

Transparency and Market Fragmentation



**Report from the Technical Committee
of the
International Organization of Securities Commissions**

November 2001

Transparency and Market Fragmentation

Executive summary

Market transparency is generally regarded as playing a central role in promoting the fairness and the efficiency of markets. To the extent that competition in the provision of trade execution services fragments a market, regulators need to consider the adequacy of the transparency arrangements for individual ‘trading venues’ as well as the necessity and ability to consolidate this information. This is important not only to optimizing trading opportunity but also to the maintenance of efficient pricing.

In considering these issues, regulators need to:

- ensure that they have developed coherent objectives and principles for transparency that they can apply in a way that addresses the dynamics of different trading methods;
- consider the approach they should take in the event of significant differences in transparency among different trading venues (and jurisdictions) in which the same instrument is traded;
- assess whether there is a need for regulatory intervention to ensure that trading information from multiple trading venues is made available to market users in a manner consistent with market efficiency, fairness and investor protection.

However, transparency alone may not always be sufficient in itself to ensure that competition among providers of trade execution services delivers higher quality price formation for market users. To ensure that competition delivers benefits to the overall market, regulators may also need to review other factors such as market access, time priority, order handling rules and reference pricing¹.

¹ “Reference pricing” generally refers to a method of trading employed by certain venues, in which buying and selling interests are periodically matched, usually anonymously, by reference to a price established elsewhere (e.g., in the primary market for a security).

Introduction

Market transparency – in essence, the widespread availability of information relating to current opportunities to trade and recently completed trades² – is generally regarded as central to both the fairness and efficiency of a market, and in particular to its liquidity and quality of price-formation.

In a fully centralized market, there is a single set of transparency arrangements and the consolidation of relevant trading information should be straightforward. When competing trading centres emerge, that situation is likely to change. While competition among providers of trade execution services³ may improve a market’s efficiency, it may, in some circumstances, have a detrimental effect. This would be the case where, for instance, competition results in fragmentation that leads to significantly different transparency levels across the market and/or excessively high search costs for market participants⁴ and their customers.

In view of the increased competition (and resulting fragmentation) in some markets in recent years, the Technical Committee mandated its Standing Committee on the Regulation of Secondary markets (TCSC-2) to assemble information on the nature of fragmentation and on transparency arrangements in member jurisdictions, and to consider the transparency issues that arise when markets fragment.⁵

TCSC-2 has focused its work, which concentrates on markets for equities and derivatives⁶, on identifying the nature and drivers of fragmentation and issues relating to the availability of, and access to, trading information. However, it recognized that in fragmented markets transparency alone is unlikely to prove sufficient to ensure high quality price discovery. The paper therefore considers a number of additional issues relevant to the quality of price formation in fragmented markets. These include access to trading venues, time precedence, order handling arrangements and reference pricing. The paper is organized as follows. Following this introductory section, Section I briefly reviews the importance of transparency to the fairness and efficiency of the price discovery

² “Market transparency” can generally be defined as the ability of market participants to obtain information about the trading process, e.g. price, order size, trading volume, risk and trader identity. Ananth Madhavan, *Market Microstructure: A Survey* 33 (2000), available at <http://papers.ssrn.com> (citing Maureen O’Hara, *Market Microstructure Theory* (1985)). It pertains to both pre-trade and post-trade information and critically depends on the willingness of participants to show and the exchange’s ability to publicly display buy and sell orders. This paper does not discuss whether traders should be identified.

³ The term ‘trade execution service’ in this paper refers to a market service that results in a trade between the parties using the service, as a result either of user orders being directly matched, or as a result of a trade involving a market intermediary acting as principal. The arrangements within which the trading process takes place are variously referred to in the paper as exchanges, trading platforms, market venues etc, depending on context.

⁴ The report uses the term market participant to refer to parties who members are of or who otherwise directly participate in a trading facility (but not to other parties who may be able to access a trading facility but only indirectly as a client of the participant).

⁵ In general, the term “market fragmentation” refers to the existence of multiple market centres (exchange markets, over the counter (OTC) market makers and Alternative Trading Systems (ATS)), through which the same securities are bought and sold. As a result, the location of buying and selling interest for individual securities is “fragmented” to the extent that quotations and orders in different trading venues do not have an opportunity to interact.

⁶ While this report focuses on issues raised in equity and derivative markets, many of the issues and observations in the report may also have relevance for bond markets, depending on their structure (See also footnote [13])

process. Section II identifies the major drivers of market competition and causes of fragmentation and identifies where market fragmentation has appeared and its scale. Section III considers the issues raised by fragmentation and possible options for mitigating any adverse effects. Section IV sets out the Technical Committee's overall conclusions.

The annexes include a survey of current transparency arrangements in member countries (Annex 2) and some references about the economic literature on transparency and fragmentation (Annex 1).

I. Transparency as a Regulatory Objective

I.1 The role of transparency

IOSCO views transparency as a core principle in market regulation, stating in its "*Objectives and Principles of Securities Regulation*" that "regulation should promote transparency of trading".⁷ This reflects member organizations' view that transparency plays a central role in promoting the fairness and efficiency of markets.

Wide availability of information on bids and offers ('pre-trade transparency') is a central factor in ensuring efficient price discovery in a market and in strengthening users' confidence that they will be able to trade at good prices. This confidence should, in turn, increase the incentive to participate in the market, further increasing liquidity and stimulating more competitive pricing.

Information in respect of the volumes and prices of completed trades ('post-trade transparency') enables market participants, and their customers, not only to take into account the most recent information on volumes and prices but also to monitor the quality of execution they have obtained compared with other market users.

In general, the more complete and more widely available is trading information, the more efficient the price discovery process should be, and the greater the public's confidence in its fairness.⁸ However, establishing market transparency standards is not straightforward. Although the importance of transparency to overall market efficiency and fairness is widely recognised, the interest of individual market participants and their customers in transparency levels varies. Wide availability of trading information may attract participation by some traders who might otherwise stay out of the market, but it may disincentives others - for instance, those interested in entering into larger trades or putting up capital to facilitate larger trades (who might see immediate disclosure as likely to turn the market against them).

⁷ The IOSCO Objectives and Principles of Securities Regulation (September 1998) lists as one of its three core objectives of securities regulation "ensuring that markets are fair, efficient and transparent" and further states, in Principle 27, that "Regulation should promote the transparency of trading".

⁸ As underlined in the Toronto Stock Exchange Report on Fragmentation, published in 1997, an ideal market may be characterized by seven attributes: immediacy, liquidity, transparency, price discovery, fairness, integrity of the credit ring (i.e., integrity of the creditworthiness of direct clearing participants) and integrity of the market.

Regulators therefore need to assess the appropriate level of transparency in any particular product market with considerable care. On one hand, they need to consider when the transparency levels established by market providers (or user convention) result in sub-optimal efficiency - i.e., allowing some participants to extract profits at the expense of efficient order interaction and price formation - so tending to undermine market confidence. On the other hand, they must be aware of the circumstances in which transparency levels may materially reduce liquidity or encourage a migration of business to more accommodating environments.

These fundamental issues relating to transparency have already been extensively explored in “Transparency on Secondary Markets: A Synthesis of the IOSCO Debate” (1992), which analyses secondary market transparency issues in the context of order-driven and quote-driven markets. This paper concentrates more on the specific issue of delivering adequate transparency arrangements across multiple market venues and the risks to investors and overall market efficiency that may occur without adequate arrangements.

II. Market Fragmentation

II.1 Increased competition among market service providers

A major feature of securities and derivatives markets in recent years has been the sharp increase in competition among service providers - whether exchanges or investment firms – to offer trade execution services in the same securities or essentially similar derivative products (i.e., products designed to hedge the same underlying risk).

This competition, which has been facilitated primarily by the power, flexibility and reach of modern electronic trading systems and the resultant impact on the business model of market service provision, is having a profound effect on market microstructure.⁹ Providers of trade execution services can now offer their services internationally (via remote participation¹⁰), handle huge volumes and electronically link a trade execution service to other key parts of the “value chain”¹¹. Moreover, new entrants can enter the market relatively cheaply, with the possibility of expanding an electronic service much more rapidly and extensively than would be the case with a floor-based service.

The flip side of this competition to win market share is, of course, the potential for fragmentation particularly in those markets that have historically been centralized.¹² The extent and

⁹ *Market microstructure* is the “study of the process and outcomes of exchanging assets under explicit trading rules.” Maureen O’Hara, *Market Microstructure Theory* 1 (1995).

¹⁰ The term “remote participation” generally refers to foreign entities that have a contract with a trading platform to participate in trading on the platform by electronic connection.

¹¹ Value chain consists of one or a few primary value service suppliers and many other suppliers that add on the value that is ultimately presented to the buying public. The value chain in securities transactions may include, as well as order matching and principle dealing, advice, order-routing and clearing and settlement services.

¹² Competition and new trading platforms do not always fragment a market. Clearly, they are likely to do so where the market has previously been centralized, as with most equity markets. However, in markets that have previously been

nature of fragmentation varies considerably among asset markets and countries. In some asset markets, the degree of fragmentation is considerable, but in others the market remains largely or totally centralized.

