

# Improving Liquidity in a Securities Market



A White Paper from Alberta Market Solutions Ltd. (October 2003)

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## INTRODUCTION

The primary purpose of a stock exchange is to provide liquidity for shareholders. Without the ability to sell their shares, investors would be reluctant to buy them in the first place. So poor liquidity has a very undesirable downward spiral effect – declining liquidity contributes to a decline in interest that reduces liquidity still further.

The converse, fortunately, is also true: good liquidity breeds more liquidity. So a stock exchange must do all it can to promote liquidity. This paper looks at some of the tools that can be used to achieve this. It is primarily aimed at exchange operators and regulators who wish to evaluate the alternative actions available to them. For this reason, the paper focuses on identifying the main subject areas that could be said to affect liquidity.

We do not go into great detail with regard to any individual subject area, for two reasons. First, it would make the paper extremely long since there is a great deal that can be said in a general sense about nearly all these topics. Secondly, it would be more appropriate and productive to address the details of these subjects in the context of a particular organisation or marketplace, whose specific characteristics can be taken into account.

This second point is important: it recognises that there could be many reasons – cultural, legal, political or technological – for some “solutions” to a liquidity problem to be not feasible in a particular environment. It is therefore wrong to prescribe general-purpose solutions to specific market problems. But it is important that market operators and regulators recognise the possibilities and that is what this paper is intended to achieve: it



provides a checklist. After that, a more thorough analysis of the issue in context can be undertaken.

### Market integrity

Probably the most important element in promoting participation is the integrity of the market itself i.e. the extent to which investors feel that the market is “trustworthy”. Good market integrity begins with the reputation and professionalism of the operators of the market – the exchange itself. If the exchange is run by – and operated for the benefit of – one particular group of vested interests, then it will be harder to win the support of the investor community.

There are two elements to market integrity: the regulation of listed companies and the trading environment.

Investors need to believe that the companies whose shares are traded are themselves subject to reasonable rules of disclosure and are prohibited from behaving in ways which are detrimental to shareholders’ interests. It is not enough that the rules be in place; they have to be seen to be actively monitored by the regulator.

Similarly, the trading environment should be reasonably transparent and the investing public must hold the general perception that the market is not controlled by insiders and market manipulators. This is the domain of regulation and it is not covered here; this paper deals primarily with trading environment mechanisms, only occasionally touching on the regulation of the trading environment.

Market Integrity is a vast topic in its own right and while this is not the place to go into the subject in any detail, it is very important to note that a market which lacks integrity in the first place will find it difficult to build and sustain liquidity using any of the other tools described in this paper.

For this reason, there may be a tendency for exchange regulators to “over-regulate” – in the understandable desire to make the market “safe”, an excess of restrictions can sometimes have the concurrent effect of damaging liquidity. The art and the science of

good market regulation is therefore finding that fine balance where the market is vigorous and accessible without leaving prices subject to manipulation and investors open to abuse.

The right balance does not exist as a general solution; it will be found at different points in different markets. To assist in this, organisations such as IOSCO and WFE regularly produce research papers that help market operators to understand how to create effective regulation that does not stifle a market.

### Definition of liquidity

It is wrong to define “liquidity” in terms of high trading volumes and an exchange should be careful when comparing its performance against other exchanges to look at trading volume alone. Whether measured in numbers of shares or in value of turnover, trading volumes alone do not contain the whole story about the liquidity of the market.

Some exchanges have a “reporting” facility which allows trades that were executed elsewhere to be reported to the exchange and then counted towards the trading volume, even though those transactions did not use any exchange matching facility. Such exchanges may have done nothing to contribute towards creating a liquid market and are merely allowing themselves to be used as a convenient platform for legitimising OTC transactions as exchange transactions.

Others, particularly derivatives exchanges, have been known to introduce exceptionally small contract sizes so as to boost the numbers of contracts traded. This gives the impression of high volume when the underlying value of those transactions may in fact be very small.

Other markets contain a preponderance of block trades – few, but very high value, transactions, which reflect a bias towards a small number of large institutions who effectively trade among themselves.

It is more important to think of liquidity, not in terms of actual volumes, but in terms of quality of service. There may be many ways of phrasing a definition of liquidity but all of them will contain three important



components: quantity, spread size and “consistency”. Here is one definition:

- a) A significant majority of investors are able to buy and sell in the quantity they desire. In any market, there can always be an order of sufficient size to move the market – that is the nature of supply and demand. A successful market will provide a satisfactory level of liquidity to the majority of users and minimise the price impact of market-moving trades by those who need to deal in size.
- b) The bid/offer spread is narrow for those securities for which there is trading demand. “Narrow” is subjective and depends on the volatility of the market. A spread of 10% in an options market may be perfectly acceptable; probably not so in a securities market. The exchange needs to assess for itself what is a satisfactorily narrow spread for its customer base, the investors.
- c) Conditions (a) and (b) are maintained regardless of market conditions. In practice, no market ever achieves these conditions all the time. Even the most liquid markets, such as NYSE, will fail to provide perfect liquidity in times of extreme volatility. But obviously every exchange should want to strive to provide the best liquidity it can, for as long as it can.

By this definition, a market’s liquidity is not measured in terms of its trading volumes but in terms of how well it serves those who want to use it. By focusing on this, exchanges can avoid cosmetic changes that don’t actually contribute to the value of the service provided.

It is possible to devise metrics that will help an exchange measure how changes in rules and/or practices have affected market liquidity. This will require the recording and retention of data on market activity (order submission rates, order/match ratios, spread size etc.) for subsequent analysis.

## Tools for improving liquidity

In this paper, we will talk about a number of different devices that can be used to improve liquidity. Some of these may be within the power of the exchange to change and some may not. In some case, there may be laws or regulations prohibiting the exchange from introducing new market-enhancing tools. However, it should be noted that most, if not all, of the recommendations here have been implemented in successful market economies throughout the world without, in themselves, having any apparent negative effect.

The liquidity promotion tools fall into the following categories:

*Trading Rules & Practices:* How the exchange’s trading policies can either promote liquidity or inhibit it.

*Market Making:* How a system of market-making may introduce and sustain liquidity and the conditions that need to be in place to make the system effective.

*Other:* Various policies and services that can be considered as a means of promoting participation in the market place.

## EFFECTS OF LIQUIDITY ON TRADING RULES AND PRACTICES

### Purpose of Trading Rules

Trading Rules should have only two purposes: first, to prevent undesirable market behaviour which is disadvantageous to the broad mass of investors and, secondly, to promote liquidity. Any other objective should be questioned and yet in many, if not all, markets practices are put in place which do not serve these objectives and may even be counter to these objectives.

Undesirable trading rules seem to spring from two sources: one of these is a desire to protect the interests of a particular class of participants to the detriment of other market users. Normally, the particular class is the one that is benefiting from the status quo.

