all users' as administratively burdensome and only see a need to notify those users who are impacted by outage.	We propose to make minor technical adjustment to strike a more appropriate balance between transparency and disclosure obligations, we propose to: • no longer require order types and fees to be made public but instead only disclosed to clients; and • remove the requirement to publish aggregate turnover statistics and information regarding connected crossing systems. We propose to limit crossing system's monitor obligations and proceed with enhanced suspicious activity reporting to ASIC. We propose to only require notification to users that may be affected by system outages and remove the 60 minute requirement.

Source: Report 290 *Response to submissions on CP 168 Australian equity market structure: Further proposals* (REP 290).

H Implementation and review

503 We intend to implement our proposals through market integrity rules. This is a rule-making power under the *Corporations Amendment (Financial Market Supervision) Act 2010*. Market integrity rules are legislative instruments. ASIC requires Ministerial consent before making any rules and any rules are subject to Parliamentary disallowance.[101]

504 The proposed market integrity rules would supplement the existing ASIC Market Integrity Rules (ASX), which came into effect on 1 August 2010, and will supplement any new market integrity rules that are created for new market operators.

505 We recognise that certain proposals that form part of the new regulatory framework will take time and investment to implement and may affect the businesses of stakeholders. Following feedback from consultation, we have made amendments to our initial proposal to promote a fair, orderly and transparent equity market, while limiting the impact to stakeholders.

506 In relation to some proposed rules, we recognise that substantial system and process changes may be required, and intend to provide transitional arrangements to allow market participants some flexibility in their implementation strategy. For CP 168 proposals, we allow staggered implementation up to about 18 months from when rules are made. For CP 202 proposals, we allow staggered implementation up to about 9 months from when rules are made.

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Compliance regime

508 We intend that each market integrity rule will have a penalty amount, categorised as Tier 1 ($20,000), Tier 2 ($100,000) or Tier 3 ($1 million), consistent with the existing penalty ranges under the ASIC Market Integrity Rules (Competition) and described in Regulatory Guide 216 *Markets Disciplinary Panel* (RG 216). RG 216 also outlines the policies that the Markets Disciplinary Panel will apply in determining penalties, and other remedial action that may apply.

509 We consulted on the proposed maximum penalties for contravention of each market integrity rule in CP 168, CP 179, CP184 and CP 202, and received little feedback on the appropriate maximum penalty for each rule.

[101] A House of Parliament may disallow a market integrity rule within 15 sitting days after it is tabled in the House if a motion to disallow has been given and, within the 15 days, a resolution to disallow is passed, the motion is not withdrawn or the motion is not acted upon.

510 The proposed guidance outlines our expectations for compliance with the market integrity rules. The guidance does not add new obligations; nor does it incur penalties for non-compliance over and above those applicable to the rules.

511 In addition to the penalties for breaches of market integrity rules, ASIC may add conditions to the AFS licence of a market participant or revoke that licence and the Minister may do the same for market operators. In certain circumstances, ASIC may also direct a market operator to take certain action or refrain from taking certain action.

Regulatory guidance

512 We propose to publish regulatory guidance to assist industry to comply with the proposed regulation.

Education

513 We intend to engage industry about the best mechanism to educate the wider marketplace on the issues raised in relation to the proposed new regulatory framework. Education for retail investors may be required about the changing market landscape, proposed new investor protections (e.g. best execution), what the changes mean and where to get advice. It may be communicated, for example, through:

(a) our consumer website (MoneySmart);

(b) articles in relevant financial and industry association magazines; and

(c) specific ASIC publications.

Review of regulatory framework

514 On an ongoing basis, we intend to review the regulatory framework to make any adjustments as a result of developments in the market and the international regulatory environment. We expect to comprehensively consult on any future proposed amendments.

