

Current Developments in the London Equity Market

1. Introduction

In October 1986, Big Bang brought enormous change to the London equity market:

- The move from single to dual capacity transformed the operations of broker/dealer and jobber firms.
- The introduction of computer technology transformed trading operations.
- The elimination of fixed commissions, the removal of entry barriers, and the improvement of visibility transformed the competitive environment.

The change was affected with great speed. Practically overnight, a closed system and trading floor were replaced by an open environment and screen trading. The number of market maker firms shot up from 13 to 33, and the capital committed to market making exploded by a multiple of 15. Commissions and spreads were both driven down by competition as large, integrated financial firms fought for position in the strategically important London market. Some characteristics of the system did not change.

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Most public orders still transact against market maker (dealer) quotes. The U.K. market remains dominated by institutional investors (more so than does the U.S. market) and, even for the largest stocks (the alphas), it is very thin compared for example to the New York Stock Exchange (NYSE). Given the sporadic, lumpy order flow that characterizes the thin, institutionally dominated U.K. market, the International Stock Exchange's (ISE) market is, on the whole, operating quite well. There is no evidence of major failure. By and large, the heavily capitalized, quote driven system appears better suited to London's unique environment than currently available alternatives: the institutional nature of the market makes it inappropriate for an electronic order driven system (such as CATS), and the thinness of the market makes it inappropriate for an agency/auction market (such as the NYSE).

Signs of strain have emerged, however, particularly since the Crash of 1987. For the most part, this is due to a tremendous excess of market making capacity, in terms of people, equipment, and the financial capital supplied by integrated financial houses fighting for position in the London financial markets.

This excess capacity has called attention to various structural problems and has generated much debate about certain rules. But the fierce tone that has characterized the debate is misleading; it largely reflects the fight for order flow in an overcapitalized market, rather than any gross inadequacy of the

system. This interpretation is supported by the fact that, although much of the argument has been couched in terms of market quality, complaints have come primarily from broker/dealers and market makers, rather than from institutional investors. In fact, the institutional investors are benefiting from the enormous immediacy and tight spreads that competition has forced market makers to provide. But the system does have weaknesses, and these may become more evident as the intensity of competition between market makers moderates. The ISE depends on market makers being prepared to quote tight spreads in large size, and on their committing themselves to doing so on SEAQ. However, the incentive to put good prices on the system is weak, because market makers can continue to attract order flow if they are known to offer good prices over the phone although not on the screen. The visibility of the market depends heavily on the quality of screen quotes, particularly since the restrictions on trade publication that were introduced in February 1988. Deterioration of screen quality is harmful to customers - they do not know in advance the best prices at which they can transact, and cannot determine after a transaction whether or not the prices they have received are good. A loss of visibility also reduces market makers' knowledge of the market. And so, as visibility deteriorates, the market makers may become less willing to quote good prices in large size on the SEAQ screen, or even over the phone. In other words, the loss of visibility can feed on itself and, in so doing, can undermine market quality.

At present, little incentive exists to by-pass the market makers. This could change, however. If both screen and negotiated prices worsen, the incentive to sacrifice immediacy, to by-pass the market makers, and actively to seek out counter-parties increases. And the opportunity exists for order flow to be diverted from the central market, because broker/dealers are free to deal directly as principals with their clients, solely on the condition that they better the market makers' prices. Consequently, the market could become increasingly fragmented and, at least for large trades, it could turn into a negoti-

ated telephone market. This may not happen, of course; but the risk exists. Our study concentrates on the quality of the market for the more liquid U.K. domestic issues that account for the bulk of trading volume [1]. We do not consider the market for small stocks or for non-U.K. equity issues. Nor do we consider problems with post-trade settlement, a procedure that currently is unduly cumbersome and expensive (and for which major changes are now under consideration). We first review recent developments starting with Big Bang (Section 2), and then consider market visibility (Section 3) and fragmentation (Section 4). The study next assesses other characteristics of the market (Section 5), and concludes by setting forth other issues currently facing the ISE (Section 6).

In brief, we assess the ISE system as follows. Market quality is currently quite high. Customers can see immediate, firm quotes in large size and with narrow spreads on their SEAQ screens. This gives some assurance that the market is well-integrated and that price discovery is reasonably accurate. Some concern exists about excessive price volatility, but we have seen no evidence on this. An important limitation, however, is that the ISE is not designed to meet the needs of customers who are prepared to forgo immediacy in search of a better price. For instance, no facility exists for exposing public limit orders to the market (although a limit order system, CLOSE, is in the planning stage). In addition, while an investor can use the services of a broker/dealer to look for a counter-party, handling pre-negotiated crosses causes problems in an environment designed to channel business through market makers, and is not commonly used for the alpha stocks. Furthermore, the system encourages market makers to post relatively poor quotes on the SEAQ screen and then to give transactions within the spread. This practice decreases screen visibility and fragments the market. All told, we are concerned that market quality could deteriorate greatly as excess market making capacity is reduced and the intensity of competition declines. At some stage, the philosophy behind the quote-driven system might be brought into question.

2. Recent history

Enormous change has characterized the London equity market since the advent of Big Bang in October, 1986. The change spans technology (the rapid introduction of computer based information systems), broker/dealer and jobber operations (the move from single to dual capacity), the competitive environment (the elimination of fixed commissions and opening of exchange membership to foreign firms), and the regulatory environment (the establishment of the SIB, the enforcement of a more prescribed set of insider trading restrictions, etc.). These changes have transformed what had been a closed market into an open system, and have resulted in the trading floor being replaced by the SEAQ screen. The open, competitive environment has also attracted massive capital to market making from integrated financial firms fighting for position in an increasingly global environment.

The problems associated with excess market making capacity did not surface until the recent bull market ended with the crash in October, 1987, because the net long position of the market makers had disguised the unprofitability of operations during the market's rise. The crash itself weakened financial positions; then the steep decline in order flow that ensued generated substantial losses.

The integrated financial firms have continued to compete fiercely for order flow despite the losses. Synergies exist between market making operations and the provision of other financial services, and the firms believe that the future indirect rewards to market making for those that survive will be substantial.

In August 1988, a price war emerged: market makers reduced their spreads, some increased share sizes and gave public customers executions at better prices, and others reduced share sizes on the SEAQ screen to the minimum (5000 shares) but in fact continued to trade in large size with public customers. The price war, along with the emergence of possible defects in the system, led the ISE to establish the Elwes Committee. The committee's work resulted in two important interim rule changes: (1)

market makers were allowed to refuse to trade with each other at their SEAQ quotes, and (2) the publication of price information on trades of £100'000 or more were delayed to the next day.

Some broker/dealers and market makers have spoken out sharply about the price war and rule changes, claiming that the market has been fragmented, that it is not transparent, that it is falling apart. Some have charged that the rule changes are a blatantly unfair restraint on competition. Allowing market maker SEAQ quotes to be unfirm to other market makers, in particular, has been interpreted as disadvantaging foreign firms that cannot lay off unwanted inventory positions as readily as can domestic firms with large retail bases.

Reports in the financial press have been bleak:

“A lack of faith in SEAQ among institutions has led a handful of big investors to start trading exclusively among themselves via Reuters' new U.K. Instinet service,” (Institutional Investor, October 1988).

“The philosophy behind SEAQ is that investors are best served by a central marketplace... ‘The screen does not provide a central market; the largest trades are always negotiated on the telephone at prices different to those on the screen,’ argues James Capel,” (Economist, November 26, 1988).