The other cause of bad trading rules lies in inappropriate regulation. Despite a long history of evidence to the contrary provided by academics over the years, there is still a



belief that a good way to make a market efficient and effective is to restrict access to it. For example, many exchanges have restrictions on short-selling and have “limit-down” rules which close the market when a security falls by more than a certain amount. The effect is to reduce liquidity. There is little evidence that they do any good for a market.<sup>1</sup> The problem with these kinds of rules is that they can rarely, if ever, change investor perceptions about market value and yet their sole purpose is to do that precisely that.

Some of the recommendations here may therefore meet opposition from brokers with a vested interest in limiting market access or from regulators who are fearful of not having control over market behaviour. For this reason, it may sometimes be prudent to compromise by making proposals that reduce the bad effects of undesirable trading rules when they cannot be eliminated altogether.

#### **Proprietary trading vs. agency trading**

In some markets, proprietary trading of securities by brokers or professional traders is somehow treated with disapproval. There is a fear that such professionals will manipulate the market. In practice, it is almost impossible to create a successful market from agency trading alone. There is rarely enough “natural” supply and demand to support such a market.

Professional trading firms who trade solely for their own account are common in all successful securities markets and a set of policies and practices are in place to ensure that their activities are properly monitored. This is preferable to banning them outright.

For example, it may be necessary to allow an intermediary to be both a broker and a dealer – taking customer orders and trading on its own account (known as a “dual capacity” firm). Separating the two activities can reduce harmful practices that abuse knowledge about

client orders, such as front-running. However, requiring “Chinese walls” between, and separate capital for, the two areas can reduce market participation and hence liquidity. As with all these matters, the regulation needs to be appropriate for the conditions prevailing in the marketplace.

Most of the policies and practices related to proprietary trading concern minimising the risk that such trading may bring into the broader market (hence the requirement for such things as capital controls, margining and position limits) and ensuring that their internal recording systems are adequate to allow the authorities to monitor their activity.

#### **Concentrators of liquidity**

Liquidity can be enhanced by concentrating it, by not spreading it too thinly across the trading day. Intelligent use of different market phases can help in this regard.

#### **Call auctions**

The convention among most markets nowadays is to operate on a continuous trading model where the market is open for several hours and trading can occur at any time during those hours. Most such markets nevertheless have a pre-opening period when buy and sell orders are “netted” to trade at a single price which would clear the greatest number of orders and create an opening price. This is known as a call auction.

This call auction methodology can be used throughout the day. There have been a number of precedents for this: at one time trading in Vienna was carried out this way and this method is used in Taiwan today. The benefit is that it helps to concentrate liquidity at a single point in time. For thinly traded stocks, this method allows the exchange to “advertise” when trading will take place. Investors who are interested in trading the stock are more likely to show up for a single auction than they are to hang around all day waiting for a price. For thinly traded stocks, a continuous market compared to a call auction is like hitching a ride on a lonely road compared to catching a scheduled train. Maybe the chances of catching the scheduled

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<sup>1</sup> The efforts to inhibit portfolio insurance trading in the US is perhaps one notable exception where “limit-down” rules were widely considered appropriate. But this was in the context of a practice which had become widespread; portfolio insurance is no longer a popular hedging strategy.



train are better than being offered a ride by a passing car.

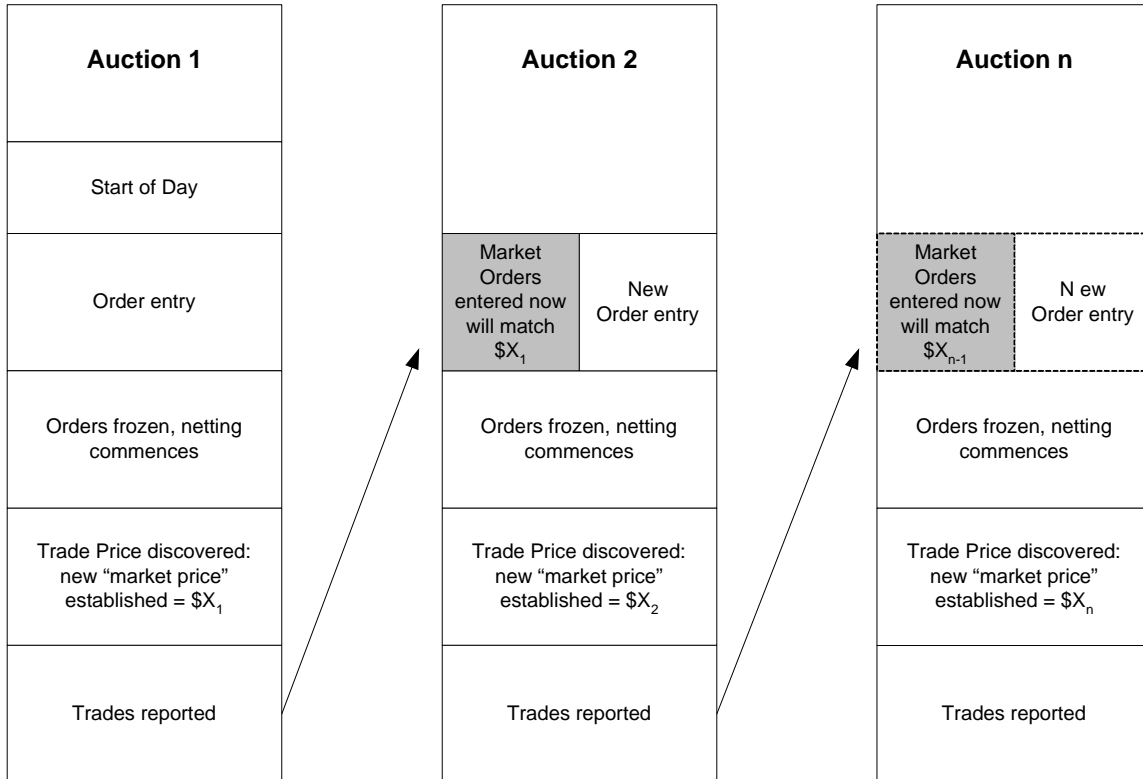
Even for popular stocks, this methodology can be quite appealing – by creating a hybrid where the call auction is run at regular intervals throughout the day, price discovery is enhanced. The continuum looks like this.

Once a stock has acquired the desired liquidity, it can be elevated to the continuous market.

**Closing auctions**

A similar model can of course be applied to

**Example of a scheduled call auction model**



In this model, liquidity is focused on each auction which may occur frequently or infrequently, or even on demand, where a broker receives an order and wants to flag the fact that there is market interest (this would probably require rules governing the size of investor interest required to demand an auction).