Among the factors determining the extent of fragmentation in the market for a particular instrument are likely to be:

- The size of the market and whether there is sufficient liquidity to sustain multiple venues;
- The relative efficiency and service levels of the established operator(s) and new entrants into that market;
- The business models and business incentives of major trading venues and market intermediaries;
- The degree to which each national regulator's approach tends to facilitate or constraint competition/fragmentation, depending on the circumstances of its legislative and/or market environment.

II.2 The principal areas of competition

There are four principal areas in which providers of trade execution services compete. The accompanying table sets out the main sources of competition for established markets (as represented in the left hand column according to their predominant trading structure).

Competitive factors making for fragmentation

Established central market, by core trading method	Sources of competitive challenge					
	Product development	Alternative systems/methods		trading	Service/efficiency	Internalization
Dealer/Market maker	Secondary listings/admissions International index products		Guaranteed liquidity providers	Reference price crossing systems designed to reduce market impact	Lower transaction costs, better technology, general efficiency, added value services (e.g. clearing)	Broker/dealer internalization of orders – including through payment for order flow arrangements – without affording public exposure
Order-Matching Market	Look-alike derivative contracts	Order-matching systems				

largely decentralized markets, the result of new entrants offering multilateral electronic trading facilities has often been to bring more consolidation and transparency to those markets. This has been particularly the case in bond markets and markets in increasingly standardized derivatives, such as swaps.

a) Product development

Product development - with a view to increasing listing fees (where applicable) and trading revenues (for participants as well as themselves) - is a core and long-established function of most exchanges. For securities exchanges, this will sometimes involve competing to attract secondary listings¹³.

Exchanges generally promote secondary listings as offering issuers the possibility of being able to tap new sources of capital and/or to benefit from the depth and efficiency of their markets. From an issuer's viewpoint, a secondary listing - or a number of secondary listings- may enable it not only to tap additional sources of liquidity, but also to expose itself to investors who may rate its securities more highly than its home market investors and/or to raise its corporate profile in jurisdictions that are important to it commercially.

In some cases, exchanges and other providers of trade execution services also trade securities that are listed elsewhere without seeking any formal listing agreement with the issuer. This often occurs in response to demand from market participants to provide a trading facility in the security when they consider there is sufficient local interest in the security. But it may also occur when exchanges with the ability to offer extensive remote access want to build their international appeal by offering trading in a wider range of securities and products based on those securities (e.g., covered warrants on baskets, indices, etc).

Although secondary listings on foreign markets sometimes fail to deliver the expected benefits, competition for dual listings has remained strong in several areas, particularly to provide access for 'emerging economy' issuers to the major liquidity centers and to provide new, high-tech issuers with specialist platforms designed specifically to attract investors in "New Economy" shares. It remains to be seen whether this trend will be in any way slowed by the development of domestic trading platforms capable of offering global access and 24-hour trading. At present, however, time-zone considerations and requirements for the local registration of publicly traded securities seem likely to continue to support this competition.

In the derivatives markets, the competition/fragmentation issue is rather different. Contracts based on the same asset but traded on different exchanges are seldom identical [and rarely fungible]. Nonetheless, the last few years have seen increasing competition among derivative exchanges to develop contracts aimed at hedging the same 'underlying' risk, whether in the area of interest rates, commodities or equities¹⁴. In the case of US equity options, for example, there has

¹³ Exchanges do, of course, also compete for primary listings, but that in itself does not fragment the market in a security. For example, the three US "classic" primary markets (the NYSE, NASDAQ and AMEX). The classic regional stock exchanges include the Boston, Chicago, Cincinnati, Pacific and Philadelphia stock exchanges. In addition, there are five U.S. options exchanges (AMEX, CBOE, ISC, Pacific and Philadelphia). Germany has eight regional securities exchanges (Berlin, Bremen, Hamburg, Hanover, Düsseldorf, Frankfurt, and Stuttgart). In addition there are one future exchange (Eurex), two energy exchanges (EEX, LPX) and one commodity future exchange (Hanover). For example, Virt-x designated to work as a pan-European exchange. It was created by SWX Swiss Exchange and the Tradepoint Consortium and launched in June 2001. The basis of the Virt-x market are the 29 blue chips of the SMI (Swiss Market Index), which are traded on Virt-x only; the listing authority for these stocks remains the SWX in Switzerland. Furthermore, as one platform for all major European indices, the main UK and European blue chips can be traded. The phenomena of fragmentation occur especially for these stocks, which remain primarily listed at their home exchanges.

¹⁴ US exchanges compete to provide options on the same US equities; Eurex in Germany and LIFFE in the UK fought a long battle to achieve the dominant Bund contract.

been a recent increase in the listing of option classes on multiple U.S. markets that were previously listed on a single exchange¹⁵. Whereas in August 1999, only 32 percent of equity options classes were traded on more than one exchange, by the end of June 2000, the number of equity options classes that were multiply traded had risen to 48 percent, a 50 percent increase.¹⁶ More recently still, exchanges in both Europe and the US have been developing markets to trade single stock futures on the same underlying equities, while NYMEX in the US has drawn up plans to offer a similar contract in Brent crude to that traded on the International Petroleum Exchange in the UK.

b) Alternative systems/methods of trade execution

A very significant source of competition in some markets has come from the development of new trading systems offering alternative trading methods. In this case, different market centers typically offer services that cater to a particular type of trade and/or customer. This form of competition has been particularly apparent in two areas.

Order-matching systems have made significant inroads in some markets that have traditionally been quote-driven/dealer markets, particularly with respect to trading in highly liquid securities. The main attraction for users has been the potential these systems offer to trade without paying the market maker's 'turn' and, in the case of systems with significant share in a market, to see more information relating to the depth of supply and demand in that market. The major example of this type of competition/fragmentation in the last few years has probably been that caused by competition between trading methods in the United States, in particular in equities traded on Nasdaq. Here, in addition to an average of 11.4 market makers per Nasdaq issue as at September 1999¹⁷, eight Alternative Trading Systems offering electronic limit order-book trading had collectively captured 43% of trades in Nasdaq equities, representing over 30% of the total Nasdaq share volume traded, during the month of July, 2001¹⁸. Secondly, **trading systems designed to remove market impact costs** from a transaction have attracted increasing interest from professional fund managers in recent years as they have focused more keenly on total trading costs¹⁹. These

¹⁵ In the U.S. options markets, all exchange-traded options are issued by the same clearing house and are fungible across markets.

¹⁶ Exchange Act Release No. 43,085 at 4 (July 28, 2000); available at <www.sec.gov/rules/proposed/34-43085.htm>.

¹⁷ NASD, <<http://www.marketdata.nasdaq.com>> (visited Dec. 11, 1999). There was an average of 47.5 market makers in the top 1% of issues by daily dollar trading volume, 24.0 market makers in the next 9% of issues, and 4.9 market makers in the bottom 10% of issues.

¹⁸ NASD, <<http://www.marketdata.nasdaq.com>> (visited September, 2001). In calculating the market share of Alternative Trading Systems (ATS), the NASD adds the orders executed internally on an ATS and the orders routed to an ATS for execution. Orders routed out to another market participant are not included.

¹⁹ This is generally at its most acute in respect of 'informational' trades and larger trades – whether large in absolute terms, or large relative to the overall liquidity in an instrument. The particular issue with these trades is the market impact costs of the transaction, i.e. the cost of the transaction in terms of the change in price needed to complete it. Invariably, the market impact costs far outweigh commission and other processing costs. This is a particularly important consideration for investors striving to improve performance and for intermediaries putting up capital to facilitate larger transactions. Unsurprisingly, investors and service providers wanting to undertake larger trades prefer to use trading processes that reduce their exposure to these costs. To some extent, their concerns can be mitigated by devices such as fully anonymous order books, by allowing them to become direct participants in the trading system (reducing their concerns about front-running on larger orders) or by introducing order-books that accommodate hidden

systems generally enable the entry, in total secrecy as to size or originator, of buy and sell orders for matching on the basis of a price established elsewhere – commonly the mid-price of the instrument at a specific time on the market centre where it is most heavily traded. These systems tend to have strongest appeal for the trading of less liquid securities where spreads tend to be relatively wide and the appearance of even a mid-size institutional order might move the price materially.

Among broker-dealers, for example, the POSIT crossing system developed by ITG now operates in Europe as well as the US and offers crossing services in US and European securities. A number of European institutional investors have recently established E-Crossnet to provide them with a crossing service in a range of European equities²⁰. Interest in this kind of facility has prompted several exchanges to respond with rival offerings. The New York Stock Exchange has for some years provided an end of day crossing session based on the closing price (as opposed to an open auction to determine the closing price), and several European exchanges have recently introduced or are considering similar functionality. The Toronto Stock Exchange has also announced the introduction of a crossing session based on the average volume-weighted price of the trading of the security throughout the day and the introduction of the POSIT crossing system.

c) Service competition

With trading costs and efficiency of ever-increasing importance to market participants and their customers, providers of trading services, whether exchanges or non-exchanges, are increasingly likely to focus on breadth and quality of service to increase their share of trading. They may offer, for instance, more efficient overall service, superior technology (for example, faster, more reliable order handling), lower transaction charges, or added value services, such as straight-through processing and central counterparty clearing. A major example of how improved efficiency and service can contribute to attracting business has been the way in which Continental European bourses – often by replacing floor trading with electronic order-books (and block trading regimes) - have regained most of the market share in their domestic securities that during the 1980s had migrated to London.

d) Internalization and payment for order flow

In some markets, a significant degree of fragmentation is the result of brokers' internalizing order-flow – particularly retail order-flow - by routing orders to their in-house trading desk or to an affiliated market maker. Some firms may also offer to pay retail brokers to route retail order flow to them for execution ("payment for order flow") in order to increase their profits from internalization and to gain favored access to information regarding likely market movements. This extends the brokers' commercial involvement in the trade process, enabling them to share in the dealing as well as the broking profit. The extent to which this adds to market fragmentation will depend on whether or not the market-making removes the order-flow from a public trade execution process.

orders (often known as 'iceberging'). However, such provisions can generally make only a small contribution to restricting market impact in the case of larger orders.