“All this adds up to the dread word ‘fragmentation’... ‘The U.K. Office of Fair Trading... already has attacked the ISE's monopoly by arguing that it should allow outside agents (including Reuters) access to stock quotes at fair prices. Once price distribution is taken out of the ISE's control, it's a relatively easy matter to set up rival markets.’” (Barrons, November 28, 1988).

“One only has to visit the many dealing-rooms in the City to realize that all that expensive equipment and all those well-paid people are not happy with a purely electronic marketplace. Many of them are quoting unrealistically narrow prices on the screen, or artificially small sizes- which is making a nonsense of the system. Almost every stockbroker you talk to misses the personal contact he use to have on the floor,” (Sunday Telegraph, December 11, 1988).

“At first, institutions and brokers liked SEAQ for its

transparency. But last summer the system started to cloud. Big share-traders complained that SEAQ's very transparency unfairly put their trading capital at the disposal of smaller market-makers rather than true customers. Rivals could dump shares..." "The prices displayed were no longer those at which big deals were being done..." "Moreover, removing visibility threatens to split the market into two tiers-one for smaller investors, one for big institutions," (The Economist, February 11, 1989).

The Elwes Committee published its interim report in May 1989. It took the position that the threshold for non-reporting should be raised considerably for more liquid stocks. It also suggested that objective criteria should be devised to assess market maker performance (and, by inference, to deregister those who are not performing satisfactorily). With evaluation criteria in place, the committee said it might be possible to reinstate the rule that SEAQ quotes are firm to all, including other market makers.

The Elwes Committee published its final report in March 1990. It recommended a number of changes, including the establishment of a limit order system for small orders, a new system for quoting for small orders, and a raising of the threshold for delayed publication of large trades, with a much shortened delay period.

The Stock Exchange Council will have to reach decisions on the report in the light both of comments from its members, and a report from the Office of Fair Trading criticising some of the rule changes concerning trade publication. The underlying issue, how to maintain a centralised market when the Exchange itself has very limited leverage, will likely remain.

This Section provides a brief review of the recent history.

2.1 Pre-Big Bang

The Big Bang of October 1986 radically transformed the London Stock Exchange. Prior to Big Bang, there were two principal types of exchange

members - brokers and jobbers. Under the single capacity system, brokers acted as agents for clients and could not take principal positions, while jobbers took principal positions but were not permitted to deal with clients except through the brokers.

Thus all orders had to be handled by brokers. Competition was restricted by the fixed minimum commission charges set by the Exchange. The brokers took the orders to the floor of the Exchange and dealt on their clients' behalf with the jobbers. Jobbers were required to offer firm two-way prices in the securities in which they dealt [2], and were generally ready to deal in large size. They acted as principals, taking the deals on to their own books. Virtually all the broking and jobbing firms were constituted as partnerships. Although incorporation had been permitted some years prior to Big Bang, outside ownership by any one shareholder was limited to 10%. Thus there was little incentive to forego the tax benefits conferred by partnership to get the limited access to outside capital afforded by incorporation.

The jobbers provided the market with liquidity on a relatively small capital base (a base on the order of £60 million supported an annual turnover on the order of £180 billion). They were protected in a number of ways that do not now apply to present day market makers:

- Entry was restricted.
- There was no trade reporting so jobbers had a far better view of the order flow than did brokers or investors. With only five significant jobbing firms (there are now 30 market makers), each saw a high proportion of the orders and was likely to know very rapidly of any unusual order flow.
- With the market being made on the floor of the Exchange, and with their continuous presence there, jobbers could see far more of what was happening. They could see brokers doing business with competitors, and they knew when a broker inspected their price and did not trade. With a screen-based telephone market, market makers' only advantage over other traders is

their immediate knowledge of the actual trades they themselves have made.

- Since the brokers had to deal on an on-going basis with a small number of jobbers, brokers did not generally try to make a quick profit directly at the expense of the jobber. It was too easy for the jobbers to retaliate by giving that broker bad prices in future.
- Performance measurement of institutional portfolios was not so tight or frequent then as now. We were told that because of this, institutions were more willing than now to help the jobber by taking substantial blocks of stock that he wanted to shift off his hands.
- Restrictions on insider dealing were far less stringent, so insiders and those with a privileged view of the order flow could make substantial profits.
- Despite these advantages, jobbers had been facing declining profits over a number of years, and this had led to a reduction in the number of jobbing firms. Before Big Bang, there were only five substantial jobbing firms in operation, two of which were contemplating merger.

2.2 Big Bang

A number of elements came together to produce the radical changes in the London Stock Market that are called Big Bang:

- The Office of Fair Trading had for some years been investigating the Stock Exchange under the competition laws. The Government finally agreed with the Exchange in 1983 to terminate the investigation on condition that the Exchange abolished brokers' minimum fixed commissions by the end of 1986.
- An increasing proportion of trades in U.K. securities between U.K. institutions was taking place off-Exchange through the medium of ADRs (American Depositary Receipts). Although this was in part due to investors seeking

to avoid Stamp Duty, the cost of dealing through the Exchange was a contributory factor.

- The pressure on jobbers' profitability was leading to excessive concentration and reduced competition. There was concern that this might lead to wide spreads and high dealing costs.
- There were strong pressures for change from the international environment. The removal of currency exchange controls, the increased readiness of investors to place funds in foreign equity markets, and the aim of many banks and other financial institutions to create or extend their presence in the securities business meant that London either had to open up or see its business slip away.

A number of other changes became inevitable after the removal of fixed brokers' commissions. Brokers argued for the right to take on principal positions to allow them to offset the reduction in broking profits. Jobbers argued that they would have to be allowed to deal directly with clients if they were not to be put at a disadvantage relative to brokers. The single capacity approach underlying the old system thus had to be jettisoned.

The developments that were collectively known as Big Bang (though some were introduced in the months prior to October 1986) were:

- Opening up Membership: Membership was made corporate and open to any body of fit, proper and adequately capitalised persons.
- Market makers: Jobbers, or market makers as they were now called, were permitted to deal directly with customers. They were required to make continuous two-way prices in any stock in which they were registered to deal, in at least minimum size (currently 5000 shares). In return, they received certain privileges, including the right/duty to post prices on SEAQ (see below), relief from stamp duty, ability to borrow stock, and access to the inter-dealer/broker system.

- Broker/dealers: Brokers were free to set their own commission charges and also to act as principals, if they would make their clients a better price than the market makers.
- IDBs: An inter-dealer/broker network was set up. Market makers alone have direct access to this service. They can use the screen based system to offer to buy or sell blocks at specified prices. Dealing, which takes place through brokers, is anonymous.
- SEAQ: A computerised quote display system that displays the prices of all competing market makers in a stock and the size in which each is prepared to deal. SEAQ also highlights the market makers who are offering the best bid and ask prices by listing their quotes on "the yellow strip". This screen is available not only to Stock Exchange members, but also to investors.
- Trade reporting: the publication of the price and quantity of each trade within five minutes (since reduced to three minutes).

The new system, which was largely modelled on NASDAQ, was designed to reflect the nature of the order flow in the London market and to build on the skills of stock exchange members. A crucial feature of the London equity market is that it is heavily institutional. By the time of Big Bang, less than 20% of equity turnover was from, or on behalf of, individuals. Almost 80% of customer turnover in U.K. equities was in the form of trades over £100'000, and 18% was over £1 million. At present, in the 100 or so most liquid stocks, there might be 150 transactions per day of which 10-15 are over £100'000 in value.