Each auction establishes a market price that can be used to settle market orders until the next auction (the shaded area illustrates the phase at which this occurs – all market orders entered during this phase will trade at the price established by the previous auction). In this way, users have potential continuous liquidity and special sessions to renew the price discovery process.

the market closing in a market which otherwise only has continuous trading. A closing auction helps create a market clearing mechanism, for those markets where investors tend to wait until the close before “showing their hand”. A closing call auction has the added beneficial effect of making it harder to manipulate the closing price in a market where closing price has been determined by reference to the last trade.<sup>2</sup>

<sup>2</sup> If there is a problem with price manipulation on the close, algorithms can be introduced to calculate the closing price based on an average or a weighted average of the last trades of the day.



### Trading hours

Another, simpler, way of focusing liquidity is to shorten the trading hours. This of course is contrary to the current trend but the idea of extended trading hours is only taking hold in markets that are already quite liquid, or at least are subject to competitive pressure.

A pre-announced short daily session in specific stocks can work as a way of focusing liquidity even without the call auction method described above.

### Order book transparency – too much or too little?

One of the criticisms leveled at “vested interests” is that they prefer an opaque market to a transparent one. However, when discussing transparency, we need to be careful – too much transparency may not be a good thing. An investor who is obliged to reveal too much about his trading intentions signals to the rest of the market what he is going to do and thereby moves the market against him.

For this reason, “more transparency” is not necessarily as positive-sounding and investor friendly as it might appear since it may remove important providers of liquidity from the market altogether.

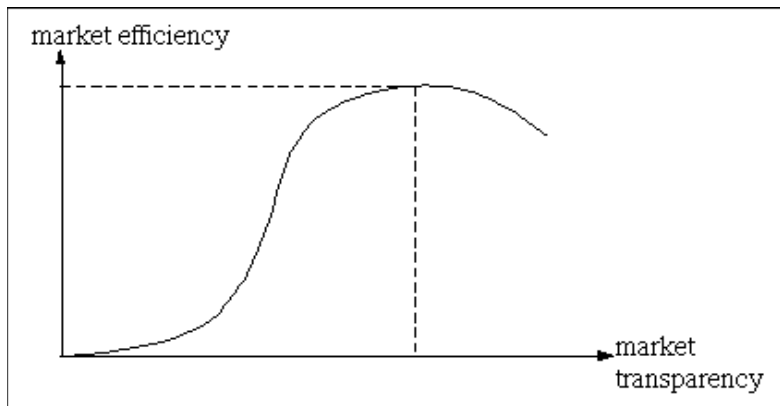
excess of transparency removes the profit and therefore the incentive to make markets.

There is therefore, in some markets, an implicit contract (albeit an involuntary one) between the “buy-side” and the “sell-side” to allow some transparency but to draw the line at a certain point.

An exchange has to find the right level of transparency that is appropriate to its circumstances. For this reason, it is suggested each of these characteristics are looked at and assessed:

### Broker identity

There are two ways in which broker ID can be revealed – at the order stage (pre-trade) and at the trade-reporting stage (post-trade). There are different benefits and disadvantages to introducing this kind of transparency. At the pre-trade stage, granting investors the ability to identify which brokers have orders in the book can create a more “exciting” market. In such markets, it is common for market users to look at who has orders in the book and ruminate about what this means for the stock. “Broker B has been a buyer of XYZ all morning...”: there may be no significance whatsoever to this fact, but it gives the market something to talk about.



On the other hand, this kind of transparency can be abused by Broker B if the firm uses it to create a false sense of activity – entering orders and then withdrawing them before they can be executed. But this is something which good surveillance ought to be able to address and there are systems available for tracking this kind of market

So there is a complex relationship between transparency and market efficiency. A “price-maker” is somebody who is willing to enter new, firm prices either in the form of quotes (as in the case of a market maker) or as ordinary firm-price limit orders. Those entering market orders are price-takers. A price-makers’ ability to profit from a market owes much to its information advantage; an

misbehaviour.

The arguments related to post-trade transparency as a liquidity-enhancing tool are much the same: letting the market know who traded and what was traded. This is a good



way of arousing greater interest in the market.<sup>3</sup>

An “excess” of order transparency arouses the fear that traders will be deterred from entering limit orders. There is a natural and understandable tendency for traders to disclose as little as possible and this applies as much at the pre-trade stage as at the post-trade stage. This concern is particularly understandable for large institutions with potentially market-moving orders to fill. Too much transparency makes it harder for such firms to obtain the best price for their order. The exchange has to determine what constitutes “too much” for its particular environment.

Most markets require that trades executed by securities dealers be reported as soon as they are executed but it is common for a delay to be allowed in the reporting of large block trades. The intention behind these exemptions is to ensure that market makers who have provided the liquidity for the institution do not have to reveal their position to the market at large (which would be the case if trade reporting were fully transparent). However, where the identities of the buyer and seller are not revealed, this is unnecessary since nobody can see whether the market maker was the buyer or the seller or indeed if there was a market maker there at all. But then if those details are not revealed, the market is deprived of important information about activity in the listed security, which then raises questions of fairness. The resolution to this issue may require compromise between the different interests that participate in the market.

### **Order size (market depth)**

Market Depth is an important feature of transparency. Knowing market prices without knowing what quantity can be dealt means that investors cannot really be sure about the impact their order might have on market

prices. For retail investors, this is not so important and it is probably unnecessary to worry too much about market depth reporting for a market which is primarily retail in focus.

But for institutions, market depth is very important and, particularly for a market without market makers or one where the market makers are not especially effective, being able to gauge market depth is very important and the exchange that cares about liquidity should generally do all it is technically capable of doing to calculate and report market depth in real time.

One way of dealing with any negative effects of this would be to introduce “iceberg” orders as some exchanges (notably Euronext and Deutsche Boerse) have done in recent years. These allow the exchange trading system to automatically store orders without revealing their full size, revealing only a portion of the order size. This allows a broker to leave a large order in the book without having to continuously update the order when some portion of it has been filled. In this way, the order remains in the market at all times without revealing its full extent. Such a process may prove useful in a market where large orders are commonplace

### **Crossing rules**

In some markets, there are rules which allow block trades to occur but with a requirement that the rest of the market be allowed to participate. These can only apply to trades where one side of the order is an agency order and the other a proprietary order. In these cases, the exchange invokes “crossing rules”. The benefit of these rules is that they allow the liquidity that a large transaction brings to the market to be potentially shared amongst everybody, rather than being taken up exclusively by the dealer who introduced it.

There are many ways of applying crossing but the common theme is that the dealer who wants to execute the cross (which is effectively how most block trades are presented) first has to tell the market that this is what he intends to do, without indicating whether the trade is a client purchase or a client sale. Other participants can then improve their bids and/or offers accordingly.

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<sup>3</sup> From a regulatory standpoint, transparency of trade reporting is also a very important part of maintaining market integrity. It can help to improve confidence that the market is not being manipulated, which is in itself is good for liquidity.



After a period of time (seconds rather than minutes normally), the cross can be executed but only if the price remains within the current (hopefully improved) bid/offer spread.

The existence of such rules can help narrow the average spread sizes to the benefit of all investors and improve confidence in the market overall.