²⁰ E-Crossnet is an authorized UK firm that provides an anonymous crossing service in UK and a number of other European equities based on reference prices in the main markets for those securities. Matched orders are then executed by a third party (exchange member) securities firm, which acts as matched principal (to preserve anonymity) and makes an immediate trade report.

Estimates of the extent of internalization are difficult to come by. However, it is clear that many larger broker-dealers view internalization of order-flow as an important means of increasing their share of the transaction value chain. Many have consequently designed their incoming order-management systems with a view to executing in-house a significant part of that flow (whether filling counter-orders from clients or against their trading or proprietary books). In an increasingly competitive world, this ring-fencing of as much transaction value as possible seems likely to intensify rather than diminish.

II.3 Future trends

Overall, it is difficult to assess how far competition and fragmentation are likely to go. New providers offering new products or new functionality will doubtless continue to spring up from time to time, though recent experience demonstrates that they will not all find user acceptance and that there may be insufficient business for all of them when market volumes turn lower. In addition, the functionality also exists to operate systems that could cater for direct retail participation in trading. So far, though there has been little evidence of any momentum to push the marketplace towards direct retail participation in the trading process (as opposed to offering retail investors the ability to control execution via an intermediary ‘gateway’).²¹

Some believe that markets – both securities and derivatives - are currently passing through a transitional period of intense innovation and competition that will shortly be followed by a period of rationalisation. In this scenario, market participants will decide which market venues work best and jettison the rest, forcing more service providers to enter into mergers or to go out of business. Others, by contrast, foresee an increasingly fragmented marketplace, to a greater or lesser degree held together by cyber networks. It is also possible that the outlook for competition and fragmentation may be affected by the emerging regulatory response, in particular to order handling in competing markets (see next Section).

III. Regulatory issues and tools

There is considerable debate, both within markets and among academics, as to whether the benefits of competition between market centres outweigh any adverse effects. The case for competition between trading venues is that it:

- breaks down monopolistic practices and increases efficiency;
- brings downward pressure to bear on transaction charges;
- stimulates innovation and offers users a range of trading methods more finely tuned to their needs;

²¹ On-line investors (whether private or institutional) may be able to see and access an order-book or market maker quote but normally only through a facility provided by a broking firm, which stands as counterparty to the ‘other side’ of the trade.

- attracts greater participation²².

The contra case is that any benefits may be more than offset by a number of disadvantages which potentially include:

- the duplication of costs, including “search”, operating and regulatory costs;
- the introduction of trading methods and business practices that may diminish efficiency and not be in the interests of the market as a whole;
- the diffusion of liquidity, and an adequate level of it, that (despite arbitrage) has the end result of reducing price competitiveness, undermining the concept of time priority, and increasing volatility.²³
- In practice, the overall impact of competition on market quality is likely to depend on the nature of the existing market structure and the types of competition that emerge. While regulators need to take care that competition does not impair overall transparency and liquidity, they need also to recognize that some forms of competition may enhance them.

As the accompanying table indicates, the introduction of private electronic limit order-book systems may well improve the levels of transparency available to the user by giving an indication of the depth of investor buying and selling interest in a way that would not occur in a market maker system. On the other hand, the execution of order-flow by entities displaying their quotes or order-books to a limited audience will serve to reduce pre-trade, even if not necessarily post-trade transparency. Critical issues in such analysis often centre on the information available to investors and the commercial incentives of market professionals who intermediate trades.

Impact of competition on transparency and interaction

Type of competition	Impact of competition on:		
	Pre-trade transparency	Post-trade transparency	Interaction
Electronic order books	May display more price levels and greater depth	Usually instantaneous	Based on direct interaction of orders

²² Kathleen Hagerty and Robert L. McDonald, *Brokerage, Market Fragmentation, and Securities Market Regulation*, in The Industrial Organization and Regulation of the Securities Industry/edited by Andrew W. Lo. 35, 37 (Univ. of Chicago Press 1996). See also Thomas H. McInish and Robert A. wood, *Competition, Fragmentation and Market Quality* , in The Industrial Organization and regulation of the Securities Industry, *supra*, at 62, 72-73.

²³ John Coffee, for example, questions the benefits of fragmentation, and particularly payment for order flow arrangements. See John C. Coffee Jr., *Comment*, in Thomas H. McInish and Robert A. Wood, *Competition, Fragmentation, and Market Quality*, in The Industrial Organization and Regulation of the Securities Industry/edited by Andrew W. Lo. 78-83 (Univ. of Chicago Press 1996).He believes that rival markets outside of the primary exchanges may be “cream skimming” rather than directly contesting the primary exchanges across the board. *Id.* at 81-82. This occurs when these markets: (1) pay for order flow only in actively traded stocks, (2) match the NYSE specialist’s quoted spread (rather than moving their own bid and ask within the specialist’s quote), and (3) avoid the professional (or informed) trader and obtain transactions from less sophisticated (or uniformed) retail customers. *Id.* He concludes that competition from rival market centers that is not based on price competition (such as payment for order flow and similar practices) may stalemate the public policy objective (narrower bid-ask spreads).

Dealer internalization/payment for order flow/closed user groups	May reduce pre-trade information unless dealer is required to display quotes publicly	May depend upon whether trade has taken place on or off exchange	Likely to remove business from wider market interaction if dealer is not offering open access
Reference price crossing	None. Objective is to avoid advertising trading intention.	No reason to seek delayed publication	Removes business from price-formation process

The particular challenges for regulators in markets with multiple trading venues are, therefore, to identify where ‘competition’ may not in fact work to the benefit of the market as a whole and where market forces may not naturally work to remedy such defects. Critical issues in such analyses often center on ‘information’ and ‘incentives’.

III.1 Transparency issues

A primary regulatory concern when a market fragments is the impact this has on information flows. Will market participants and their customers continue to have access to as full a picture of market activity as would be the case if the market were centralised? This is likely to depend largely on the number of venues, the different trading methods on those venues, each operator’s incentive to ‘advertise’ trading data, or whether regulation already requires them to display the information. Broadly, regulators need to consider three main groups of issues:

- the desirability and practicability of creating identical – or, at least, similar – transparency arrangements for all trading in a class of instrument;
- the desirability and practicability of regulators working together to coordinate supervisory responsibilities with regard to transparency arrangements in the case of an instrument traded in more than one jurisdiction;
- any need that may arise for regulators to intervene to ensure adequate arrangements for the dissemination of consolidated information (or the dissemination of information in a way in which users can readily consolidate it themselves).

A. The desirability and practicability of creating identical – or, at least, similar – transparency arrangements for all trading in a class of instrument

While regulators attach great importance to ensuring high transparency levels and have traditionally approved the transparency regimes of their central markets, few incorporate detailed

transparency requirements on the face of their regulations²⁴. The arrival of competing trading venues therefore poses the question of the extent to which they should require all trading venues in an asset class to adopt identical, or broadly similar, transparency arrangements.

It would be desirable to have (at least) a coherent transparency regime for an asset class that applies across all market venues within a single jurisdiction. That should lend support to regulators' goals of investor protection and market efficiency. Moreover, public good requirements that impose private costs are normally most easily enforceable if applied on a harmonized basis. However, in developing a transparency regime, regulators have two particular dimensions to consider – application to different trading methods, and scope.

Where fragmentation is characterized by a variety of trading methods, a 'one size fits all' approach will not be workable. Generally, a 'harmonized' approach is likely to entail similar requirements for similar platforms, or similar types of trade, rather than identical requirements for all types of trading. For example, while it may be possible to have similar pre-trade standards across all similar order-book systems, those requirements will not be capable of exact replication for dealer systems (which may only display a minimum dealing size and may approach the advertising of price improvement in different ways). Nor (where such systems are permitted) will they be relevant to reference price crossing systems, whose trading model aims to remove market impact by having no pre-trade transparency. On the other hand, in respect of post-trade transparency (in any given asset), it might be possible to require real-time disclosure of all trades irrespective of trading system, perhaps with some special arrangements for risk trades of abnormal size.

In respect of scope, regulators are likely to have two aspects in particular to consider. One, especially if there is extensive fragmentation, is whether it would be appropriate to have exemptions for entities with minimal market shares and, if so, where to set thresholds. The second relates to the more critical area of how far, and by what means, to extend transparency requirements beyond

²⁴ Current regulations in the jurisdictions of TCSC-2 members generally promote transparent markets, but there is also recognition of the importance of keeping the "informed investor" in the market in order to contribute to liquidity. The way in which transparency requirements are incorporated into regulation, and their scope, varies significantly among jurisdictions.²⁴ In particular, some jurisdictions set high-level requirements only and may address them solely to the main market operators (i.e. exchanges), while others have established broader and more detailed requirements, e.g., on broker-dealers or their bank equivalents.