Most of the volume comes in the form of large, infrequent institutional trades. Furthermore, there is a widely held belief, which was confirmed by most of the people we spoke to, that institutional trades are often "one-way"; that is, once one institution starts to buy or to sell, others follow.

The competing market maker system was seen as best able to satisfy the needs of this very lumpy order flow. It built on the existing skills of the

jobbers who were accustomed to taking large principal positions on either side of the market when asked. It also met the needs of institutional investors who were accustomed to being able to buy or to place a substantial number of shares at a known price, without waiting for a final counter-party to be found.

2.3 Big Bang to the Price War

The most striking change following Big Bang was the abandonment of the Exchange floor. Within a matter of weeks, the exchange became a telephone market. The ISE was left with a relatively new trading floor, that is now only partially used by its options market.

Big Bang worked well in many ways. 33 firms became registered market makers. Many of these were part of well-capitalised financial companies for whom market making in the U.K. was part of a wider strategic plan. The capital committed to market making increased enormously, from £60 million to over £1 billion.

In the alpha stocks (the 100-150 most liquid stocks), firm quotes were typically available for up to 100'000 shares (about \$0.5 million by value), and the average touch at this size (the difference between best bid and best offer) was 0.73%. But the SEAQ screen actually under-estimated the depth of the market, since 75% of trades of between 100'000 and 1 million shares (above which size there are no firm quotes) [3], were transacted at prices on the screen or better.

In the year after Big Bang, turnover on customer business virtually doubled to over £1.1 billion per day. By August 1987, the FT-SE index had risen by almost 50% above its level at the time of Big Bang. Since market makers generally held long positions, their inventory profits, coupled with the increase in turnover, disguised the excess capacity and the basic unprofitability of market making itself.

The Crash of October 1987 hit the London market badly. Over the period October 12 to 30, 1987, London prices fell 27% as compared with a fall of

23% in New York. The new system responded well to the test, however. The markets remained open at all times. Transactions took place at close to quoted prices apart from during two 15 minute intervals during the crash. Market makers were net buyers of £250 million in equities. The deviation between spot and index futures prices was far less pronounced than on the NYSE.

There were accusations that market makers did not answer their phones, and certainly it was difficult to get through. But on October 19 and 20, the system handled more than twice the average number of daily transactions for 1987. There were inevitably capacity constraints, but no clear evidence of any deliberate attempt to avoid the obligation to make a market.

Market makers were ill positioned for the crash. They were long stock before it, and took on more stock as the market fell. Following the crash, spreads widened. The average touch for alpha stocks increased from 0.83% to 2.00% over the month. By the summer of 1988, the touch had declined to 1.15%, but was still above the pre-crash level. The premium for large orders also rose sharply, and the size in which firm prices were quoted fell. And turnover declined sharply, almost to pre-Big Bang levels.

The price war started on August 25, 1988. Two of the largest market making firms (Barclays de Zoete Wedd (BZW) and Phillips and Drew (P&D)) reduced spreads and lowered the size in which they were prepared to make firm quotes to the minimum level of 5000 shares. They made clear to their institutional customers that they were still prepared to deal with clients at the quoted price in large size, but that they did not wish to be forced to deal with competing market makers in this manner. BZW and P&D argued that they were in effect subsidising their competitors who could take on large principal positions knowing they could lay them off at good prices (with BZW and P&D).

Some of the other market makers took up the challenge, and decided to attract business by quoting prices in still larger size than before. So the average touch in alphas went down from 1.15% to

0.80%, while the average largest quote size increased over the quarter to 140'000 shares from 70'000 shares.

Profitability was badly affected. Estimated annual losses by market makers collectively were running around £500 million in 1988. As one market maker told us, £350 million of revenue were offsetting £850 million of costs. There have been some retrenchments and a few outright withdrawals from the market, but there are still 30 registered market makers, with the top eight firms accounting for 80% of the business.

A further source of conflict was created by small order routing systems. Two market makers (BZW and Kleinwort Benson) set up their own systems whereby brokers can automatically route small orders to them. The market maker firm undertakes to match the best price on the screen even if its own screen price is inferior. This was felt to be unfair to other market makers who were taking a risk by quoting the best prices on the screen, but were not rewarded with the order flow. These in-house systems also competed with the Exchange's own small order handling system, SAEF.

2.4 The Price War to the Present

In response to the growing acrimony between market makers, and between market makers and dealer/brokers, the Exchange set up a special committee in November 1988 under the chairmanship of Nigel Elwes of Warburgs to review the market structure. The committee recommended as an interim measure two important changes:

1. The removal of the obligation on market makers to deal with other market makers at the prices they were quoting on the SEAQ screen.
2. The suspension of immediate publication of trades over £100'000.

The first change was designed to meet the criticism that some market makers were avoiding their responsibility to provide liquidity by laying off posi-

tions with other market makers. The partial suspension of trade reporting was justified by the argument that immediate publication impeded the execution of large trades by allowing other traders to spoil the business, either by transacting or by moving their prices before the market maker had the opportunity to effect an offsetting trade. The recommendation was that large trades should continue to be reported to the Exchange for control and surveillance reasons, and be published the following day in the Daily Official List, but that these trades should no longer be published electronically within five minutes of their taking place. The committee explored the possibility of delaying electronic reporting for only one or two hours, but this was rejected as technically unfeasible.

The rule changes provoked opposition. David Walker, the Chairman of the Securities and Investments Board (SIB) criticised the retreat from transparency. John Heimann of Merrill Lynch saw the changes as an attempt to re-establish the old oligopoly that prevailed before Big Bang. Certainly, the changes have made life more difficult for those market makers with a small share of the order flow (who are therefore less likely to have direct knowledge of large orders), and for those who lack distribution capacity (and thus depend on other market makers for liquidity).

In addition to the practitioner-based Elwes Committee, the ISE commissioned an independent assessment of the system from the consultant firm, Touche Ross. The Touche Ross report argued that the system depended excessively on market makers, and concluded that the dispersion of order flow between market makers was incompatible with a central market. The report proposed that a central order processing system be set up to expose and match both market and limit orders. Market makers would have privileged access to the public order flow for a brief period (five to ten minutes). However, they would continue to be obliged to quote firm two-way prices, and other market maker privileges (relief from the stamp tax and stock borrowing concessions) would be made available to all members of the Exchange. These proposals

represented a substantial shift from the philosophy behind the quote-driven market, toward a CATS-type system. With regard to some of the more immediate issues, the Touche Ross report endorsed the removal of the obligation on market makers to deal with each other, and recommended that the rule on delayed publication of large trades be reduced from one day to around 30 minutes.