### **A note on fairness:**

A fair market has a better chance of being liquid than one that is biased in favour of vested interests. Ultimately, fairness in securities markets is determined by how transparency and efficiency are optimised. This is something that cannot be imposed on a market – the exchange has to adopt policies that are consistent with local customs and behaviour. But it is almost certainly true that the most liquid markets are those that have a reputation, amongst their primary users, for being fair – for having successfully optimised transparency and efficiency.

### **Trade Restrictions**

There are many ways in which an exchange can inhibit trading. These restrictions are generally presented as being necessary to provide “orderly markets”. And there are definitely circumstances, particularly those relating to operational failure or in times of serious financial stress, where the fairest thing to do is to halt or impose restrictions on trading in the affected securities. But these should be very exceptional.

### **Margin trading**

Margin trading, understandably, causes regulators great concern. Badly managed margin trading can very quickly lead to losses and investor disenchantment. However, this is not a reason for banning it outright – rather it is a reason for introducing sensible regulation to allow it while preventing the worst abuses.

Margin trading has a legitimate role to play in securities markets. For example, where investors are in the process of switching from one asset to another, the ability to acquire the new securities while disposing of the old can

best be done using margin trading. The “old” stock can act as collateral for the new.

Similarly, day-traders who intend to close their positions before the day-end – and who thereby provide the market with liquidity – cannot effectively do this without the ability to trade on margin.

The important factor here is risk management and investor protection. The investor needs to be made explicitly aware of the risks of margin trading and the broker needs to have clear, workable procedures laid out for dealing with margin trading. The broker also needs appropriate risk management systems that can monitor positions, issue and collect margin calls and generally allow hands-on management of positions. This is particularly important of course, now that on-line trading is so prevalent.

Very often, the failure to develop sensible effective margin trading rules causes the practice to “go underground” i.e. it happens anyway, but within the criminal world outside the scope of the regulatory and legal structure. This can lead to much greater societal problems than those related to the reputation of the securities market.

### **Short Selling**

Two of the most popular, and often ill-advised from the point of view of promoting liquidity, are rules limiting short-selling and rules which introduce inappropriate trading halts.

Limits on short-selling are very common. In some jurisdictions, the limitations are imposed by law and not by the exchange; there are many places where short-selling is illegal.

Given that short-selling can be an extremely significant contributor to enhancing liquidity in a market place, it is worth considering why the short sale ban exists. There are two reasons: one good, one bad. First the bad: in some markets, short-selling is banned because its opponents believe it will allow short-sellers to force the price down to a level which it would not otherwise reach.

It is odd that the opposite, but equally undesirable possibility, is never considered:



that buyers could force the price up to a level that it would not otherwise reach. An absurdly high stock price ultimately hurts as many people, if not more, than an absurdly low stock price. Therefore, should the buying of shares also be illegal, because it can artificially inflate share prices?

In other words, even if it were true that short sellers can create false market prices, it is an illogical position to take. And many studies have shown, in any case, that short-selling does not affect the market in this way. There are natural constraints on short-sellers that do not apply to those taking long positions and these serve to limit the capacity of short sellers to move markets significantly.

First, they are heavily exposed on the upside; many traders have faced ruin in a “short-squeeze”. Secondly, short-sellers need to borrow stock in order to make delivery on what they have sold. The supply of stock for lending can be quite limited. Thirdly, they are required to return the stock to the lender any time the lender wants it back. They can only do this by buying the stock back in the market, which, again, can lead to a short-squeeze.

This then introduces the good reason for inhibiting short-selling; if a marketplace does not have a good supply of stock which can be lent to the short-seller, then it may be wiser to simply not allow short-selling. If the practice leads to excessive numbers of settlement fails, then it should be avoided. The optimal course to take is to allow short-selling, but have very severe rules which require the short-seller to first ensure that he can borrow the stock before he enters the order and have sound risk management practices which ensure that short positions are properly margined.

Good market supervision accompanied by prudent risk management practices can allow short-selling to play a positive role in providing liquidity. It is also essential if the exchange is going to operate a sophisticated market maker system (see later) or for the introduction of derivatives trading.

### **Up-tick rules for short sellers**

Many markets that allow short-selling nevertheless restrict it only to those market conditions where the market is rising or at least not falling (i.e., a short-sell is only permitted when the last reported price was higher than (or not less than) the previous trade price) This feature, called the “up-tick rule,” it appears to satisfy the concerns of those who fear that short-selling will reinforce declines in a falling market.

If such a rule is needed to satisfy those concerns, then that may be a sensible compromise. Note that most markets that have an up-tick rule also provide an exemption from it for market makers, arbitrageurs and other “market facilitators.”

### **Trading halts**

Many exchanges have rules to halt trading in stocks for all sorts of reasons. Sometimes, the reasons are good, especially if they relate to major corporate upheavals in the listed company itself and the exchange wants to suspend trading for a while pending some important announcement. But even these should be rare and exceptional cases. It can also happen that a stock is trading at what is clearly an erroneous price due to some technical error. Again, it is wise to halt trading until the problem is sorted out.

But too often, the reason for halting trading is simply that the stock has become volatile; its price is perceived to be dangerously unstable. Consideration should be given to the idea that an unstable market, where at least it is still possible to buy or sell the security, is often a lot more useful than one that is closed altogether. Sometimes brokers themselves would rather have the market closed than deal with the problems that volatility brings them in terms of order execution and risk management. And where there are genuine operational concerns or where the overall market is at risk, clearly it makes sense to cool things down by introducing a halt (or, a better word, pause) in trading.

But rules that routinely invoke trading halts can do more damage than good in the long run. Limit-down rules have become quite



common in recent years and sometimes, as market conditions change, they trigger trading halts too easily. A limit-down rule typically stipulates that trading in a security will halt if it falls by more than \$x from its previous close. If \$x eventually represents a small percentage of the security price, then the trigger will come in too often. If a limit-down rule has to be applied, it should be on a percentage basis, and preferably a very large percentage at that.

If such trading halts are considered necessary (for example, if there is a consensus in favour), then efforts should be made to minimise their frequency and to ensure that the trading system can quickly determine the conditions for re-start. A very temporary halt in such markets may be sufficient – a short period which is long enough to alert the market that it has entered an unusually volatile phase and to allow brokers to withdraw or modify their orders pending re-start. To do this well, the trading system needs to have good parameter-driven logic that can help the exchange determine the duration of the halt and provide tools for the rapid withdrawal of orders by brokers.

Also, such a market may benefit from adopting the call auction model (see 2.3) on re-opening rather than going directly into continuous trading.

### **Summary:**

The danger with excessive use of trade halts or trade restrictions is that the investor loses confidence in the availability of the market. The market seizes up. The result is certainly not disorderly – but a stagnant market is not what regulators mean when they talk about “orderly markets”.

It is worth taking a close look at the rules that inhibit trading and examining whether all of them are actually necessary.