Key terms

Term	Meaning in this document
(ACOP) automated client order processing	See 'DEA'
AFS licence	An Australian financial services licence under s913B of the Corporations Act that authorises a person who carries out a financial services business to provide financial services Note: This is a definition contained in s761A of the Corporations Act.
agency	Where a market participant acts on behalf of a client
algorithm/algorithmic trading	Electronic trading activity where specific execution outcomes are delivered by predetermined parameters, rules and conditions
algorithmic program	Automated strategies using programmable logic/system-generated orders (rather than human-generated orders) based on a set of predetermined parameters, logic rules and conditions. These include algorithmic trading, automated order generation, high-frequency trading and automated market making
AOP (automated order processing)	The process by which orders are registered in a market participant's system, which connects it to a market. Client or principal orders are submitted to an order book without being manually keyed in by an individual (referred to in the rules as a DTR). It is through AOP systems that algorithmic programs access our markets
arbitrage	The process of seeking to capture pricing inefficiencies between related products or markets
ASIC	Australian Securities and Investments Commission
ASIC Market Integrity Rules (ASX)	ASIC Market Integrity Rules (ASX Market) 2010—rules made by ASIC under s798G of the Corporations Act for trading on ASX
ASIC Market Integrity Rules (Chi-X)	ASIC Market Integrity Rules (Chi-X Australia Market) 2011—rules made by ASIC under s798G of the Corporations Act for trading on Chi-X
ASIC Market Integrity Rules (Competition)	ASIC Market Integrity Rules (Competition in Exchange Markets) 2011—rules made by ASIC under s798G of the Corporations Act that are common to markets dealing in equity market products quoted on ASX
ASX	ASX Limited (ACN 008 624 691) or the exchange market operated by ASX Limited

Term	Meaning in this document
ASX 24	The exchange market formerly known as Sydney Futures Exchange (SFE), operated by Australian Securities Exchange Limited
ASX guidance notes	Guidance notes providing assistance to ASX market participants on ASX's interpretation of the former ASX Market Rules
ASX Operating Rules	ASX Limited's new operating rules, which replace the pre-existing ASX Market Rules
ASX SPI 200 Index Future (SPI Future)	The ASX 24 futures contract listed with S&P/ASX 200 as the underlying product
Australian domestic licensed financial market	A financial market licensed under s795B(1) of the Corporations Act
Australian market licence	Australian market licence under s795B of the Corporations Act that authorises a person to operate a financial market
best available bid and offer	See 'NBBO'
best bid or offer	The best available buying price or selling price
best execution	Where a market participant achieves the best trading outcome for its client
bid–ask spread	The difference between the best bid and the best offer
block crossing/trade	A crossing where the consideration for the transaction is not less than $1 million (pre-trade transparency exception in ASIC Market Integrity Rules (Competition))
Centre Point	An ASX-operated execution venue that references the midpoint of the bid–ask spread on ASX's CLOB
Centre Point priority crossing	A type of crossing that occurs on Centre Point, allowing an ASX market participant to match orders at the midpoint of the prevailing best bid and offer on the ASX CLOB
Chi-X	Chi-X Australia Pty Limited or the exchange market operated by Chi-X
CLOB (central limit order book)	A central system of limit orders, where bids and offers are typically matched on price–time priority
CFTC	Commodity Futures Trading Commission
CMCRC	Capital Markets Cooperative Research Centre

Term	Meaning in this document
CME	Chicago Mercantile Exchange
co-location	Facility offered by a market operator whereby market participants (and possibly clients of market participants) are able to place their trading processing servers within the same physical location as the market operator's processing servers to minimise latency
Corporations Act	*Corporations Act 2001*, including regulations made for the purposes of that Act
CP 145 (for example)	An ASIC consultation paper (in this example numbered 145)
crossing	A type of transaction where the market participant is the same for both the buyer and the seller. The market participant may be acting on behalf of the buying client and the selling client, or acting on behalf of a client on one side of the transaction and as principal on the other side of the transaction
crossing system	An automated service provided by a market participant to its clients that matches or executes client orders with orders of the market participant (i.e. against the participant's own account) or with other clients of the market participant. These orders are not matched on a pre-trade transparent order book
dark liquidity	Non-pre-trade transparent orders
dark liquidity/trading below block size	Trades using the 'at or within the spread' exception to pre-trade transparency. These include priority crossings, Centre Point priority crossings, and Centre Point trades
dark pool/venue	Non-pre-trade transparent, electronically accessible pools of liquidity
dark trades/trading	See 'off-order book trading/transactions'
DEA (direct electronic access)	Electronic access to markets via the electronic infrastructure of a market participant. Also known as ACOP in Australia, DEA is the process by which an order is submitted by a client, agent or participant representative into a market participant's AOP system directly without human intervention. DEA enables a client to access a market without being a direct market participant and without being directly bound by the operating rules of the market they are accessing
DTR	Representative of the market participant that has been authorised by the participant to submit trading messages to the execution venue on behalf of the participant