The Elwes Committee's second report, which significantly modified its interim conclusions, was finished in May 1989. The committee endorsed the SEAQ philosophy and firmly rejected both the Toronto-type CATS and the NYSE-type specialist systems for the London market. The Committee's main recommendations were:

- Market makers should not be able to display less good prices on SEAQ than they display on other quote vendor systems. This was aimed particularly at market makers who offered better prices to institutional clients through closed user groups. Market makers could continue, however, to negotiate better prices than their quotes on individual trades.
- Brokers using either the ISE's own automatic execution system (SAEF) or an in-house system, should only be able to route orders to a particular market maker if that market maker is committed on SEAQ to matching the touch for all public customers.
- Market makers should be evaluated to ensure that they honour their obligation to quote competitive prices and sizes.
- Once effective evaluation of market makers is in place, it should be possible to reimpose the requirement that SEAQ quotes be firm to other market makers as well as to other members of the market.
- The definition of a large trade that would not be subject to immediate publication should be refined to make it reflect more closely the liquidity in different stocks.
- Broker/dealers who are acting as agents in crossing two clients' orders should be required to expose the deal to the most competitive

market maker to allow him to participate in the deal.

- An experimental limit order execution system (CLOSE) should be set up.

Following further consultation with member firms and discussion by the Stock Exchange Council, the Elwes Committee produced a third and final report in March 1990. This report largely built on the earlier findings. The new recommendations were that:

- the classification of shares into alphas, betas, gammas and deltas be scrapped, and be replaced by a uniform system based on the normal market size (NMS) in each security. The minimum quote size, the maximum size of trade subject to on-line reporting, and the size of trade which can be executed through the automatic execution system would all be tied to the NMS.
- large trades would be published within 90 minutes rather than the following day. The introduction of the normal market size would also have the effect of raising the threshold for delayed publication to transactions of around £750'000 rather than £100'000.
- a 'green strip' would be introduced to enable market makers to quote prices for small transactions on an anonymous basis. In this way, each market maker could quote one set of prices in small quantity, and another in institutional sizes.

3. Visibility

SEAQ is a screen-based system. The screen displays each market maker's quotes, showing a bid and offer price, and the sizes for which the prices are firm. The screen also shows cumulative volume, and the size and price of the most recent transactions. In this section we examine the quality of the information that appears on the screen.

The quality of a market should be assessed in light of the requirements and expectations of its users. As

noted, equity trading in London is dominated by the institutional investors. Order flow is low even in the most liquid stocks, most of the volume is in large trades, trading tends to be 'one-way', and the institutional investors put a high premium on immediacy - the ability to buy or to sell a large block of shares at short notice and at a good price. The institutions have been much less concerned about price continuity. In this environment, the quality of the quotes is of paramount importance.

The London equity market has traditionally lacked the investor protection offered by an open auction system or by trade publication. Pre-Big Bang, the main protection against bad prices (apart from the services offered by a professional broker) was the fact that the jobber had to offer a firm two-way price without initially knowing which way the customer wanted to deal. Although London since Big Bang is far more open than it was, the transparency of the market continues to depend much more heavily on the publication of firm two-way quotes than on trade publication.

After Big Bang, the old jobber/broker market, that was designed to offer immediate execution in institutional size, became the quote driven market-maker, broker/dealer system of today. The new structure was founded on the principle that investors should be able to see the prices at which they could trade with individual market makers. The ISE has sought to maintain the integrity of the quotation system, and has been concerned about market makers posting poor prices on SEAQ and then giving better executions. Poor SEAQ prices impair market visibility (an issue we deal with in this section) and imply a certain amount of market fragmentation (an issue we deal with in the next section).

3.1 General Assessment

The system would seem to have a high degree of transparency, with competing quotes in large size being displayed to all those interested, and with speedy (within three minutes) reporting of the price and size of each trade taking place in the market.

Transparency is impaired, however, by three factors:

1. Market makers are generally prepared to deal within their quotes, particularly when they are not on the touch, and will normally deal at quoted prices in much larger size. The more this happens, the less will the screen represent best prices available to customers.
2. Large trades are only published the following day. The fact that a large trade has taken place is made publicly known through the cumulative volume indicator, but the price only becomes known the following day with the publication of the Daily Official List. Given that 'large trades' as currently defined account for 75% of total volume, this exemption from immediate publication means that the transaction record is of little value. If the Elwes Committee's recommendations in its Final Report are accepted, only the very largest trades will be subject to delayed publication, and the value of the transaction record will be at least partially restored.
3. The system allows each market maker to put up only one set of quotes (a bid and ask in a size he or she chooses). In principle, a system that allowed the market maker to display an entire price schedule would be more transparent, but given the small degree to which spreads vary with trade size, it is not clear this would have a material impact. Again, the Elwes Committee has now gone some way to meeting this point by proposing a Green Strip system which will enable market makers to quote different prices for large and small trades.

3.2 Within the Spread Transactions

Market makers have an incentive, of course, to announce good quotes and large size: the advertising attracts order flow, especially for the market maker who has a quote in the yellow strip (the

region of the SEAQ screen where the inside market, or touch, is displayed). This incentive is limited, however, because favored relationships and customer loyalty exist between various market maker firms and institutional customers, and market makers will typically match or even better the touch for favored customers. An individual market maker might not wish to quote the price and size at which he or she is really prepared to deal for a number of reasons. Essentially, stating wider spreads and then giving transactions between the quotes adds flexibility to screen based trading. It gives market makers time to alter their quotes on the screen following informational change, and it enables them to service customer orders without constantly adjusting their screen quotes in a way that would signal their inventory positions.

Another key reason for market makers quoting poor prices and/or small size on the screen and then making better prices over the phone, is that this enables them to price discriminate between customers. If a market maker gives its own customers good prices, other parts of the company are rewarded with profitable business. Conversely, the firm may wish to avoid trading with, or else offer poorer prices to, customers who are known to be slow payers or who have poorly run back offices. And, most importantly, the very fact that a particular customer is in the market wanting to trade in a certain way, itself carries information that the market maker firm might wish to reflect in the prices it quotes over the phone.

For example, if a broker/dealer firm that does a large amount of principal trading with its own customers wishes to sell stock to a market maker firm, it is likely that this broker/dealer has tried and failed to place the shares with its own customers. The market maker firm would thus wish to offer a lower price because little buying interest exists for the stock, and because others now know that the shares are overhanging the market. The firm will also want to discriminate between a trader who always seems to buy ahead of a price move, and one who follows a mechanical strategy such as running an index fund.

Price discrimination and poor screen prices go together. If visibility is to be upheld, then price discrimination must be severely curtailed. Curtailing price discrimination, however, will benefit the informed trader and the broker/dealer, at the expense of the uninformed trader who has not hawked a transaction around the market. If the relatively "informationless" traders are sufficiently disadvantaged, it could become economical for them to bypass the market and deal with each other directly (as some traders are now doing in the U.S., via systems such as Barra/Jefferies' Posit and Instinet's crossing network). The market makers would then see a declining proportion of the order flow and would be disadvantaged by increasingly trading with better informed customers. Ultimately, if carried to its logical conclusion, the market could fragment, and the market maker system could cease to be viable. We emphasize that there is no evidence that this is happening at present. Competition is so fierce that screen prices are good, and there is little incentive to bypass the market makers. But if spreads were to widen enough to give market makers an economic return on their capital, it is possible for the threat to become real.

3.3 Trade Reporting

Following the February 1989 rule changes, trades of over £100'000 are only published the following day. Because these trades account for 75% of the value of customer business (7% by number of transactions), this change makes on-line trade reporting of marginal value. The Elwes Committee's final proposals would greatly raise the threshold for non-reporting, which is sensible. The current limits are, for most shares, well below the level where a market maker would need to lay off an inventory position immediately.