### **Mistrades**

Although it is possible to impose checks on order entry to prevent errors from occurring, it is always possible that these checks are over-ridden and a mistrade occurs i.e. a trade at a price far away from the current market price. Where this happens, it is a matter of

exchange policy whether or not a reversal is permitted.

In less complex markets, where it is unlikely that the mistrade has automatically triggered other trades, it should generally be possible to reverse the trade without there being any severe market impact. Generally speaking, this is preferable to the alternative where the loser simply has to absorb the loss – in extreme cases this could cause financial problems which could spill over into the rest of the market. Even in less serious cases, the inability to reverse the trade can cause a firm to become hostile to the market, in a way that would not apply to the “winner” if the trade were reversed. But the issue should be dealt with in the context of the culture of the marketplace.

There are algorithms and policies that can be developed to address this issue in context.

### **Trading parameters**

Exchanges have always needed to standardise how symbols are traded. In particular, the trading unit size (board lot, in some markets) and the tick size (the minimum price increment allowed). It is worth studying these to see what effect they have on trading.

### **Board lots**

For dematerialised markets, where physical scrip is no longer used, the board lot size can reflect whatever is most efficient for that market, rather than what the depository system dictates. Nevertheless, sometimes old habits are carried into the electronic market for no good reason other than that being the way it was always done.

Board lot sizes should ideally be standard across all securities. Serious consideration should be given to having no board lot system at all i.e. a board lot size of 1. This helps eliminate the need for odd lot markets that serve only to fragment liquidity<sup>4</sup>; it does not

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<sup>4</sup> More generally, it is inadvisable to adopt too many market models for the same category of asset. Trading an equity under, for example, a regular book, an odd-lot book and an all-or-nothing book each with their own special terms is



prevent the market adopting its own “standard” as to what constitutes the typical basic order.

The major objection to having no board lot is that it raises the possibility that the best market price may be for one share. But this problem exists anyway: the difference between one board lot and one share is only a matter of scale. A best market price for one board lot is a bit more helpful than for one share, but not a lot.

Electronic systems give investors the ability to re-present such data in a way that is useful and meaningful to them. In a market without board lots, inquiries that present market depth at, for example, 1,000 or 10,000 share levels should eliminate any such concerns that the best price is misleading. Any “best price” is misleading to the investor who wants to deal in more shares than are available at that price.

#### Tick sizes

If the tick size is too small, it can lead to fragmentation of the order book with small numbers of stocks in the order book at each price level. This poses two problems:

- a) It is harder to see what the current best market looks like since the best bid and/or offer may be for the smallest unit available. To see what the current price is for a larger quantity may require looking at many more levels than would be necessary with a larger tick size. (But as mentioned above under the discussion on board lots, this can be resolved by using intelligent software which can re-format the market depth to present it in the tiers that the investor wants to see.)
- b) It may make it harder to achieve a match as buyers and sellers “jockey for position” incrementally improving their bids and offers but not quite matching. The would-be buyer of a stock with a five-cent tick that is bid at \$5.25 and offered at \$5.30, has to

hit the \$5.30 offer or just wait. With one-cent ticks, he can gradually increase it by ones. This runs the risk that the whole market will have moved on before a match can occur.

It is easy to see how the opposite problem to (b) would arise if the tick size is too large – a large tick size would discourage price improvement and lead to illiquidity that way.

A tick size that is too large does more harm than one that is too small and exchanges should probably err on the side of smaller tick sizes<sup>5</sup>. There is no simple solution to this, but certainly the tick size is one of the issues the exchange should look at in considering how to improve liquidity. Tick sizes can be varied depending on the stock price – generally the lower the price, the smaller the tick size in absolute terms but the higher the tick size in percentage terms.

#### Stock prices

Standardised board lot sizes may not work if there are very wide discrepancies in prices between stocks listed on the exchange. The exchange – or whichever entity regulates the listed companies themselves – may want to encourage listed companies to rationalise their stock prices, if the value of a trading unit is too large or too small, unless the smallness has arisen purely from poor financial performance.

In some countries, long-standing legislation has made it difficult to introduce sensible stock prices. But in some of those countries (notably Switzerland) the law has been changed to allow more flexibility in stock splits and other devices to make the stock more tradable. Despite the fact that a stock split has no fundamental impact on the company itself, it is a proven fact that they have a significant impact on the liquidity (and sometimes even the performance) of the company’s stock.

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<sup>5</sup> With some trading systems that have not been designed well, a small tick size can lead to performance problems where there are too many price levels for the system to maintain. This sometimes causes the exchange to adopt wider tick sizes than they otherwise would.

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confusing and is harmful to the establishment of liquidity.



## Order types

The availability of flexible order types that support different trading strategies is an important component in making the market attractive. If either the system or the rules impose limits on the types of orders that can be entered, then this can be a deterrent to trading.

This does not mean that the exchange necessarily needs exotic features such as basket orders or combination orders (although these can be useful too) but it should examine whether its standard order types are appropriately supportive of popular trading strategies – particularly those utilising stop instructions.

Also, in an illiquid market, great care needs to be taken with the way in which market orders are handled. A standard market order is defined as one which trades at the current market price. But the current market price can always be changing and when a price gap occurs between the time the order is submitted and when it hits the book, this can result in fills that are far away from the market, as perceived by the investor. This is a bigger problem in illiquid markets since such markets can be more volatile, and one bad experience can damage a market's reputation. It may even be appropriate not to use market orders at all or to allow them only on stocks with a proven track record for being liquid. Alternatively, market orders can be defined as being only applicable within a limited percentage of the current market price.

## INTRODUCING A SUCCESSFUL MARKET MAKER MODEL

### Market making

The most immediate tool at hand to deal with problems of liquidity is to use market makers. A market maker is a firm or individual (nowadays almost always the former) who agrees to provide liquidity in return for some benefit. The way in which they provide liquidity varies from place to place but it nearly always consists of providing two-way quotes (i.e. bids and offers) throughout the trading day or on request, in a minimum size as stipulated by the exchange.

There are a variety of models that can be used: competing market makers are often used in derivatives markets and in certain major markets (most notably NASDAQ). In this model, no single market maker has priority over the others and their combined efforts assist in the process of narrowing the bid/offer spread.

Some markets have a single market maker who has sole responsibility for maintaining liquidity. The best known example is the Specialist system used at the national exchanges in the US. But the “competing market makers” model is by far the most common.

In both cases, it may happen that all orders have to match with a market maker quote; the market maker becomes counter-party to every trade. The alternative to this is to operate a limit order book alongside the market maker quote system so that customer orders can match with each other as well as with the market maker. This is known as a “hybrid” system, since it combines a conventional auction market with a quote driven market.

It is probable that most new markets which want to institute a market maker system would operate the hybrid model rather than the quote-driven model. Only those markets with a strongly established market maker system in place tend to use a quote-driven model.