All jurisdictions require their exchanges/markets to disseminate pre-trade and post-trade information to market participants. The detailed requirements vary, depending in particular on the form of trading, e.g. whether market-maker or order-book, or whether trading floor or electronic. Where electronic platforms operate, trading information can readily be made available in "real-time", and frequently is (except, for instance, in some types of crossing and block trading systems). Where no electronic platforms exist, information must generally be disseminated in a "timely" manner. Some jurisdictions specify the minimum amount of pre-trade information that needs to be made available to market participants – for instance, the five best bids and asks (and the volume) for a particular security. No jurisdiction appears to have a derogation permitting a market operator to disseminate different amounts of market information to different classes of participants.

There is commonly a difference between the information an exchange makes accessible to participants/members and the information it makes available to the public at large. While regulators in most jurisdictions subscribe to the principle of promoting broader transparency, most have no regulations specifically requiring that pre-trade and/or post-trade information be disseminated beyond market participants (i.e to the public at large), or that it be provided to them free of charge or at reasonable cost. Increasingly, however, exchanges themselves have been expanding the amount of information that they make freely available to the public, either as a method to promote business among private investors or in response to competition. Technology makes it increasingly simple for investors to access this information in real-time, in particular via the Internet.

exchange markets. In most jurisdictions, regulators have hitherto focused transparency requirements exclusively on exchanges, which, for the most part, have provided the main, or the only market centers. The development of trade execution services outside exchange systems raises the question of whether, and on what basis, regulators need to extend transparency requirements beyond exchanges.

The SEC's approach in the US has been to set enhanced pre-trade transparency requirements for qualifying alternative trading systems with more than a set market share in the trading of an instrument that are consistent with the pre-trade transparency requirements for exchange specialists and market makers²⁵. In Canada there is transparency requirement for all types of marketplaces. In Europe, the Forum of European Securities Commissions (FESCO) has recently published proposed standards which would require certain non-exchange trading systems to have broadly similar transparency arrangements to any 'regulated market' in respect of any instrument traded on a 'regulated market'²⁶. In addition, the European Commission's preliminary proposals for upgrading the Investment Services Directive (ISD) also envisage an extension of transparency requirements not only to a much wider range of trading platforms but (for post-trade purposes) to all transactions undertaken by an investment firm in any instrument traded on a 'regulated market'.

Overall, regulators will generally find it easier to approach the transparency issues arising from competing platforms where they have developed a clear set of objectives and principles for transparency. They therefore need to have an approach that will guide them in achieving an appropriate balance given the characteristics of the market in question. This may take account of such factors as the level and nature of the public involvement in trading the asset, the favored trading method, the weighting of the informational factors determining pricing, the manipulability of the instrument and the available technology.

B. Any need that may arise for regulators to intervene to ensure adequate arrangements for the dissemination of consolidated information (or the dissemination of information in a way in which users can readily consolidate it themselves)

A major concern when a market fragments is that, even if each trading venue applies identical transparency rules, it becomes more difficult and costly for market participants and their customers to be aware of all current trading information in respect of each of those venues²⁷. Regulators therefore have to decide how far they can rely on market forces to deliver some form of data consolidation, or at what point they should consider regulatory intervention to ensure that data from all market venues is easily (though not necessarily freely) available to interested parties. A market-led solution could arise in several ways. Information vendors could purchase data from market centers to sell on to end users. Alternatively, market participants (and even investors) could

²⁵ In the United States, all trades made on an exchange or through a broker-dealer, including trades effected on an alternative trading system, are subject to post-trade reporting through an "effective transaction reporting plan". See generally Exchange Act Rule 11 Aa3-1.

²⁶ "Regulated Market" is a defined term of the Investment Services Directive that describes markets that meet prescribed conditions and may be freely accessed by authorized investment firms throughout the EU.

²⁷ This leaves aside the issues of access and order interaction, which are addressed later in this section.

themselves consolidate information by using software to search real-time information (ideally made available in a standardized way) drawn down from the internet.

Given the availability of modern technology and strong competition among information vendors, regulators may be able to rely on ‘market’ solutions. However, that may depend on the overall balance of interests between trading centers, information vendors and the needs of investors. For larger market venues, particularly the ‘national’ exchanges, trading data is a major source of income. This presents regulators with a significant issue as to the extent to which that information should be regarded as a private or public good and the circumstances in which it would be appropriate for a regulatory (or competition) authority to recommend controls on those prices or otherwise to require market centers to provide access to market information on reasonable, non-discriminatory terms.²⁸

At present, the principal jurisdiction with extensive experience in regulatory-led consolidation of market information across market centers is the US. Here, Congressional establishment of the National Market System in the 1970s, designed to ensure efficient price-formation and trading opportunity across all US exchanges trading listed equities, was supported by the subsequent setting up, by the exchanges, of the Consolidated Quotation System for dissemination of exchange and market maker quotations in listed securities and the Consolidated Tape for dissemination of completed transaction in listed securities.²⁹ In Canada the securities regulators have considered the issue of consolidated order and trade reporting in the context of introducing new regulations governing Alternative Trading Systems. For the present, they have decided that, initially, marketplaces, which will have to report quotes that are displayed within the market and all completed trades, should report the information to an information vendor. But the intention in the longer term is that the information should be consolidated.

In other countries with multiple regional markets (e.g. Germany), liquidity in individual securities tends to gravitate to a core exchange for that issue, and trading data tends to be widely available as a result of multiple exchange memberships and electronic trading links.

C. The desirability and practicability of regulators working together to coordinate supervisory responsibilities with regard to transparency arrangements in the case of an instrument traded in more than one jurisdiction

Competition among trading venues in different jurisdictions to provide trading in the same instrument raises the issue of inconsistent transparency arrangements. This is a complex area, though clearly the issues will be minimized where the relevant jurisdictions have similar approaches to transparency requirements.

In cases where material differences in transparency regimes do exist, the significance of these differences in determining where an order is executed may in practice depend more on a number of other factors (e.g. relative costs, settlement processes, and legal, tax or other regulatory

²⁸ See SEC Concept Release on the *Regulation of Market Information Fees and Revenue* (part II), Exchange Act Release No. 42,208 (Dec. 17, 1999) available at: <http://www.sec.gov/rules/concept/34-42208.htm>. In addition, pre and post-trade information in Nasdaq securities is disseminated pursuant to a separate national market system plan.

²⁹ Id.

considerations). Differences in regulation are therefore likely to be of most significance in cases where the impact of ‘other factors’ is essentially neutral, and in most cases, where the trading venues share common trading hours. Evidence that transparency per se is, in fact, a major determinant of where business is conducted in such circumstances is scant. However, the potential importance of greater harmonization of transparency arrangements in the cross-border environment is increasingly recognized in some geographic areas, such as Europe, where there is an increasing likelihood that some instruments may come to be traded simultaneously in different countries.³⁰

III.2 The need for supplementary measures to protect market efficiency

While high levels of transparency within individual market centres and across the whole market is essential to efficient price-formation, transparency alone may not be sufficient in a fragmented market to enable investors to obtain the best possible execution for their orders or to ensure optimal price-formation. In particular, transparency per se does nothing to guarantee that the best-displayed prices are in fact "good" prices.

If competition is working well, one would expect the benefits to be manifesting themselves not solely in market share increases for successful service providers but also in such indicators as rising market volumes and narrowing spreads³¹. However, it is also possible that competition may, in some circumstances, add little to overall pricing quality or even adversely affect the depth of market³² and/or the incentives supporting competitive pricing, leading to wider spreads than might otherwise have been the case. The remainder of this section therefore considers a number of issues, over and above transparency, that may also affect the quality of execution and the overall quality of price formation in a fragmented market.

A. Access to trading

While access to information across all trading venues in an instrument should assist investors in obtaining good quality execution and facilitate efficient pricing more generally, access to information is only of limited assistance if it is not also possible to access the trading opportunity.

A particular benefit of some new trading centers is that they open up wider direct access to trade execution (e.g. to institutional investors) than has often been the case with traditional exchanges, and this may sometimes encourage greater exposure of trading interest. But not all trading systems are designed to offer wide access. The degree to which a regulator may wish, or be legally empowered, to require a market center (especially a non-exchange) to provide open access

³⁰ Although Member States have universally developed higher transparency standards, the EU Investment Services Directive (ISD) sets minimum transparency requirements for all Regulated Markets (Article 21). In its current proposals to upgrade the ISD, the Commission has suggested real-time post-trade transparency for all Regulated Markets. .

³¹ The spread is an indication of the premium that must be paid by investors seeking liquidity and therefore of the efficiency of the market.

³² The “depth of trading” measures the amount of trade required to change the price of a security a given amount.

varies across jurisdictions, but regulators should seek to ensure that access to significant centers of price-formation should normally not be denied on any discriminatory basis³³ and examine closely both the motivations and implications of any venue wishing to restrict access.

Although arbitrage by those parties which do have trading access to multiple centers should flatten prices across markets very quickly, arbitrage is not costless and regulators need to consider whether markets characterized by a significant role for (a generally limited number of) arbitrageurs have sufficiently open access arrangements in the first place.