For all trading systems, a significant difference exists between the economic signal transmitted by a quote and that transmitted by a transaction price. A quote reflects one market participant's willingness to trade, but a quote is only valid up to a given

size, and it may also be improved on (in terms of price and/or quantity) in negotiation. A transaction price is a price that has actually been accepted by both counterparties to a trade.

A transaction price, however, relates to the past and does not necessarily reflect the price at which one can trade in the present, as does a bid or an ask quotation. In the U.S. agency/auction markets, much importance is attributed to the transaction record as a reflection of current market conditions. This is particularly true for the NYSE where quotes can be set by very different types of market participants (specialists, floor traders, and public limit order traders), and where transactions occur far more frequently than in London.

In the ISE market maker system, considerably more attention is given to the importance of good quote reporting, and less to transaction price reporting. The architectural strategy of Big Bang clearly hinges on screen transparency - that is, market makers putting on the screen the largest sizes and the best prices they are prepared to offer their customers. The exemption of large trades from on-line reporting is based on the argument that there is a conflict between prompt and full trade reporting on the one hand, and high quality quotes on the other. Market makers will not be prepared to take large positions if they have to publish their transactions before they can lay them off. In keeping with the basic philosophy of SEAQ, the Stock Exchange is prepared to sacrifice trade reporting in order to go all out for high quality quotes.

But investors who are accustomed to seeing prompt reporting of all trades will require much persuading if they are to believe that a market with good quotes but only limited trade reporting is sufficiently transparent. The ISE may be able to meet these concerns at least in part by raising the exemption limits and reducing the delay before large trades are published (as the Elwes Committee has recommended).

However, even if the rule on trade publication is modified along these lines, the transparency of the market will still be seriously impaired. A trader contemplating a transaction will face the risk that a large trade has already taken place but is not yet

public knowledge. The loss in transparency is also risky for market makers, because they have only a limited knowledge of the order flow unless it is their own quotes that are being hit. Delayed trade reporting further makes it easier for public traders to transact simultaneously with several different market makers. The restrictions on trade reporting have attracted a hostile response from the Office of Fair Trading for these reasons.

In short, a market maker firm benefits from keeping its own trades secret, but is hurt by not knowing other firms' trades. The primary consequence of delayed trade reporting is likely to be an improvement in the relative position of market makers with a large share of the order flow (such a firm, because of its size, sees a large part of the order flow and thus depends less on trade reporting). We therefore predict that the limited trade reporting will result in increased market concentration.

3.4 Preferencing

In Section 3.2 we noted that the incentive to quote good prices is weak, and that market makers can attract order flow by establishing a reputation for offering good prices over the phone even when they post poor quotes on the screen. Consequently, attention has centered on ways of encouraging market makers to quote in large size and at narrow spreads. The focus has been on two issues in particular: (1) whether market makers who are setting poor prices on SEAQ should be allowed to receive order flow from automatic execution systems (the so-called "preferencing" debate that is covered in this subsection), and (2) whether market makers should be prevented from indulging in "fair weather market making" (which is covered in the following subsection).

"Preferencing" refers to the means of diverting order flow to particular market makers who are not necessarily showing the best screen prices. In the retail market this occurs primarily with proprietary small order systems such as Kleinwort's BEST and BZW's TRADE. An order input by a broker

through a terminal is executed in one of these proprietary systems at the best screen price, regardless of the price the market maker is showing on SEAQ at the time.

A preferencing issue also arises with respect to the ISE's own system, SAEF. As originally conceived, SAEF orders would have been routed automatically to the market maker with the best price on SEAQ. Brokers, however, have successfully pressed for the right to designate the market maker firm that will get their business. This issue involves a conflict of interest for the ISE. The Exchange both sets market rules for others, and wants its own automated execution system to be profitable. The ISE has promulgated but failed to confirm a decision that preferencing on SAEF should only be permitted when the market maker concerned is setting the best price on SEAQ.

Preferencing also exist with "Closed User Groups", where a market maker posts prices on a different screen system that is seen only by favored institutional clients. In general, these quotes are better than those displayed by the market maker firm on the SEAQ screen. The Elwes Committee has recommended that market makers should not be allowed to display quotes on any other system that are better than those they are showing in SEAQ. Furthermore, the Committee believes that if a market maker firm is committed to matching the touch for small trades on its proprietary system, than it must make a similar commitment to the public generally. The solution proposed by the Elwes Committee is for there to be a new facility to enable market-makers to quote prices for small order sizes, in addition to their existing quotes. The best prices in small size would be shown on the so-called Green Strip.

Market makers would only be allowed to execute trades with automatic execution facilities if they are on the Green Strip at that time. This would largely avoid the problem of market makers discriminating in favour of their own customers, and would to some extent deal with the problem of market makers getting order flow without participating in the price discovery process.

3.5 Fair-Weather Market Making

Market makers are required to make firm, two-way prices for at least 5000 shares in the securities for which they are registered [4]. The market makers are not obliged to deal in larger size, nor is there any limit on the spread they can charge. They have no obligation to smooth prices or to ensure an orderly market. In return for making a market, the firms receive certain privileges, notably relief from stamp duty, facilitated stock borrowing, and access to the inter-dealer broker (IDB) system.

The concept of fair weather market making is intended to describe those firms that take the privileges but fail to meet the implicit obligations. The Elwes Committee uses the term to refer variously to a market maker who will reduce his risk position at another market maker's expense, to one who will spoil another market maker's business when the latter is trying to place a large order, and to one who only wishes to deal with his own clients and affiliates.

Some of the anger about fair weather market making may be the result of the vigorous competition that has accompanied the rapid increase in capacity. From an economic point of view, the argument about privileges and obligations has little merit - with essentially unrestricted entry to market making, competition would ensure that the benefit of any subsidies would be passed on to customers in the form of narrower spreads. Further, it is difficult to see how any free market can prevent a market maker who has learned legitimately of a competitor's transactions from taking advantage of that knowledge. Nor is it reasonable to demand that a market maker hold a position rather than attempt to lay it off (this may cease to be regarded as a problem now that market makers are not forced to deal with each other). Finally the value of market maker privileges will be greatly reduced once stamp duty is abolished, which the Government has announced it intends to do.

But a problem nevertheless exists. Without further change, market makers will tend to set poor quotes on the screen so as to be able to discriminate

between customers, and to take on large positions without advertising the fact by moving their screen quotes. The Elwes Committee's proposed solution is to monitor market makers' performance, with the threat that 'fair weather' market makers would be deregistered if they failed to make an active market. The criteria to be used were sketched out broadly, and were based primarily on the time the market maker spent making the best price.

Specifying tight performance criteria for market makers would be a partial retreat from the philosophy of Big Bang. The membership of the Exchange was opened up at Big Bang. The intention was to establish a free environment where anybody who is prepared to abide by the rules may participate. Assessment prompts two particular concerns in this setting. First, it seems to be an ad hoc measure that indicates a fundamental weakness in the design of the system. Second, it raises the fear that the Exchange could use its discretion to register and deregister to protect unfairly the economic interests of some of its members. In its Final Report, the Elwes Committee went some way to allay these fears by proposing a much simpler and more direct method of assessing performance than had at one time been mooted.

4. Fragmentation

'Fragmentation' can denote a variety of perceived threats to the integrity of a market. We use the term in this study to refer to comparable trades taking place at different prices at the same time. There is little reason for anyone to trade at prices worse than those visible to all traders on the screen. Therefore, if screen spreads are tight and the quotes are in large size, the competitive dealer market will be integrated.