There are three pre-requisites for a successful market maker model:

- Suitable Candidates
- Adequate Incentives
- Good Risk Infrastructure

### Candidates

Without suitable candidates to play the role of market maker, the market maker regime cannot operate at all. Here are some of the attributes that the right candidates must have.

### Skills

There need to exist, in the marketplace, trading firms with the skills to make markets. Trading securities profitably on a proprietary



basis is a professional skill which needs to be learned. However, it is a skill which is within the scope of many financial firms; a bank which provides a forex service could very well already possess the core skills that would apply to market making in securities.

### Capital

A firm needs core capital that is adequate to support its market making activities. This can either be provided by the firm itself or can exist in the form of a guaranteed credit line from a reliable bank. The exchange needs to set the level of capital with which it is most comfortable and mandate that market makers never allow that to be breached. The responsibility for monitoring this day-to-day will probably lie with the clearing organisation since it will be the entity that needs to deal with a failure to settle.

Good market makers do not need to consume a lot of capital since they are in the business of closing off positions as soon as possible to take advantage of the bid-offer spread. But in practice, especially in times of high volatility, a firm needs to be able to sustain a large position without running out of the capital needed to support it.

### Systems

To provide a continuous quoting service, it is essential that the market maker has access to software which enables him to maintain quotes. This can be done in two different ways: either using front-office software which inter-acts with the market to generate quotes and re-submit them to the market. Or it can be handled by the host exchange system, in the form of an automated auto-quote system.

Both methods can be made to work successfully and each have their own merits and demerits. A front-office system allows the market maker greater flexibility in how he quotes since it enables him to program the quote system in a way that reflects his particular policies and practices. On the other hand, an exchange-supplied auto-quote system is much cheaper (from the market maker perspective) since it is provided by the exchange.

From the perspective of the market as a whole, the exchange system has the advantage of ensuring that quotes are continuously present since the control over quote issuance does not lie with an external system.

Whichever method is used, the market maker will need a risk management system which is capable of maintaining the stock position and monitoring its inherent risk in real time. This will include, among other things:

- a position management system which updates the market maker's net position in real time;
- a position reporting capability which flags to the market maker when the net position has exceeded the permitted size (which may vary from firm to firm);
- monitoring of capital ratios to ensure that the total gross and net position remains within regulatory limits;
- monitoring of stock loan positions with respect to credit exposure to individual lenders (who hold the firm's collateral against the loan)

### Incentives

Market makers will only agree to perform these duties if there are incentives to do so. But even then, if the market maker is not already active – or does not have the wish to be active - as a proprietary trader, then it will be hard to create sufficient incentive to make him take on the responsibility, unless the exchange is willing to pay very generously. A potential market maker will probably need to have the desire and ability to trade securities on a proprietary basis in the first place.

So the purpose of the incentive is not to encourage proprietary firms to trade, it is to encourage proprietary traders to make continuous markets.

Generally, the incentives take two forms: fiscal and non-fiscal.



## Fiscal incentives

The exchange can pay the market maker to make markets. Some of the alternatives include:

- payment of a flat fee;
- a variable fee based on performance;
- exemption from trading fees (again on a fixed or variable basis);
- exemption from other exchange fees such as membership fees or clearing fees (if this is under the control of the exchange)
- exemption from transaction taxes (such as stamp duty)

[The latter can be extremely effective in a high tax environment and is the one case where it may be possible to motivate traders to become market makers who otherwise would have no interest since they are able to use the exemption to increase profit margins considerably]

## Non-fiscal incentives

The exchange can give trading advantages to market makers: e.g.

- Guaranteed allocation of order flow among participating market makers

Privileged access to the contents of the order book, which is hidden from other market participants

- Guarantees of access to IPO's
- Exemptions from trade and position reporting rules
- Exemptions from limitations on short selling, crossing and other trading rules

[In the latter two cases, these may not be seen as incentives so much as pre-requisites, depending on the market model that exists in that marketplace. However, an exemption or relaxation of block trade rules can be valuable in its own right – it helps to execute large client orders].

## Risk Infrastructure

By “risk infrastructure”, we mean the supporting mechanisms and third party participants that are necessary to provide a secure environment for the market maker. For a market maker to do his job properly, he needs to be able to manage the risk of the positions that he is forced to take. In those countries that have a derivatives market, futures and options can be used to offset some of the risk.

But with or without a derivatives market, the market maker needs other avenues for offsetting risk. This can be particularly difficult in a thin market where there is inadequate liquidity in the first place.

There are a number of ways in which to address this.

## Competing market makers

One of the advantages of a competing market maker model, as opposed to a specialist model, is that the market makers can trade with each other. This provides a valuable method of allowing each market maker to offset risk. There will often (but not always) be situations where two market makers have opposite positions in the market which can be offset. Although this sounds like it is not in the spirit of competition, it is actually in their interests to trade with each other since there is a long term mutual benefit in being able to offset risk.

It is therefore desirable, from a risk management perspective, to have competing market makers.

Clearly, this does not mean that the relationship between market makers should be so close that they collude with each other to manipulate market prices. Just as with any other group of traders, there need to be harsh penalties for attempts to manipulate market prices. Clear rules governing trading between market makers need to be in place and good surveillance systems can help here also to ensure that trading between market makers is limited to book-balancing and arises from natural market activity alone.



## Specialists

It may be the case that there are insufficient firms available for a competing market maker system, or that the market makers are unwilling to participate in a competing system. In these cases, it may be appropriate to adopt a specialist model. Under this model, a single firm is responsible for maintaining quotes in the market, in accordance with rules determined by the exchange.

A specialist in a small market with relatively low liquidity will generally have few means of offsetting risk and will therefore want to avoid carrying a position in the issue for which he is making a market. He therefore needs the support of relatively flexible rules which allow him to see the order flow before anybody else can and to temporarily suspend quoting under certain conditions (e.g. when there is excessive volatility or it appears that an attempt at market manipulation is being undertaken). He may also be entitled to a share of trading fees as a reward for being ready to supply liquidity.

Once an issue has acquired a certain level of liquidity, the specialist system can be replaced with a market maker system or, indeed, with an simple limit order book where no formal market making service is provided.

### Major shareholder

In some markets, the major shareholders of a company provide a form of “unofficial” market making. This is not a desirable state of affairs because a powerful shareholder can easily manipulate the market to his advantage and may have an agenda which includes driving the market price up or down depending on his objectives.

But where the alternative is no liquidity at all, an exchange might consider an arrangement whereby a controlling shareholder promises to provide inventory and to act as a “buyer-of-last-resort” for the purpose of supporting a market making firm’s ability to provide continuous quotes. The shareholders’ role would be to provide inventory for the market maker when demand is high and to receive inventory when the supply is high. This provides a cushion for the market maker.

For this to be acceptable from a market integrity standpoint, it needs to be done:

- a) with a very high degree of transparency and disclosure, and;
- b) subject to passive, mechanical processes that pre-determine how much inventory is allocated and the conditions under which that inventory will be used.