B. Time precedence of limit orders

A potentially major difficulty in a fragmented marketplace is that a competitively priced limit order placed with one market center carries no time precedence in respect to any identically priced order (or quote) subsequently placed in other centers. As a result, an order placed at the opening in one market center could remain unfilled while identically priced limit orders (or market maker quotes) initiated at later times in other centers were filled.

Arguably, this might serve to reduce interest in placing competitive limit orders, to the detriment of overall market quality. The issue for regulators is whether this is better addressed by leaving market forces to attract limit orders to the venues where they stand the greatest likelihood of achieving time precedence, or whether they should mandate arrangements that would afford limit orders greater protection. This could be achieved by some form of centralized order-routing, in effect creating a central limit order book for all limit orders regardless of the venue in which the orders were placed, or by less centralized approaches, such as requiring market makers to incorporate customer limit orders in their quotes or to interact with public order books

C. Order handling rules and incentives

In a fully centralized market with a single method of trading, the arrangements by which customer orders are handled should be straightforward, and there should be little dispute as to what constitutes best execution. However, when brokers have choice in where they execute orders, the position – notwithstanding high transparency levels - becomes more complex: order handling procedures take on greater significance not only for customers but, potentially, for the quality of price-formation as a whole. In a fragmented market, there can be many difficulties – for brokers and regulators alike - in determining what constitutes best execution. Should best price or the overall cost of dealing on any particular facility be the benchmark? How many market venues it is reasonable to expect a broker to monitor and be able to access? What is important is that best execution rules should incentives brokers to make best use of the opportunities presented by competing providers of trade execution services to achieve the most competitive executions possible for their customers.

This may involve requiring brokers to monitor multiple trading venues on a continuous basis (which in itself helps to support a more competitive environment). But it may also involve

³³ Many jurisdictions have rules allowing exchanges to apply rules to different classes of member/participant but do not permit them to have rules that discriminate between members/participants in the same category of membership.

reviewing the incentives for brokers to work for the best possible deal for a client rather than simply rely on what may be un-ambitious benchmarks of acceptable execution - for example, the current best bid and offer on a designated market center. Some regulators, and intermediaries, will feel more comfortable with retaining an explicit benchmark price as a safe harbor. Arguably, however, the scope that competing trading venues, and alternative methods of trading, offer to improve execution quality suggest that broker performance in trading to a customer's 'best advantage' should be assessed against broader market outcomes.

A related consideration for regulators in a fragmented market may be the impact on broker incentivization of commercial arrangements between brokers and market venues, including arrangements that are effectively internalisation through a wholly-owned or affiliated market making entity. Although the venue may guarantee to match the best available price in the market (and sometimes price improvement), these arrangements, whether or not accompanied by payment for order flow or soft commissions, may (notwithstanding best execution obligations) tend to weaken brokers' incentive to seek extensively for price improvement for their clients³⁴.

It is also the case that investors are likely to achieve most benefit from the competitive provision of trade execution services if they themselves better appreciate the opportunities offered. This lends weight to the need both for investor education and for investors to be able to access adequate information on market quality and broker performance.

These are areas in which the SEC has recently taken action and adopted two rules to improve public disclosure of order execution and routing practices where securities are traded at more than one market center.³⁵ Market centers that trade national market system securities³⁶ are now required to make available to the public monthly electronic reports that include uniform statistical measures of execution quality. In addition, broker-dealers that route customer orders in equity and option securities are now required to make publicly available quarterly reports that, among other things, identify the venues to which customer orders are routed for execution. In addition, broker-dealers are now required to disclose to customers, on request, the venues to which their individual orders were routed. By making visible the execution quality of the securities markets, the rules are intended to spur more vigorous competition among market participants to provide the best possible prices for investor orders.

D. Reference pricing- crossing systems

The section above alluded to one form of passive pricing, i.e. where market making firms are content to guarantee a price equivalent to the prevalent best bid and offer but may not wish to be price leaders themselves. A further, and different, form of passive, or reference, pricing is that in which buying and selling interests are periodically matched, usually anonymously, by reference to a

³⁴ The SEC has adopted rules requiring enhanced disclosure of payment for order flow practices on customer confirmations and account statements, as well as upon opening new accounts. Exchange Act Release No. 34902 (Oct. 27, 1994) (effective Apr. 3, 1995), available at <http://www.sec.gov/rules/final/orderfin.txt>. Moreover, the SEC recently published a Report of the Advisory Committee on Market Information: A Blueprint for Responsible Change (September 14, 2001), available at <http://www.sec.gov/divisions/marketreg/marketinfo/finalreport.htm>.

³⁵ Exchange Act Release No. 43,590 (Nov. 17, 2000) (eff. Jan. 30, 2001); available at <www.sec.gov/rules/final/34-43590.htm>.

³⁶ These securities are generally exchange listed, or in the national market tier of NASDAQ. See generally Exchange Act Rules 11Aa2-1; 11Aa3-1.

price established elsewhere. Commonly, the reference price will be the mid-price of an instrument at a particular time in its main market center, but other reference prices (e.g., the volume-weighted price over a period of time) are also used.

In addition to needing to ensure that such systems operate in a way that does not lead to manipulation of the reference price, regulators need to consider the effect of such trading mechanisms on the overall market. The main attraction to users of this type of trading process is the way in which it removes market impact cost. Arguably, this is not only to the benefit of those trading this way, but also benefits market users more widely by reducing price volatility. On the other hand, such systems may (unless attracting incremental liquidity) remove liquidity from mainstream price formation, leading to reduced liquidity and less price competition. Given that these systems are particularly attractive for trading in less liquid securities (where spreads tend to be wider and market impact costs higher), there could be some risk of a vicious circle developing. Regulators may therefore need to consider periodically whether this form of trading is growing to a degree at which it is detracting from the quality of the market and, if so, whether or not there is a satisfactory self-correcting mechanism in the market.

IV. Conclusions

The extent of competition/fragmentation in the provision of trade execution services currently varies considerably, both from market to market and country to country. Moreover, it is difficult in this period of rapid development in market structure and business models to predict whether market forces will, over the medium term, tend to sustain the recent increase in competition and fragmentation or start to lead to some reduction in the number of competing trading venues.

Globalization of the world's securities markets compels securities regulators to view market fragmentation from a global perspective. For example, a particular product "X" might be traded in multiple markets around the world (thus "fragmenting" the market for that product), or the existence of fragmented markets in a single jurisdiction that trade product "X" will have an impact on investors outside the jurisdiction that trade the product. The issues raised by competition/fragmentation are complex, and different types of competition and fragmentation lend themselves to different solutions. The appropriate solutions in each jurisdiction will also depend on 1) the regulatory framework and rules already in place, and 2) the structure and the needs of the markets in each jurisdiction. Nonetheless, on the basis of its review, the Standing Committee considers that regulators facing these issues could usefully take account of the following:

- Regulators facing fragmentation in markets they regulate should seek to understand both the positive and negative implications of that fragmentation and the role that transparency can play in mitigating any negative aspects. Their approach should, *inter alia*, consider different trading methods in their markets and, as appropriate, the interaction of exchange and off-exchange trading where the latter has the potential to influence price-formation.
- Where regulators accept a variety of trading methodologies (i.e., auction versus dealer markets), they should – in each product class - aim to achieve similar transparency requirements for each trading centre that uses the same trading method (e.g., all auction markets should have similar transparency requirements for each product class). In addition, they should seek to find a way to improve the comparability of the data stream between the two markets for the same product class.

- Where there is evidence that different transparency regimes in different countries are materially influencing trading decisions and trading patterns in a product, regulators should jointly consider whether the fairness and efficiency of the market in that product has been compromised.
- Optimum levels of transparency in each centre trading an instrument may be of limited benefit to market users if they are unable to access that data readily and at reasonable cost. Regulators should seek to ensure that there are no unreasonable restraints on data dissemination and consider promoting standard protocols to facilitate data consolidation.
- Regulators need to recognise that transparency alone may not be sufficient to ensure high quality price formation and high quality execution in a fragmented marketplace. They also need to ensure that there are no unreasonable barriers to accessing different trading centres and that their order handling and best execution rules support efficient price discovery.
- Regulators should keep under review the extent to which competition/fragmentation rests on various forms of reference pricing and review periodically the effect this may be having on their markets, e.g. stimulating liquidity or damaging the quality of price formation.
- Regulators should take into consideration an adequate level of investor protection.

The table below sets out some off the options regulators could adopt in response to the transparency and price discovery issues raised by competition/fragmentation.