A distinction should be drawn between actual and potential fragmentation. Much of the argument in the U.K. about fragmentation has concerned developments that could worsen the prices shown on SEAQ, and thus lead to fragmentation in the future. One should also keep in mind that the ISE is a

competitive dealer market, similar in structure to the NASDAQ market. Any competitive dealer market is fragmented in ways that need not characterize an agency/auction system such as the NYSE. Public orders are not consolidated in a single file with secondary trading priority rules enforced (e.g., the first or largest public orders at a price execute first). Indeed, secondary priority rules have little relevance when public orders are routinely executed immediately against a market maker's quotes [5]. Moreover, a London market maker's affirmative obligation to make a two-sided market is not comparable to an NYSE specialist's affirmative obligation to make a "fair and orderly" market. This means that orders and executions need not be consolidated in London so as to ensure price continuity or other measures of market quality that are more characteristic of the NYSE. Consequently, the fact that trading has left the floor and gone "upstairs" is not in and of itself evidence of increased fragmentation - the trading desks of competing market makers for an issue are not more separated today than were the trading posts of competing jobbers on the now vacated floor. Without the floor, however, information transfer might be more difficult for some traders.

The ISE market also differs from NASDAQ in certain key respects. Most importantly, unlike in NASDAQ, ISE trading is dominated by institutional investors. As noted, institutional orders for alpha stocks are generally not negotiated in an upstairs market (as in the OTC), but rather are brought to the market makers and filled immediately. It is the market makers who then search for counterparties, or else work off their inventory imbalances as market conditions and subsequent order flow permit. The market makers commonly negotiate with institutional customers by posting relatively wide spreads and then giving executions between their quotes. In contrast, transactions within the spread are not observed in the more retail-oriented NASDAQ market.

4.1 General Assessment

Currently, fragmentation is not serious, although it could become so if spreads were to widen appreciably on the SEAQ screen. The ISE has no rule equivalent to NYSE Rule 390, and thus integration depends on the attractiveness of dealing through the central market, rather than on regulation. Non-members are free to deal directly with each other. Members can also by-pass market makers and deal directly with each other. The fact that virtually all trades in London in U.K. equities are done through the ISE, and that 85 percent of the trading is with market makers, testifies to the quality of the service being offered.

In this section, we consider five possible forms of fragmentation. These are:

1. Off-board trading
2. ISE trades that by-pass the market makers
3. Fragmentation of the market among competing market makers
4. Diversion of order flow to quote vendor systems and closed user groups
5. Fragmentation between SEAQ and the IDB system

4.2 Off-Board Trading

Despite some rumours to the contrary, there is little evidence of trading that does not involve members of the Stock Exchange. Instinet has not been successful thus far in London. We understand that virtually all trades in London in U.K. equities are reported to the Exchange, and are subject to its surveillance and reporting rules. The ISE, however, has no monopoly on securities trading. As the Elwes Committee has stated, "In the U.K. there is no obligation for clients to execute their securities business on an Exchange, nor for dealers in securities to join an Exchange. That being so, business will only continue to be attracted to the ISE if the prices at which investors can buy and sell securities

'on market' are more competitive than can be obtained elsewhere'' (Elwes Committee Second Report, p. 14.).

4.3 Trades that By-Pass Market Makers

The fact that a trade is carried out on-exchange does not guarantee that it will be channelled through a market maker, however. Currently, some 10 percent to 15 percent of trades by-pass the market makers (a similar proportion to that which existed prior to Big Bang). Broker/dealers are free to act as principals or to cross customers' orders without reference to market makers. Currently, their only obligation is to ensure that customers do at least as well as they could if they dealt directly with a market maker in agency trades, or that they get a better execution in principal trades. In practice this means trading at or within the SEAQ touch for agency trades, and within the touch for principal trades. Consequently, a worsening of screen prices widens the scope for trades to by-pass the market makers. This is a potentially serious threat to market makers who must see the order flow to establish good prices. The Elwes Committee has proposed tightening the rules to ensure that a cross be exposed to a market maker firm, and that the firm should be able to participate in the cross if it so desires. The market makers, however, still will not know of trades between broker/dealers and clients.

4.4 Fragmentation between Market Makers

On a market-wide basis, 25 percent of the market making firms handle 80 percent of trading volume. We do not have information on the degree of concentration in individual stocks, but over 90 percent of the alpha stocks have at least ten registered market makers.

Inevitably, most market makers have only an incomplete view of the order flow. They depend heavily on the SEAQ screen (which is public), on the IDB screen (which is available only to other

market makers), and on those orders and requests for quotes that they themselves receive.

The two major rule changes introduced in 1989, and currently under discussion, hurt a market maker with a small share of the order flow. Delayed publication of large trades suppresses important information about order flow (which keeps smaller market makers relatively less informed). Restrictions of the obligation on market makers to trade with each other impedes inter-market maker trading and, in so doing, hurts the smaller firms in particular. Inter-market maker trading is a particularly important means of information transfer in the absence of immediate trade reporting. However, without firm quotes, this market may function less efficiently, and an incentive is created for market makers to club together. Market makers with a small share of the market or who are otherwise relatively powerless, would likely be excluded from the club. Thus for various reasons, the rule changes last year disadvantaged the small market makers. Although the changes have been partially reversed (raising the threshold for non-publication, delay limited to 90 minutes, reinstating the obligation to deal at least in normal market size), the changes taken as a whole might encourage increased concentration in the industry.

Because market maker firms give executions within the spread, dispersal of the order flow across them has also caused concern that different customers can realize different execution prices under identical market conditions. The differential price enhancements for within the spread transactions are bound to make both quotes and transaction prices noisier reflections of underlying economic conditions. This must, to some extent, impair price discovery and raise questions of fairness.

The point of entry of an order into the system should not matter in a truly consolidated market. In the U.K., the execution realized by a public customer depends on the market making firm to which the order has been submitted, and the system is, indeed, fragmented. With tight spreads and good depth at the quotes, the fragmentation that presently exists is not of major concern. This might change if spreads

were to widen with a diminution of excess capacity and weakening of inter-market maker competition.

4.5 Quote Vendor Systems and Closed User Groups

Three automated execution systems - the ISE's SAEF, Barclays de Zoete Wedd's TRADE, and Kleinwort Benson's BEST - are estimated to have captured approximately 10 percent of trading volume [6]. Of primary concern is the order flow being diverted to the two private systems, BZW's TRADE and Kleinwort's BEST.

Another related and potentially troublesome development is that some market makers now offer prices to closed user groups that are better than those they announce to the broad public on SEAQ. As we have noted, fragmentation of this type would be eliminated if the ISE were to accept the Elwes Committee proposal that market makers not be allowed to display quotes on SEAQ that are inferior to those they display on any other quote vendor system.

The uneasiness concerning the private systems is that a market maker could post relatively unattractive quotes on the SEAQ screen and still capture order flow from its competitors. For a number of reasons, a market maker firm may in fact commit itself to a better price and/or size than it is showing on SEAQ. For instance, the firm may have an undesirably large long position in a stock but be unwilling to lower its SEAQ quotes because this might trigger a decline in competitors' quotes without eliciting any purchases. Or, the market maker may wish to price discriminate between a known group of final investors and the public generally for the reasons discussed in Section 3.2 above.