The incentives for the shareholder ought to be that he is helping to sustain liquidity in his company, so it may not be hard to find shareholders who are willing to play this support role. It is a role which works best if the market maker is a professional firm and establishes a contractual relationship with the shareholder.

This should not be seen as a long-term solution. Once the requisite liquidity has been achieved, this type of “intervention” can be abandoned.

### Issuers and sponsors

In some markets, the firm which underwrites a new issue will also act as a market maker through an agreement with the issuer. This kind of arrangement is already common in the “New Markets” that have been established in places like Germany, France and Hong Kong in recent years. In fact, in some of these markets, it is a pre-requisite that new issuers retain and contract with such a market maker before they are allowed to be listed.

### Stock borrowing lending facilities

Market makers will easily find themselves in the position that they are required to sell stock which they don’t have, in order to meet their obligations. To do this effectively, they have to be permitted to execute short sales. Even if this is banned in the general market, an exemption really ought to be granted to market makers. It is true that a market maker might use the shareholder “benefactor” (see above) who is always willing to supply them with stock – but this methodology should not be relied upon for the long term and in any case may not be an option for certain stocks.

The delivery obligation arising from a short sale can only be met by borrowing stock.



This means there needs to be an effective regime which facilitates stock loans: a “liquid” SBL market is therefore important in its own right. This market can either take the form of a traditional phone-based market or can be supported by a formal stock lending process operated by the central depository.

A developing market that has not had a tradition of SBL in its capital markets may need to kick-start SBL activity by establishing a matching service for borrowing and lending. A fully dematerialised, automated central securities depository provides the ideal environment for this.

### **MARKETPLACE DESIGN – Is the Limit Order Appropriate?**

In these last two sections, we have discussed the various rules and methodologies that typically apply in a “hybrid” trading system i.e. a system where limit orders, market orders and quotes comprise the extent of price discovery mechanisms.

This model has generally been adopted by nascent markets, based on the belief that they should use the same types of trading system as those used by more established markets. However, in the absence of pre-existing liquidity, a hybrid trading system, based around the concept of limit orders, may have little chance of success.

It may make more sense to adopt a platform where investors can flag their interest in trading particular issues and allow market makers (and even non-market makers) to respond to that interest – sometimes referred to as “indication-of-interest” or IOI - by issuing quotes or even non-binding quote indications which invite the interested party to enter into voice-based or electronic negotiation. This kind of model reflects the somewhat informal nature of a developing marketplace, where a strict regimen of order entry and order matching is simply inadequate.

Fortunately, technology has reached a point where such a “community” style of price discovery can be implemented under a controlled network that greatly facilitates negotiation and promotes liquidity. AMSL’s

paper “Liquidity Network” describes this concept in more detail.

It is a design that is very appropriate to exchanges that experience severe liquidity problems in some of their issues. But it is not merely a piece of technology – it is also a philosophy, a recognition that the trading solutions adopted by a Tier 1 exchange trading billions of dollars in securities every day may not be appropriate for a small exchange, trying to build its market.

### **OTHER**

#### **Clearing and Settlement**

The timely and reliable settlement of trades is an absolutely vital component of the securities markets. Doubts on the part of investors about the ability of a trade to settle would quickly discourage them to abandon the market.

- This is a very broad subject, in many ways much more complex than the issues surrounding the trading of securities, and so this would be the wrong place to discuss in any detail. It is so crucial to overall market integrity that it is misleading to address it solely in the context of liquidity enhancement. However, there are some high level considerations that do directly relate to liquidity: The clearing and settlement organisation(s) should operate an efficient risk management regime which optimises the use of performance bonds (in the form of margin and guarantee fund obligations) at a level which provides good security but does not place such a burden on market participants that it discourages trading. Excessive caution by the clearing organisation can suffocate the market.
- Many marketplaces are moving towards T+1 settlement. Even if T+1 is not immediately achievable<sup>6</sup>, the

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<sup>6</sup> T+1 is only possible in a market where the technology available to brokers, banks and clearinghouses is sufficiently advanced that it can



- objective of reducing settlement time is a good one, from the point of view of liquidity. A short settlement window means that cash and assets are turned around more quickly and are therefore available for re-use at an earlier time. This can only have a beneficial impact on liquidity.
- The banking system has a crucial role to play in ensuring settlement efficiency. Securities settlement cannot be any faster than the cash settlement system used by the banks. So any inefficiencies there will feed through to the securities market. This applies internally - e.g. can the system support same-day funds? - and externally – are currency controls imposing an unreasonably heavy restriction on the smooth flow of funds?
  - Where possible, and where the infrastructure permits, orders should be validated before they are entered to the order book - for cash availability in the case of buy orders and stock availability for sell orders. In the latter case, this can only be done on an effective basis if there is a direct link between the clearing organisation and the exchange.
  - Post-trade, the stock position should be confirmed and updated as near to real-time as possible. Any limitation imposed by the depository and/or custodians in confirming a trade should be investigated and removed so that the process can be completely automated. Apart from the more general trade and position management benefits that this brings to the broader market, it makes order validation much more effective (and therefore facilitates day trading which can enhance liquidity a great deal).
  - If a stock borrowing and lending facility exists within the clearing infrastructure, this can greatly facilitate safety and reliability for those engaging in short-selling. Matching tools and real-time transfer of securities under loan against real-time margin payment would be particularly beneficial (see 3.4.4.).
  - Intelligent collateral management tools which allow the transfer of collateral internally between participants (or between them and the clearing organisation) can make much more effective use of collateral in meeting margin requirements for trading activity or pending settlement.

### Costs

If one looks at the upsurge in trading in securities that has occurred since the Internet was introduced, it is apparent that one of the major factors was cost. The cost of trading fell so low that it became attractive to people who previously would not have traded at all, or at least so frequently.

There are three areas where costs can be considered.

### Price makers free

It is sometimes argued, especially with regard to markets that do not have market makers, that people who enter limit orders which improve the current market price provide an important service to the marketplace, and that it is somehow inappropriate to charge them trading fees when they are providing that service. At the very least, it is argued, surely their fees should be lower than those paid by investors who just hit the current best bid or offer. The latter are “price-takers” and should pay more than the “price-makers” who provide price improvement.

There is some validity to this argument and it would be worthwhile considering whether such a regime might form part of the overall fee structure in an exchange which was looking to improve liquidity. As a liquidity enhancing tool it certainly has merit. It

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support the requisite real-time processes, collectively referred to as Straight-Through Processing (STP). See also 4.3.



provides a clear incentive for traders to populate the order book.

This policy has been adopted in some markets and has been well received. For example, Island, the American ECN and virt-x, the European trading platform, both operated regimes where they charged nothing to price-makers. There are a number of ways of implementing this: should it apply to all limit orders or just those which improve on the current best price? If best price only, should it apply even if prior to matching, a better price was entered? These are details which need to be studied, but for a market which suffers from a shortage of price-makers, the fee reduction is an interesting device to consider.