Term	Meaning in this document
ELP (electronic liquidity provider)	Typically, high-frequency traders or algorithmic traders who attempt to profit by providing continuous two-sided quotes for liquid securities on an unofficial basis to capture the bid–ask spread of a product
equity market	The market in which shares are issued and traded, either through exchange markets or OTC markets
equity market products	Shares, managed investment schemes, the right to acquire by way of issue shares and managed investment schemes, and CDIs admitted to quotation on ASX
ETF	Exchange-traded fund
ETF special trade (exchange-traded fund special trade)	Has the meaning given to the term 'ETF Special Trade' by the ASX Operating Rules
exchange market	A market that enables trading in listed products, including via a CLOB Note: Not all exchange markets offer primary listings services.
execution venue	An execution venue is a facility, service or location on or through which transactions in equity market products are executed and includes: • each individual order book maintained by a market operator; • a crossing system; and • a market participant executing a client order against its own inventory otherwise than on or through an order book or crossing system. This includes an order book and other matching mechanisms
extreme cancellation range	Range within which trades are required to be cancelled, as outlined in Chapter 2 of ASIC Market Integrity Rules (Competition)
extreme trade range	Has the meaning given in Rule 2.2.1 of ASIC Market Integrity Rules (Competition]
financial market	As defined in s767A of the Corporations Act. It encompasses facilities through which offers to acquire or dispose of financial products are regularly made or accepted
financial product	Generally a facility through which, or through the acquisition of which, a person does one or more of the following: • makes a financial investment (see s763B); • manages financial risk (see s763C); and • makes non-cash payments (see s763D)

Term	Meaning in this document
financial market	As defined in s767A of the Corporations Act. It encompasses facilities through which offers to acquire or dispose of financial products are regularly made or accepted
financial product	Generally a facility through which, or through the acquisition of which, a person does one or more of the following: • makes a financial investment (see s763B); • manages financial risk (see s763C); and • makes non-cash payments (see s763D) Note: See Div 3 of Pt 7.1 of the Corporations Act for the exact definition.
fragmentation	The spread of trading and liquidity across multiple execution venues
fully hidden order	An order on an order book that is not pre-trade transparent
high-frequency traders	High-frequency traders that adopt a specialised form of algorithmic trading characterised by the use of high-speed computer programs
high-frequency trading	While there is not a commonly agreed definition of high-frequency trading, we characterise it as: • the use of high-speed computer programs to generate, transmit and execute orders; • the generation of large numbers of orders, many of which are cancelled rapidly; and • typically holding positions for very short time horizons and ending the day with a zero position
institutional investor	Advising institutions typically concerned with buying, rather than selling, assets or products. The most common types of institutional investors include private equity funds, mutual funds, unit trusts, hedge funds, pension funds and proprietary trading desks
IIROC	Investment Industry Regulatory Organization of Canada
indirect market participant	A broker that is not itself a market participant, but that accesses the market through a market participant
internalisation	Where a client order is transacted against a market participant's own account
IOSCO	International Organization of Securities Commissions
issuer	A company that has issued shares
latency	An expression of how much time it takes for data to get from one point to another

Term	Meaning in this document
limit order	An order for a specified quantity of a product at a specified price or better
limit up–limit down	A control mechanism that aims to address volatility in markets by preventing trades in products from occurring outside a specified price band over a period of time. Sometimes referred to as a 'collar'
liquidity	The ability to enter and exit positions with a limited impact on price
market impact	The effect on the formation of price, volume and market depth created by order flow or trading activity. This includes the associated cost incurred when the execution price differs from the target price, or when the liquidity required by the execution is different from the liquidity available
market integrity rules	Rules made by ASIC, under s798G of the Corporations Act, for trading on domestic licensed markets
market licence	An Australian market licence
market maker	An entity that provides liquidity to a market when it is generally absent or weak, and manages short-term buy and sell imbalances in customer orders by taking the other side of transactions. Market makers often take on this role in return for rebates and/or various information and execution advantages
market manipulation	As defined in Pt 7.10 of the Corporations Act
market operator	A holder of an Australian market licence that is the operator of a financial market on which equity market products are quoted
market order	An order at the best price currently available
market participant	An entity that is a participant of a financial market on which equity market products are quoted
meaningful price improvement	Where the trade is for a volume less than or equal to the volume displayed at the best available price, we consider 'meaningful' price improvement to be a one tick size price improvement or the midpoint of the best available bid and best available offer. Where the trade is for a volume greater than the volume available at the best bid and offer across the pre-trade transparent order books, price improvement may take into account the volume-weighted average price of the available orders rather than best prices only
MiFID	Markets in Financial Instruments Directive