The Elwes Committee has rightly seen this as a threat to the integrity of the market. Straightforward fragmentation exists if the prices being quoted are better than the SEAQ touch. Accordingly, the Committee has recommended that market makers not be allowed to quote better prices (or the same price in larger size) on some other system, apart

from IDB, than they quote on SEAQ. But even if a market maker firm is just matching the SEAQ touch on its automated execution system, it has less incentive to itself post good SEAQ prices.

The recommendation has been made to the ISE that the Exchange forbid its market makers from participating in alternative systems (or at least that their pricing freedom be severely constrained if they do participate). But the ISE cannot regulate the activities of non-members, and if an economic function is fulfilled by these alternative markets, they will be set up. The issue underscores the limits of the ISE's ability to prevent the market from fragmenting.

4.6 The Inter-Dealer Broker System

Fragmentation is also thought by some to exist because of the inter-dealer broker (IDB) system. 10 percent of total turnover on the Exchange is currently being conducted through IDBs.

IDB is essentially a CATS-type order driven market available to market makers only. Market makers can either post limit orders on the IDB screen, or trade against the IDB quotes of other market makers. Either way, the orders are anonymous, and the quotes are firm and generally better than those shown on SEAQ. The IDB screen is only seen by market makers, and only market makers and brokers affiliated with them have access to the system. The system fulfills a valuable function within SEAQ by transmitting information about order flow, and thus tends to offset the fragmentation inherent in the multi-market maker system.

The Touche report states that "the reason why access to the IDB system has become an issue is because it is a form of limit order system that would be attractive to other traders" (p. 26). The suggestion is made in the report that the system be opened to all principal traders. Doing so would no doubt decrease the importance of market makers as more public orders would be directly crossed with each other. This would be a major step toward a central order processing system. The change might also imply some recognition that the quote-driven, market

maker based philosophy underlying SEAQ is not viable, and that the central market can only be maintained through an order-driven system. The issue clearly goes well beyond a question of detail.

5. Evaluation of Other Market Characteristics

This section evaluates the quality of other market characteristics under a variety of headings.

5.1 Depth/Liquidity

The Prudential, the biggest of the institutional investors, told us that, in the large stocks, it expects to be able to deal in blocks of up to £1 million at a time, and that it expects to do so immediately and at a low spread. It feels that liquidity had improved rapidly in the build-up to Big Bang, deteriorated sharply with the crash, and has since moved back towards the levels at Big Bang. This confirms the picture given by the statistics on spreads and quote size.

Two additional points need to be borne in mind in assessing liquidity. First, the demand for liquidity is to some extent a function of what users are accustomed to. Rebalancing an institutional portfolio today may well require shifting much larger blocks than previously, but the institutions are used to splitting up their trades into more digestible chunks, and they accept that they cannot get immediacy in larger size. Second, it is ultimately the final customers who are the source of liquidity. That is, market intermediaries only smooth out temporary order imbalances. The market mechanism can help in providing long-term liquidity only if, by its very transparency, it encourages customers to intervene in the market when prices are out of equilibrium.

5.2 Spreads

The touch in the 150 most liquid stocks averages just over 0.8 percent, and is good for 5000 shares. The touch widens very little with size, and the average touch at maximum quote size (around

90'000 shares) has only been 0.1 percent to 0.15 percent wider than the touch at small size.

This may in fact overstate both the effective dealing spread and the degree to which the spread increases in size. Although 80 percent of all transactions are done at the touch, the proportion of large trades done at better than touch prices is, we were informed by the ISE, around 50 percent. Furthermore, many of the people we interviewed confirmed that market makers would generally improve on the touch at maximum quote size, and would be prepared to deal at the touch in larger than quoted size.

It is generally believed that spreads are far lower than could be maintained in equilibrium. The Touche Ross report estimated that the gross revenue in alpha stocks is zero.

5.3 Openness to Entry

There are no serious entry barriers to market making and dealer/broking. Membership in the Exchange is open to any body of fit and proper persons. There are capital requirements to be satisfied and rules to be obeyed, but in practice these do not constitute a serious impediment to entry. As noted above (section 3.5), there are proposals to evaluate market makers more rigourously than in the past, but it does not appear likely that this evaluation will be used to preclude new entrants.

5.4 Ability to Handle Basket Trades

Baskets are increasingly being traded on the Exchange. An institution wishing to sell a basket will define its contents in general terms - amount of stock in each category (alpha, beta, gamma, and delta), how large any large holdings are relative to normal trading volume in that stock, etc. - and will seek bids from market makers and broker/dealers. The bids are expressed as a discount or premium from the mid-touch price on the SEAQ screens at a future time. When that time arrives, the institution

receives a complete list of stock it has bought or sold. The procedure for handling baskets is cumbersome. It takes a few hours to set up a basket trade. At present many of the people we saw argued that basket trading was unprofitable. One market maker told us that "you can tell which firms are desperate to increase market share. They are the ones doing the basket trades".

It is not possible to do basket trades through the Stock Exchange's recently established automatic execution facility (SAEF). The system currently only handles orders up to 1000 shares (a value of around \$5000), and does not cover all stocks. However, SAEF is being extended both in terms of its size limit (to 5000 shares) and coverage.

5.5 Limit Orders

Currently there is no facility that would allow customers to place limit orders on the market. Customers who wish to do so must instruct their brokers to watch the screen and to place the orders with a market maker once the limits are hit. The only limit orders on the market are the orders that market makers themselves put on the IDB screen. The Elwes Committee concluded that a trial limit order system (CLOSE) be designed primarily for retail demand, and that it should be allowed to develop or wither according to the level of demand for the service. It is also possible that CLOSE, if implemented and successful, could be expanded to handle large trades. As with opening access to the IDB screens, this would imply a major shift in SEAQ design philosophy. In any event, the proposal is likely to run into opposition from some market makers who see CLOSE as a direct competitor.

5.6 Block Trades

A customer who wishes to trade a large block can generally do so with a market maker, and transactions of over £1 million account for 15 percent of turnover for the market makers. But for very large

blocks, a market maker may be unwilling to take the entire transaction at a reasonable price. The customer might then either use a broker to find suitable counterparties, or else divide the order into smaller pieces to be trickled onto the market.

Only 10 percent to 15 percent of trades currently by-pass the market makers, which illustrates the degree of centralization of the London market. However, for some large trades, a brokered institutional market, along the lines of the U.S. upstairs market, might be more efficient. Careful negotiation of a block might reduce market impact costs, and enable the entire block to be shifted more rapidly than is possible under a trickle strategy.

5.7 Price Stability

Some complaints have been made that, following Big Bang, the structure of the market has increased price volatility. Three different arguments have been advanced in support of this belief. First, the excellent liquidity in the London market has attracted international investors who wish to adjust their portfolios rapidly, and these investors destabilize the market. This argument was used to explain the severity of the fall in the FT-SE index during the Crash. We have seen little evidence to back this argument; indeed, it appears implausible since a more liquid market should respond less to any given order flow. Order flow would in fact be attracted to the London market only if the greater liquidity actually resulted in smaller price movements.

The second argument is that the transparency of the market results in market makers adjusting their prices too quickly in response to each other's price changes, so as to be protected from their (possibly) better informed competitors. The implication is that some market makers are unwilling to take an independent view of the market and to commit their capital.