Impact of competition (and resulting fragmentation) on transparency and price formation: potential issues and possible regulatory responses

Issue	Possible Regulatory Responses	Observations
Different transparency levels among different domestic trading venues	<ol style="list-style-type: none"> 1. Allow market forces to determine level of pre-and post-trade transparency in individual trading venues. 2. Allow market forces to determine level of pre-trade transparency in individual trading venues, subject to standardized post-trade transparency across all trading venues 3. Apply different pre-trade transparency requirements to trading venues that use different trading methods (<i>e.g.</i>, quotations for dealer markets, depth of limit orders for auction markets) 4. Require standardised pre-trade transparency for all trading venues, including dealer and auction markets 	<p>Renders performance/enforcement of duty of best execution exceedingly difficult.</p> <p>May hinder performance/enforcement of duty of best execution, although permits flexibility to adopt different transparency arrangements for different types of trading. Quality of post-trade transparency particularly important if pre-trade transparency allowed to vary.</p> <p>Recognises different user preferences while requiring coherent overall transparency approach. May require adoption of supplemental rules (<i>e.g.</i>, order handling rules) to ensure market efficiency.</p> <p>Ensures comparability of trading interest displayed in all markets. May be difficult to develop ‘one size fits all’ approach for all business models within jurisdiction.</p>
Different levels of transparency for same instruments across jurisdictions	<ol style="list-style-type: none"> 1. Establish transparency requirements for instruments independently of requirements in other jurisdictions. 2. Coordinate supervisory responsibilities with respect to transparency requirements across jurisdictions. 3. Agree to create coherent transparency requirements across jurisdictions to avoid regulatory arbitrage 	<p>Although potential for arbitrage may exist, different transparency levels may not be a significant factor in deciding where trading takes place (<i>e.g.</i>, relative costs, settlement processes, time zones).</p> <p>May be beyond individual regulator’s vires. Requires regulators to accept a ‘whole market’ view and not just a local (part) market view. May be difficult to achieve where market structures are different.</p>

Issue	Possible Regulatory Responses	Observations
Fragmentation of information across trading venues	<ol style="list-style-type: none"> 1. Leave to market forces to collect and consolidate information from all trading venues 2. Foster consolidation by private sector by promoting standardised data protocols, capping monopolistic data charges, and/or requiring access on reasonable, non-discriminatory terms 3. Mandate consolidation of information across trading venues 	<p>Assumes market will develop solutions around information vendors, search machines, etc. and standards for display, etc. Ability to do so may depend on the extent to which anti-competitive barriers to collecting, consolidating and disseminating market information are present, e.g. monopolistic data pricing, deliberate diversity in data formatting, etc.</p> <p>Need to consider impact of limiting data revenues on national exchanges. May be difficult to enforce without imposing significant conditions on markets that have the effect of mandating consolidation.</p> <p>Raises question of how consolidation system should be built, operated and financed - e.g., by the main regulatory authority, by the market centres, by a third party contractor.</p>
Dispersal of order flow across trading venues	<ol style="list-style-type: none"> 1. Allow market forces (<i>i.e.</i>, arbitrage) to keep prices in line 2. Ban discriminatory restrictions on access to orders displayed on trading venues 3. Minimise commercial arrangements between dealers and brokers that may work against competitive pricing (<i>e.g.</i>, internalisation, payment for order flow). 4. Develop order handling/best execution regimes that incentivize brokers to direct order flow to centres offering the best opportunities for execution. 	<p>Provided that a number of participants have access to all major trading centres, this should ‘flatten’ prices efficiently. But arbitrage carries costs, which are effectively a wealth transfer from market users to the arbitrageurs.</p> <p>Increases opportunity for orders in different venues to interact. Subjecting certain systems (<i>e.g.</i>, for institutional trading) to high levels of transparency may undermine their business model. May be difficult to enforce if restrictions are not facially discriminatory but have discriminatory effect.</p> <p>Restricting internalisation and payments for order flow may improve incentives for brokers to seek superior execution opportunities. May reduce incentives for market makers to commit capital.</p> <p>May improve protection for limit orders. Performing/enforcing duty of best execution becomes more complicated if market is fragmented. Rules may need to be reviewed to ensure that brokers seek optimal execution. May require disclosures relating to quality of different market centers and brokers’ execution policies to enforce.</p>

Issue	Possible Regulatory Responses	Observations
	<p>5. Develop rules/arrangements to ensure timely interaction of most competitively priced buy and sell orders</p>	<p>Greater protection for limit orders. May ultimately require creation of some form of central limit order book incorporating best bids and offers from all centres. Would preserve both time and price precedence across market but would need to be mandated and financed.</p>

ANNEX 1

THE ECONOMIC LITERATURE ON TRANSPARENCY AND FRAGMENTATION.

SOME REFERENCES

- Admati A.R. and P. Pfleiderer (1991) *Sunshine trading and financial market equilibrium*, Review of Financial Studies 4.
- Bloomfield R. and M. O'Hara (1998) *Does order preferencing matter?*, Journal of Financial Economics 50.
- Bloomfield R. and M. O'Hara (1999) *Market transparency: who wins and who loses?*, Review of Financial Studies 12.
- Bloomfield R. and M. O'Hara (2000) *Can transparent market survive?*, Journal of Financial Economics 55.
- Chowdhry B. and V. Nanda (1991) *Multimarket trading and market liquidity*, Review of Financial Studies 4.
- Easley D., N.M. Kiefer, M. O'Hara and J.B. Paperman (1996) *Liquidity, information and infrequently traded stocks*, The Journal of Finance.
- Easley D. and M. O'Hara (1987) *Price, trade size and information in securities markets*, Journal of Financial Economics 19.
- Easley D. and M. O'Hara (1991) *Order form and information in securities markets*, The Journal of Finance 46.
- Flood M.D., R. Huisman, K.G. Koedijk and R.J. Mahieu (1997) *Post-trade transparency in multiple dealer financial markets*, LIFE Working Paper
- Flood M.D., R. Huisman, K.G. Koedijk and R.J. Mahieu (1999) *Quote disclosure and price discovery in multiple-dealer financial markets*, Review of Financial Studies 12.
- Gemmill G. (1996) *Transparency and liquidity: a study of block trades on the London Stock Exchange under different publication rules*, The Journal of Finance 5.
- Hansch O., N.Y. Naik and S. Viswanathan (1999) *Preferencing, internalization, best execution and dealer profits*, The Journal of Finance 5.
- Hasbrouck J. (1995) *Trade and quote transparency: principles and prospects for the year 2000*,

Kofman P. and J.T. Moser (1995) *Spreads, information flows and transparency across trading systems*, Working Paper federal reserve Bank of Chicago.

Huisman R. and K.G. Koedijk (1998) *Financial market competition: the effects of transparency*, De Economist 146.

IOSCO (1992) Transparency on secondary markets, Il Sole 24 Ore.

Macey J.R. and M. O'Hara (1997) *The law and economics of best execution*, Journal of Financial Intermediation 6.

Madhavan A. (1995) *Consolidation, fragmentation and the disclosure of trading information*, Review of Financial Studies 8.

Madhavan A. (1996) *Security prices and market transparency*, Journal of Financial Intermediation 5.

Madhavan A. (2000) *Market microstructure: a survey*,

Madhavan A., D. Porter and D. Weaver (1999) *Should securities markets be transparent?*,

Mulherin J.H. (1993) *Market transparency: pros, cons and property rights*, Continental Bank Journal of Applied Corporate Finance 51.

Naik N.Y., A. Neuberger and S. Viswanathan (1999) *Trade disclosure regulation in markets with negotiated trades*, Review of Financial Studies 12.

O'Hara M. (1995) Market microstructure theory, Basil Blackwell, Cambridge.

Pagano M. and A. Roell (1996) *Transparency and liquidity: a comparison of auction and dealer markets with informed trading*, The Journal of Finance 51.

Scalia A. and V. Vacca (1999) *Does market transparency matter? A case study*, Bank of Italy Discussion Paper n.359.

Schwartz R.A. (1995) Global equity markets: technological, competitive and regulatory challenges, New York University.

Porter D.C. and D.G. Weaver (1998) *Post-trade transparency on Nasdaq's national market system*, Journal of Financial Economics 50.

TSE Special Committee Report (1997) Market Fragmentation: responding to the challenge.

Ui T. (1996) *Transparency and liquidity in securities markets*, Institute of Monetary and Economic Studies, Bank of Japan.

ANNEX 2

SURVEY ON MARKET TRANSPARENCY IN MEMBER JURISDICTIONS

PART I - EXECUTIVE SUMMARY

To understand the minimum transparency requirements imposed by member jurisdictions, a questionnaire, as per Appendix 1, was devised to survey the current regulatory approach to transparency in secondary markets. By November 2000, 16 responses were received and a collation of these responses is provided in Appendix 2.

The survey results appear to suggest that both equity and derivatives markets apply similar transparency requirements. Few of the respondents discussed on the debt market transparency; therefore, no specific conclusion can be drawn. In general, all jurisdictions believe that transparency is an important element of preserving market integrity. However, the level of transparency requirements varies significantly among jurisdictions. Some jurisdictions impose high level requirements only on market operators to ensure the transparency of their markets but a few sets forth the requirements (some even prescribing details) in laws; others have established broader and more detailed requirements, e.g., on intermediaries. Jurisdictions facing the issue of market fragmentation are considering enhancing their transparency requirements to ensure that the interests of market participants and investors are not hampered. The following is a brief summary of responses.

In essence, although most jurisdictions subscribe to the principles/objectives of ensuring adequate transparency in price determination and equal access to information for all market participants, many of them do not have explicit requirements providing for participants to have fair and timely access to pre-trade and post-trade information. A majority instead phrases the requirements as a duty on the authorised markets to grant fair and timely access to participants to such information. Nevertheless, some jurisdictions like Spain and Italy have put in regulations details as to what information should be provided and how.

All jurisdictions have requirements on their markets to provide for dissemination of pre-trade and post-trade information. Some are more explicit than others in the detail they prescribe as to what information needs to be disseminated, how and in what timeframe. Canada envisages a data consolidator, who will be responsible for the dissemination of information, once received from market players. The least specific requirements just state in guidance to the exchanges that they should deliver efficient and reliable pricing by ensuring sufficient transparency in the exchange markets, taking account, among other things, of the nature of the markets. The regulator will then consider the exchange's transparency requirements on a case-by-case basis.