Term	Meaning in this document
NBBO (national best bid and offer)	The highest bid (best buying price) and the lowest offer (best selling price) for a product that is available across all pre-trade transparent order books at the time of the transaction. The best bid and best offer may not necessarily be on the same order book. It may be that the best bid is on the order book of Market X and the best offer is on the order book of Market Y
NYSE	New York Stock Exchange
off-order book trading/transactions	Transactions that take place away from a CLOB and that are not pre-trade transparent. It is often referred to as 'dark liquidity' or 'upstairs trading'. It includes bilateral OTC transactions and transactions resulting from a market participant matching client orders or matching a client order against the participant's own account as principal. When this type of trading is done in an automated way and is part of a pool of liquidity, it is referred to as a 'dark pool'
operating rules	As defined in s761A of the Corporations Act
order book	An electronic list of buy orders and sell orders, maintained by or on behalf of a market operator, on which those orders are matched with other orders in the same list
OTC	Over-the-counter
partly disclosed order	An order on an order book that is pre-trade transparent with the exception of either price or volume
passive order	The unfilled balance of an active order, or any limit price order which is not immediately executable (i.e. priced to buy below the current offer, or priced to sell above the current bid)
portfolio crossing	See 'large portfolio trade'
post-trade transparency	Information on executed transactions made publicly available after transactions occur
pre-trade transparency	Information on bids and offers being made publicly available before transactions occur (i.e. displayed liquidity)
price formation	The process determining price for a listed product through the bid and offer trading process of a market
price step	The difference in price of one tick size

Term	Meaning in this document
price–time priority	A method for determining how orders are prioritised for execution. Orders are first ranked according to their price; orders of the same price are then ranked depending on when they were entered
priority crossing	A type of crossing on ASX's CLOB that is transacted at or within the spread with time priority
PureMatch	An ASX-operated low latency order book that provides trading in a subset of ASX-listed securities (intended for commencement in the Australian market in the fourth quarter of 2011)
REP 215	ASIC report *Australian equity market structure*, released 4 November 2010
RG 223 (for example)	An ASIC regulatory guide (in this example numbered 223)
Rule 5.6.3 (ASX) (for example)	A rule of the ASIC Market Integrity Rules (ASX) (in this example numbered 5.6.3)
Rule 5.6.3 (Chi-X) (for example)	A rule of the ASIC Market Integrity Rules (Chi-X) (in this example numbered 5.6.3)
Rule 4.2.3 (Competition) (for example)	A rule of the ASIC Market Integrity Rules (Competition) (in this example numbered 4.2.3)
S&P/ASX 200 Index or S&P/ASX 200	An index of the largest 200 shares listed on ASX by market capitalisation
SPI Future	ASX SPI 200 Index Future
s912 (for example)	A section of the Corporations Act (in this example numbered 912), unless otherwise specified
SEC	Securities and Exchange Commission (US)
settlement	The exchange of payment and delivery for purchased securities
SFE	The market formerly known as Sydney Futures Exchange (now ASX 24)
short selling	The practice of selling financial products that are not owned by the seller, with a view to repurchasing them later at a lower price. Short sales can be naked or covered
spread	The difference between the best bid and offer prices
synchronised clock	A system time clock that matches a reference source clock

Term	Meaning in this document
tick size	The minimum increment by which the price for an equity market product may increase or decrease
trade report	An electronic message created when a transaction is executed, detailing the terms of the transaction
trade-through	A model and rule that embeds price–time priority across multiple pre-trade transparent venues to protect displayed bids and offers from being bypassed
trading halt or suspension	A temporary pause in the trading of a product for a reason related to market integrity, such as when an announcement of price-sensitive information is pending (this does not include a halt or suspension caused by a technical problem, including a power outage, affecting a market operator's trading system)
volatility	Fluctuation in a product's price
volatility control	A post-order control that prevents certain orders from being matched beyond set price limits. These controls aim to limit the disruptive effect of anomalous trades