The third argument involves "one-way" markets, a situation that exists when public customers arrive sequentially on the same side of the market (either as buyers or sellers). One-way markets are believed

by many to exist in London because of the herd instinct that might characterize institutional investors who all respond to similar research reports and economic conditions. One-way markets can imply excessive short-run price instability if they result in over-shooting and eventual reversals. They may also be evidence of inaccurate price discovery in the short run. However, the existence of short-run price instability should create profitable opportunities for market makers to position themselves against the herd.

5.8 Price Discovery

No formal opening procedure exists on the ISE. Market makers are free to put quotes on the screen from 7:30 a.m. to 9:00 a.m., at which point the placement of quotes becomes mandatory. Customers can see the prices on the SEAQ screen and, if they believe them to be unreasonable, can readily transact against them and presumably bring them back into line. On the other hand, as just noted, the existence of one-way markets may suggest that the process of price discovery takes an extended period of time.

One might anticipate that more attention will be given to improving price discovery. The Elwes report emphasized that, "At the centre of any market is a price formation system. In an ideal central securities market there is a single equilibrium price based on all available information..." (p. 11). Yet the implications of imperfect information disclosure on quotes and transaction prices were not discussed by the Committee in this light.

6. Other Issues Facing the ISE

Market quality is being maintained today at a huge cost - market making firms were estimated to be making losses on the order of £500 million per year in 1988, though the situation has since improved somewhat. How long will overcapacity last? What effect will its eventual elimination have on compet-

itive pressures? If competition does weaken and appropriate structural changes are not made, will SEAQ spreads widen appreciably and depth decrease? If so, the screen will become more opaque, and fragmentation will emerge as a more serious problem. We have consequently given particular attention in this study to potential problems concerning visibility and fragmentation. In this section, we briefly consider certain other issues relating to the ISE.

6.1 Flexibility

The ISE depends on market makers posting good quotes in size on SEAQ. The risks of doing so for the market maker firms are substantial, however, and they will post good quotes in size only if the system is tuned to their needs. This is why transaction prices are not being published immediately for large trades, why SEAQ quotes are not firm for inter-market maker trading, and why a public limit order facility may not be implemented. Unfortunately, these concessions to the market makers have restricted the system's flexibility to meet the disparate needs of different customers.

Structural changes are being planned, however. A public limit order facility, CLOSE, is currently under consideration. Perhaps institutions will show more willingness to have their block transactions negotiated rather than relying on market makers for massive immediacy. The Exchange's own small order execution system, SAEF, will likely be improved, which among other things will enable basket trades to be handled far more efficiently. However, it is not clear how much the ISE's competitive market maker system can be changed without undermining its central focus - the market makers.

6.2 Fairness

Questions of fairness have been raised in relation to the rule changes. The changes would appear to advantage incumbent market makers at the expense

of newcomers. As noted in Section 4.4, delaying price reporting for large transactions until the next day puts market makers with small market share at an informational disadvantage because they see only a small fraction of the order flow. Not requiring that SEAQ quotes be firm for inter-market maker trading also disadvantages those firms without retail distributions or good relationships with other market making firms. Some non-U.K. firms (notably Merrill Lynch and Salomon Brothers) have argued that the main purpose of the rule changes was in fact to put foreign firms that are new entrants into the British market at a competitive disadvantage. Other newcomers, however, do not appear to have endorsed this view. A potential danger might exist, however, that some firms will deregister as ISE market makers but continue to make markets for their own clients, a development that would increase fragmentation. The rule changes have also been criticised by the Office of Fair Trading, and the situation is in a state of flux.

6.3 Attracting Small Retail Orders

One should recognize that the ISE's order flow is not independent of system design and trading costs, and that the ratio of large, institutional orders to small, retail orders is subject to some control. System efficiency might be enhanced by encouraging the submission of more small orders: the lumpiness of the order flow would be reduced, price discovery could be facilitated, and price stability enhanced.

Alteration of the order flow may be achieved in several ways. First, allowing market makers to post two quotes on either side of the market [7] would enable them to set tighter spreads for small orders (which would encourage the flow of small orders), while continuing to post wider spreads for large orders. Second, instituting a facility such as CLO-SE could spur the flow of retail limit orders. Third, improvements in clearance and settlement would further reduce transaction costs which should also increase the flow of small orders to the market.

6.4 The Global Environment

Securities markets are becoming increasingly global. Investors are diversifying out of domestic equity markets, more financial houses are operating internationally, and electronic technology has made the transmission of both trading information and orders far easier. Alternative electronic trading systems have been and are being developed in countries around the world, and orders are increasingly travelling across national borders. These developments have strengthened the competition between national exchanges. In today's global environment, the ability of any individual exchange to impose rules or restrictions on trading is tempered by the threat of orders migrating to another market.

The ISE has recognized and benefitted from these trends. In 1988, trades in non-U.K. equities constituted 23 percent of the Exchange's turnover. In light of this, it is striking that the ISE has chosen a trading system that differs radically from that of virtually all other major exchanges aside from NASDAQ. The reasons, no doubt, are largely historical - the current system reflects the way exchange members are accustomed to doing business, as well as the expectations and requirements of major institutional customers. In addition, the potential of a largely electronic, screen based system has also seemed very attractive.

Nevertheless, London's continuing strong position in international equity trading may become more uncertain [8]. Although the ISE enjoys both a geographical and language advantage, it could lose substantial business to a superior system. Just as London captured appreciable order flow from other exchanges, so might some other country or system, in the future, capture substantial order flow from the ISE.

The U.K. equity market has been altered dramatically in the last four years. Broker dealer operations, trading operations, the competitive environment, and the regulatory environment were all changed by Big Bang, as a closed, floor based system was replaced by a far more open, screen based system. However, the market is still designed

specifically to meet the requirements of domestic investors, with their lumpy order flow and expectations of immediacy. At the heart of today's market are the market makers, professionals not unlike the jobbers of old, but required to operate in a far more transparent way. The system depends on their readiness to post competitive prices on the screen. One must question whether this quote-driven approach will endure in an increasingly international environment, especially in light of developments that are occurring in other market centers around the globe.

Footnotes

- [1] The Stock Exchange currently classifies stocks into four categories from alpha (the most liquid) to delta (the least liquid). In this report we focus on the alpha stocks of which the number has grown from 100 after Big Bang to 150 now, and which account for over 60% of customer turnover. Beta stocks, which account for a further 20% of turnover, are treated similarly except they are not subject to immediate on line trade reporting. Pricing of gammas and deltas is indicative, not firm. The classification system is currently under review.
- [2] Before Big Bang, jobbers would display only the mid-spread price (the average of their bid and ask) on a chalkboard by their trading posts. Brokers holding customer orders could, however, ask for and receive oral quotations before entering into trades.
- [3] One of the early changes made to SEAQ was to raise the maximum quote size from 100'000 to 1 million shares.
- [4] The minimum quote size is currently 5000 shares for alpha stocks and 1000 shares for betas, but this is under review.
- [5] A secondary priority rule is used, however, with respect to the display of market maker quotes. The quote of the most competitive market maker on each side of the market for a security is displayed on the yellow strip; when two or more market makers are tied in setting the best quote, the market maker with the largest size is given priority on the yellow strip.
- [6] The Touche Ross Report, "Maintaining a Central Equities Market", p. 23.
- [7] The Elwes committee has put forward a proposal which would enable this to happen.
- [8] Certain significant differences exist between the domestic trading system and SEAQ International.