The detail of the standards for pre-trade and post-trade transparency may vary depending on whether the trading is taking place on a trading floor or through an electronic trading system. Only in some jurisdictions is 'real-time, immediate or timely' further defined. Where electronic trading systems exist, information is generally automatically made available in real-time (with no or only a few seconds delay) to market participants and sometimes market vendors and/or the wider public.

Where no electronic platforms exist, the standards are for dissemination of information in a 'timely' manner. The details of how the standards of 'timely' or 'real-time' are interpreted are often left to the exchange's rules. Some jurisdictions specify the minimum amount of pre-trade information that needs to be made available to participants (or even to the public). Where the information is specified, the five best bids and asks and the volume displayed at particular limit prices are normally required. None of the jurisdictions appears to have derogation permitting a market operator to disseminate different amounts of market information to different classes of participants. In some jurisdictions, there is, however, a difference between the information provided to participants/members and the information made available to the public at large. The public can access the information through various distribution channels, including the exchanges' own computer system, the Internet, information vendors or brokers, and/or printed publication. For most jurisdictions, investors are charged for accessing real-time information (usually by information vendors) whilst delayed information is free. Brokers may provide real-time information to clients for free.

Very few jurisdictions have specific approaches to trading systems that offer no, or restricted, pre-trade information. Largely there is little permitted derogation from 'real-time' post-trade publication. If there is such derogation, like in Australia, it is generally in relation to size of the trade or off-market transactions.

In most jurisdictions there are few mandated transparency requirements for off-exchange, OTC and unlisted securities trading. Some jurisdictions like France apply similar transparency requirements (as for on exchange trading) through their intermediaries on OTC trades in exchange traded products. Canada, on the equity side, brings off-exchange market systems and ATSSs into its definition of marketplace and therefore the same transparency requirements as for exchanges are applied. Other jurisdictions like Quebec and Malaysia do not allow or do not in practice have off-exchange markets. The only jurisdiction with quite detailed requirements for both off-exchange trading of listed securities and transactions on unregulated markets is Italy.

In many jurisdictions, instruments are not trading on more than one market. Where trading does take place on more than one market, regulators require similar, if not identical, standards/rules across all markets with the same regulatory status and only some have requirements to consolidate market information across markets (Canada, Germany, Spain and the US). These jurisdictions do not regard transparency alone as being sufficient to meet regulatory objectives for high quality price formation and investors' ability to obtain best execution for their orders. Most jurisdictions emphasise, in addition to transparency requirements, the need for 'best execution/best price' requirements, placed on the intermediary as part of the general requirements to deal fairly with its clients.

Where an instrument is traded in multiple jurisdictions, most jurisdictions state that they have no authority to dictate transparency standards on trades outside their domestic market. However, they do pay special regards to the IOSCO Principles, and Europe FESCO Principles for Regulated Markets which suggest that transparency standards are becoming more harmonised across different jurisdictions. In addition, increasingly co-operative arrangements (such as MOUs) are being established. The fact that some jurisdictions have higher standards of disclosure or transparency requirements than others may become a matter of concerns for alliance or linkage initiatives (as has been encountered by Brazil).

In terms of transparency in rules and procedures, most jurisdictions' regulations provide for fair treatment of orders. This is achieved either through requirements placed on the specification of the exchanges' electronic trading systems or through requirements placed on the intermediary, or - in some jurisdictions - both. Most jurisdictions have 'best execution'-type requirements on their

intermediaries and exchange members. The 'best execution/best price' requirement would generally mean that the intermediary would have to make reasonable efforts to check prices on different markets. Most jurisdictions state that they do not have a requirement for disclosure of order handling choices/policy to market participants or customers at this stage even though the US and the UK are considering the inclusion of such a requirement in their future regulations. Order execution rules, as part of wider market rules, are approved by the regulator in all jurisdictions.

A summary of the responses in relation to the individual questions is provided in Part II.

PART II - SUMMARY OF RESPONSES

Question 1:

Do the Public Regulation requirements in your jurisdiction provide for participants to have fair and timely access to:

- (a) Pre-trade information?***
- (b) Post-trade information?***

If yes, please describe the Public Regulation requirements and explain the regulatory objectives/approach/ principles behind these requirements particularly in the context of organised exchanges and Off Exchange Market Systems.

Answers 1:

Although most jurisdictions subscribe to the principles/objectives of ensuring adequate transparency in price determination and equal access to information for all market participants, many of them do not have explicit requirements providing for participants to have fair and timely access to pre-trade and post-trade information. A majority instead phrases the requirements as a duty on the authorised markets to grant fair and timely access to participants to such information (see Question 2).

Nevertheless, some jurisdictions like Spain and Italy have regulations requiring fair and timely access for market participants to pre-trade and post-trade information, often with some detail as to what information should be provided and how. The US SEC has a statutory requirement that "directs the SEC to assure that all securities information processors (e.g. vendors) may obtain market information from an exclusive processor of that information (e.g. an exchange) on terms that are 'fair and reasonable'". Canada envisages to pose a requirement on market participants to provide information to the market place or data consolidator, with the onus on the data consolidator to disseminate this information to market participants. In Germany requirements providing fair and timely access for market participants are applied to organised exchanges , with the trading on off-exchange market systems being reported to the regulator, not directly to the market.

Question 2:

Do the Public Regulation requirements in your jurisdiction require the markets to provide timely and widespread dissemination of:

(a) Pre-trade information?

(b) Post-trade information?

If yes, please describe the Public Regulation requirements and the arrangements by which this is achieved, including practices/ requirements in respect of distribution channels, timeliness and fees or other costs imposed, for both organised exchanges and Off Exchange Market Systems.

Answers 2:

All jurisdictions have requirements on their markets to provide for dissemination of pre-trade and post-trade information. Some are more explicit than others in the detail they prescribe as to what information needs to be disseminated, how and in what timeframe. Canada envisages a data consolidator, who will be responsible for the dissemination of information, once received from market players. The least specific requirements just state in guidance to the exchanges that they should deliver efficient and reliable pricing by ensuring sufficient transparency in the exchange markets, taking account, among other things, of the nature of the markets. The regulator will then consider the exchange's transparency requirements on a case-by-case basis.

Other jurisdictions are much more specific in their requirements for exchanges as to what type of information should be disseminated and how. Although requirements might vary between different markets, e.g. the US has different 'Plans' for different markets - each of which needs to operate in accordance with the Exchange Act rules. The information disseminated to market participants is generally on real-time basis. The public can access the information through various distribution channels, including the exchanges' own computer system, the Internet, information vendors or brokers, and/or printed publication. For most jurisdictions, investors are charged for accessing real-time information (usually by information vendors) whilst delayed information is provided free by exchanges. Brokers may provide real-time information to clients for free.

The type of information that is covered in most of the more detailed rules includes:

- a) Pre-trade information: Five best bid and ask prices with further information about the general product traded and the quantity.
- b) Post-trade information: type, issuer, class, series of the security, volume, price (including settlement price), time of trade, any errors, odd lots, any intervention action (e.g. suspension). Generally identity of the parties cannot be disclosed (except to the exchange/regulator). It varies by jurisdiction as to whether off-exchange trades are reported to the public and when.

Malaysia has no specific requirement but has with HLSE LINK implemented a system to provide investors with some information in a timely manner. Brazil's requirements are quite general, except for detailed auction procedures for illiquid stocks and trades representing a significant price and/or volume jump. Notably CFTC does not have specific requirements for pre-trade transparency.

Question 3:

What are the standards for pre-trade and post-trade transparency for organized exchanges in your jurisdiction?

Please note in your answers (where relevant):

- (a) *The standards/ meaning you attach to real-time, immediate, timely (or similar terminology that would normally be taken to mean instantaneous);*
- (b) *Any regulatory requirements on the minimum amount of pre-trade information to be made available to participants;*
- (c) *Any derogation permitting a market operator to disseminate different amounts of market information to different classes of participant, e.g. market makers vs. broker-dealers, or institutional investors vs. retail investors;*
- (d) *Your approach to trading systems that offer no, or restricted, pre-trade information (e.g. preferencing systems, reference price matching systems);*
- (e) *Permitted derogation from 'real-time' post-trade publication and the reasons for them.*

Answers 3:

As described in Answers 2 above, the detail of the standards for pre-trade and post-trade transparency vary between jurisdictions. The standards also vary depending on whether the trading is taking place on a floor or through an electronic trading system.