Appendix 1: Summary of key CP 168 & CP 202 policy proposals and refined propositions

Table 2: Summary of key CP 168 policy proposals and refined propositions

Issue	Key proposal	Substance of refined propositions
Automated trading	'Kill switch' capability and other trading system controls.	Make a new rule for 'kill switch' capability and requiring direct control over filters, with amended drafting. No new rule for real-time monitoring and post-trade analysis. Publish guidance clarifying our expectations for these trading system controls under existing rules.
	Testing of algorithms and annual review of systems.	Amend existing rules to incorporate an annual review of systems. No new rule on testing of algorithms. Publish guidance clarifying our expectations on testing of systems under existing rules (including of order flow via algorithms).
	Additional minimum standards for direct market access.	No new rule. Publish guidance clarifying our expectations for additional minimum standards for direct market access under existing rules.
	Guidance on order-to-trade ratio.	Issue guidance to the market clarifying our expectations regarding market participants obligations to consider and monitor order-to-trade ratios.
	Enhance enforceability of market integrity rules on market manipulation.	Amend market integrity rules to enhance their enforceability against misconduct carried out through trading algorithms without removing reference to 'materiality' in the original rule.
Extreme price movements	Limit up–down control for cross-traded products.	No new rule. Amend existing rules on anomalous order thresholds and extreme cancellation ranges.
	Limit up–down control for ASX SPI 200 Index Future.	Apply the amended anomalous order thresholds and extreme cancellation ranges rules to the ASX SPI 200 index futures contract.
Enhanced data for surveillance	Identification of: • execution venue; • the category of client (e.g. principal or agent, retail or wholesale); • the origin of order (including if indirect broker); and • the algorithm that generated the order.	Make a new rule requiring identification of: • execution venue; • principal or agency orders; • the origin of order (including client reference) where information is readily available (guidance to be provided); • the AFS licence number of a client order (where this originates from a shadow broker/indirect market participant and information is readily available); and • orders originating from wholesale clients through DEA with non-discretionary routing and execution instructions. No new rule for client legal identifier on all orders.

Issue	Key proposal	Substance of refined propositions
	Enhanced clock synchronisation for market operators and new requirement for participants.	No new rule. Keep under review.
	Records to ASIC in standard format.	No new rule. Publish guidance on a standard format for provision of information. Revise content to ensure information required will be easier to source.
Pre-trade transparency (dark liquidity)	Meaningful price improvement for dark trades below block size (one tick or at midpoint).	Make new rule on price improvement as proposed.
	If dark liquidity below 'block size' grows by 50% in next 3 years—impose $50,000 threshold for dark trades from passive (limit) orders.	No new rule on minimum size threshold. Keep under review. Remain prepared to introduce if the price discovery function of the market is likely to be compromised.
	Tier 'block size' exception (currently $1m) to range from $200,000 to $1m.	Amend the 'block size' threshold rules as proposed—in conjunction with the new price improvement rule.
	Enhance conflict of interest obligations for market participant when dealing with client order flow.	Proceed with proposed enhancements to conflict of interest regulation.
Crossing system operation	Transparency and disclosure.	Proceed with minor technical adjustment to strike a more appropriate balance between transparency and disclosure obligations.
	Client's right to opt-out of crossing system.	Remove 'at no additional cost' requirement.
	Crossing system to be operated without undue discrimination.	Proceed with proposal.
	Operator monitoring of conduct in crossing systems.	Limit crossing system's monitoring obligations and proceed with enhanced suspicious activity reporting to ASIC.
	Adequate systems, controls and client notifications.	Only require notification to users that may be affected by system outages and remove the 60 minute requirement.

Issue	Key proposal	Substance of refined propositions
Implementation timetable	For CP 168 proposals, we allow staggered implementation up to about 12 months from when rules are made. For CP 202 proposals, we allow staggered implementation up to about 9 months from when rules are made.	For CP 168 proposals, staggered implementation up to about 18 months from when rules made. For CP 202 proposals, we allow staggered implementation up to about 9 months from when rules are made.