- (a) Only in some jurisdictions is 'real-time, immediate or timely' further defined. Where electronic trading systems exist, information is generally automatically made available in real-time (with no or only a few seconds delay) to market participants and sometimes market vendors and/or the wider public. Where no electronic platforms exist, the standards are for dissemination of information in a 'timely' manner. During trading hours, this is largely interpreted to mean within minutes. After trading hours, it normally means that the information should be available before the next market opening. The details of how the standards of 'timely' or 'real-time' are interpreted are often left to the exchange's rules. Germany's standards are one of the most detailed.
- (b) Some jurisdictions specify the minimum amount of pre-trade information that needs to be made available to participants (or even to the public). Other jurisdictions do not specify what pre-trade information should be made available. Where the information is specified, the following is normally included:
 - the five best bids and asks and the volume displayed at that limit price (and sometimes with time stamp);
 - the weighted average bid/ask spread
 - all orders outstanding for each financial instrument
 - (for derivatives markets) the market makers' limit prices and price/quotation requests
 - special size or block orders are normally dealt with differently
- (c) None of the jurisdictions appears to have derogation permitting a market operator to disseminate different amounts of market information to different classes of participants. In many jurisdictions, equal treatment of all participants is required in the legislation/rules. There is however sometimes a difference between the information provided to participants/members and the information made available to the public at large. In Hong Kong information vendors may

not display all information provided by the exchanges on derivatives transactions. CFTC states that any derogation would have to be submitted to the CFTC.

- (d) Very few jurisdictions have specific approaches to trading systems that offer no, or restricted, pre-trade information. However, in some jurisdictions like Australia the regulations leave sufficient leeway to allow some trades to be conducted without, or with restricted, pre-trade disclosure. Such a special regime might, for example, apply in the case of blind crossing systems or block orders.
- (e) Largely there is little permitted derogation from 'real-time' post-trade publication. In fact, Canada is aiming to move to 'real-time' for market makers within a year. If there is such derogation, like in Australia, it is generally in relation to size of the trade or off-market transactions. The rationale behind this derogation is to allow dealers to unwind their positions, without the market pressure resulting from the public knowledge of the position - this is particularly relevant in less liquid markets.

Question 4:

Please describe any mandated transparency requirements in respect of:

- (a) Off Exchange Market Systems trading exchange-traded instruments;***
- (b) Any other trading of exchange-traded instruments;***
- (c) Any trading of securities over-the-counter not included in (a) or (b) (e.g. the U.S. "pink sheets");***
- (d) Alternative Trading Systems for unlisted securities.***

Answers 4:

There is quite a wide range of practices. In most jurisdictions there are few mandated transparency requirements for off-exchange, OTC and unlisted securities trading. France applies similar transparency requirements (as for on exchange trading) through its intermediaries on OTC trades in exchange traded products. Some jurisdictions like Germany classify ATS as financial service institution. Other jurisdictions like Quebec and Malaysia do not allow or do not in practice have off-exchange markets. Canada - on the equities side - brings off-exchange market systems and ATSs into its definition of marketplace and therefore the same transparency requirements as for exchanges apply. The information will be disseminated through the data consolidator. The only jurisdiction with quite detailed requirements for both off-exchange trading of listed securities and transactions on unregulated markets is Italy.

The key conclusions on the sub-questions are:

- (a) Some jurisdictions require the trading of exchange-traded securities that takes place on off-exchange market systems be reported once the transaction is completed. But more often the timing requirements are not quite as stringent as for on-exchange trading. Switzerland, the UK and the US (as long as the trading volume is small) require no public dissemination.
- (b) Most jurisdictions rely on the transparency requirements of the market operators, if they have any transparency requirements at all.
- (c) US rules have provisions for OTC Bulletin Board. No other jurisdictions have any requirements, which have not already been covered in a) or b) above.

- (d) Most jurisdictions have no specific transparency requirements on unlisted securities (except for Canada where trading systems of unlisted securities also fall within the definition of marketplace, and the US where ATSSs for unlisted securities are subject to the same transparency requirement as ATSSs for Exchange-traded securities - above). In Italy, Consob can specify requirements.

Question 5:

Where an instrument is traded in more than one Market in your jurisdiction:

- (a) *Are the above standards applied to achieve identical rules across all (similar) Markets with the same regulatory status? If not, please describe what differences are permitted and why.*
- (b) *Are there any requirements to consolidate market information across Markets? What level of consolidated market information is publicly disseminated (e.g. best bid and offer)?*

Answers 5:

In many jurisdictions, instruments are not trading on more than one market and therefore the question is not applicable.

- (a) Where trading does take place on more than one market, regulators require similar, if not identical, standards/rules across all markets with the same regulatory status. Sometimes regulators have some discretion as to what exact standards to require, but this discretion would be used to ensure that similar markets are subject to similar rules - creating a level playing field.
- (b) Of those jurisdictions where an instrument is traded on more than one market only some have requirements to consolidate market information across markets. Examples are the following: i) Canada goes furthest with its requirement on all market places (including non-exchange systems) to provide accurate and timely information to a data consolidator, which will then disseminate the consolidated information (including pre-trade the total volume bid or offered to each of the best five price levels for each security); ii) Germany has a central order book for exchange trading in an electronic trading system; iii) Spain's four exchanges are interconnected through an electronic trading system; and iv) in the US, where Plan processors are responsible for receiving pre-trade and post-trade information from their participants, they are responsible for consolidating the information and disseminating it.

Question 6:

Where an instrument is traded in more than one Market in your jurisdiction, do you consider ‘transparency’ alone as being sufficient to meet regulatory objectives for high quality price formation and investors’ ability to obtain best execution for their orders?

Please describe other measures you use/ consider important to achieve the above objectives in ‘fragmented’ markets (e.g. appropriate order handling/ interaction/ best execution rules; concentration rules; controls on exchange/firm incentives, payments for order-flow).

Answers 6:

Again this question is only applicable in some jurisdictions, where instruments are traded on more than one market.

All respondents, to whom this question applied, did not regard transparency alone as being sufficient to meet regulatory objectives for high quality price formation and investors' ability to obtain best execution for their orders. Some jurisdictions stress again in their answers the need for timeliness of information dissemination. Italy would not allow intermediaries to execute trades outside a regulated market - unless certain requirements (upon client request, obtaining better execution price) are met.

Most jurisdictions emphasize, in addition to transparency requirements, the need for 'best execution/best price' requirements, placed on the intermediary as part of the general requirements to deal fairly with its clients. The 'best execution/best price' requirement would generally mean that the intermediary would have to make reasonable efforts to check prices on different markets. France has in addition a 'concentration provision' which allows client orders exceeding a threshold be executed outside a regulated market. The US has in addition order handling rules and intermarket linkages displaying prices to enhance investors' ability to obtain best execution. Germany also puts emphasis on the authorization process/criteria and reporting requirements, as well as rules of conduct to ensure best execution, for ATSs (so far as ATS can be qualified as financial service institutions) and off-exchange market systems. In the UK the approach to best execution is currently under review.

Question 7:

Where an instrument is traded in multiple jurisdictions, are the transparency standards for trades of that instrument conducted outside the domestic market the same as or along the lines of those of the domestic market (the market of the issuer's incorporation or primary listing)?

If not, do you have any plans for achieving harmonization of standards or for recognition of different standards (e.g. by mutual agreements)? If yes, please describe.

Answers 7:

Most jurisdictions state that they have no authority to dictate transparency standards on trades outside their domestic market. However, it is emphasized that IOSCO Principles, and in Europe FESCO Principles for Regulated Markets, assist in harmonizing transparency standards across different jurisdictions. In addition, increasingly co-operative arrangements (such as MOUs) are being established. Some jurisdictions have higher standards of disclosure or transparency requirements than others. This will become a matter of concern for alliance or linkage initiatives (e.g. Brazil).

Most jurisdictions have more power over transparency standards applying to foreign instruments being traded on their domestic markets - in most cases these standards are similar to those applying to domestic instruments traded on domestic markets.

Question 8:

Do the Public Regulation requirements in your jurisdiction provide for:

- a) Fair treatment of orders (e.g. order handling/ execution rules)?***
- b) Best execution of orders?***
- c) Disclosure of order handling choices/ policy to market participants where there are multiple execution venues?***
- d) Disclosure of the order execution rules to the regulator and to market participants?***

If yes, please describe the respective requirements.

Answers 8:

- a)** Most jurisdictions' regulations provide for fair treatment of orders. This is achieved either through requirements placed on the specification of the exchanges' electronic trading systems or through requirements placed on the intermediary, or - in some jurisdictions - both. In the case of the former, the regulations normally specify that orders should be matched strictly according to price and time priority. If the market operates under an open outcry system, requirements such as 'all contracts shall be executed openly and competitively' (e.g. CFTC) or the need for a public display of the customer limit orders (e.g. SEC) are in place. In the case of the latter, intermediaries are normally required to handle orders of their clients fairly and in the client's best interest. In some jurisdictions, this formulation is specified in the 'best execution' requirement.
- b)** As mentioned under a), most jurisdictions have 'best execution'-type requirements on their intermediaries and exchange members. Normally such a requirement means that the intermediary needs to find the most favourable terms reasonably available under the circumstances for the customer's transaction (SEC definition). This requirement applies unless the client specifically demands otherwise. In most jurisdictions, the duty of 'best execution' is further described in rules/guidelines to the intermediary. The CFTC has no 'best execution' rule, but rather a 'customer first' rule which requires brokers to transmit client orders executable at or near market price to the floor for execution before orders of their own or affiliates.
- c)** Some jurisdictions have a requirement for disclosure of order handling choices/policy to customers (in the case of France) or to market participants (in the case of Germany). But the majority of jurisdictions state that they do not have such a requirement at this stage despite that the US and the UK are considering to include it in their future regulations.
- d)** All jurisdictions state that order execution rules, as part of wider market rules, are approved by the regulator. Normally, the rules have been notified to market participants and the wider public.