### **Taxes**

In some jurisdictions, stamp duty is paid on share transactions. If set too high, these taxes can have a very negative effect on trading and there have been cases where trading has migrated to another territory purely to escape the stamp duty.

Ordinary investors may not be deterred by the tax but it does have a very bad effect on the activities of professional traders such as market makers (or perhaps the price makers described above). For this reason, it is not uncommon for exchanges to lobby for an exemption from stamp duty for market facilitators such as these.

Paradoxically, the existence of a transaction tax can help promote market activity because, when the exemption is offered to liquidity providers, it incentivises the liquidity providers to take advantage of their exemption,

High capital gains taxes can also inhibit trading.

In both cases, it is reasonable for an exchange to lobby the government on the general and specific issues of these taxes.

### **Fees: Brokerage Commissions and Trading/Clearing Fees**

Most exchanges were broker cartels at one time and it is only in recent years that this situation has changed. Yet there are still markets where minimum commissions are

supported by the exchange rules. This does not help in the promotion of the overall market and it is very desirable that brokerage commissions should be open to competition so as to encourage investor participation.

But brokers can only be expected to co-operate in this regard if the basic trading and clearing fees themselves are also reasonable. A high cost structure at the exchange or the clearing house is unsupportable in an illiquid market. It is worth reviewing the revenue model: in some cases, it may be better to levy higher up front membership fees and reduce trading and clearing costs so as not to discourage trading.

### **Open gateways and STP**

Some exchanges have in the past imposed limits on investor access, for example disallowing direct entry of orders by investors. Gradually more and more exchanges have accepted the merits of direct access. But it is worth emphasising that rather than being daunted by the prospects of direct access and the types of operational and control problems that this could give rise to, exchanges should deal with these and ensure that their systems are able to handle the additional order flow which will certainly arise if investors can submit their orders in an STP environment.

In fact, the successful implementation of STP at any point in the transaction chain will be beneficial to liquidity. The ability to reduce human error and speed up processing has positive implications throughout the marketplace: low error rates increase investor confidence and faster, automated processing reduces costs at all levels. Some of those savings should be passed on to the end-user, the investor.

### **Institutional membership**

Large Institutions can be granted a form of exchange membership<sup>7</sup>, which would allow

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<sup>7</sup> In removing the middleman – the broker – we have to be careful. Intermediaries will continue to be a vital part of the exchange structure and although some of the suggestions here - such as eliminating minimum commissions - are often opposed by brokers, it will continue to be necessary to ensure that intermediaries are able to



them to enter their orders directly to the market. Given the usefulness of the broker intermediary in handling clearing and settlement and general administration, it may be that most institutions would not choose this kind of direct membership. Nevertheless, if the “membership” takes the form of giving clients direct access to the market, while having the trade cleared and settled by the client’s broker, this may facilitate access and improve liquidity.

One way of partly addressing this would be to allow the institutional client to have a trader ID and direct access to the market as if he were a trader registered with the broker. Some exchange rules prohibit this but it is worth seeing whether such a regime would be beneficial in facilitating market access and encouraging participation.

However, this is not suggesting that simply increasing the number of exchange members will have a positive effect on liquidity. Some of the world’s most liquid markets (e.g., the London Metal Exchange) have very small memberships. It is the quality of the brokers, rather than their number, that really matters.

### **Market promotion and education**

Exchanges can sometimes be conservative organisations and the idea of promoting the market is not something that comes naturally to some of them. Indeed, some market regulators appear to take the view that encouraging market participation is tantamount to encouraging speculation (and perhaps thereby encouraging de-stabilisation). Clearly, the exchange exists because it is believed to be good for the community. There is nothing wrong, therefore, in promoting its use, provided it is presented in a responsible way.

Market promotion does have a valid role in informing the general public about the merits of the market: why it is not the same thing as a casino, how it helps support the economy through harnessing investment funds, how it

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operate a profitable business. If they can’t make a profit out of it, the market is not going to work, so intermediaries need incentives just like everybody else.

allows the general population to participate in ownership of a nation’s resources and how it helps the process of diversification and risk reduction.

These facts need to be advertised. One excellent way to convey this message in a responsible manner is for the exchange to develop its own educational resources which allow investors to attend seminars and see for themselves how the market works. Many modern exchanges now have such a facility.

Education is perhaps the most effective form of market promotion, and this is even more important in nascent markets than in established markets. A new, growing market needs to provide investors with the confidence that markets are long term institutions and inform people that the temporary setbacks that do occur in a small market – whether it is prices over-reaching themselves or the climate for IPO’s being unattractive – can occur anywhere. Education, accompanied by prudent but not stifling regulation, can play a vital role in creating this confidence.

### **Regulatory policy**

Regulatory policy in any market has to be oriented towards balancing the interests of investors with the rights of intermediaries and professionals to operate profitably. In a developing market, an excess of regulation will make it so much harder to develop critical mass in the trading of securities.

The monetary costs of regulation can be high in two ways: either the capital requirements are too high for all but the largest financial entities (usually banks) to participate; or – and this can affect the banks as much as the smaller firms – the costs of compliance with a burdensome regulatory regime do not justify being in the business. Potential market intermediaries may then be unwilling to provide the resources needed to create a viable securities industry. They may only provide resources to allow the business to continue at a basic level, such as simply processing client orders but not doing all the other things that effective intermediaries do: finding new investors, underwriting new issues, providing market liquidity etc.



A securities industry with such a limited purpose will not be able to support an active primary and secondary market.

### **New Listings**

In some markets, the lack of investor interest may simply be due to the quality of the listings. To address this, some governments have sold off parts of state-owned enterprises as a means of attracting investor interest. The fact that the power company, for example, is well known and familiar to everybody can be sufficient incentive to encourage wider participation. Even in very mature markets, such as the UK, privatisation or partial privatisation has had a dramatic effect on share ownership and participation in the securities markets.

### **Capital controls**

Limits on foreign ownership and other types of capital control have been implemented in just about every market in the world but there are probably fewer such controls in place now than at any time in history. It is worthwhile examining the controls that exist with regard to foreign ownership, limits on the amount of shares controlled by a single party, and other such devices that restrict access to the capital markets and to balance these against the broader interests that these controls are supposed to protect.

This is not suggesting that the controls are necessarily a bad thing, merely stating that they are worth reviewing in context to see whether a relaxation may be beneficial to liquidity, without damaging the original intent of the controls.

### **Derivatives**

One of the most effective ways of improving liquidity in the underlying market is to encourage the trading of derivatives on those underlying assets. Derivatives benefit underlying markets in two ways:

- a) The ability to manage risk in the underlying market, using efficient and reliable tools such as futures and options, increases investors' sense of comfort with, and willingness to participate in, that underlying market.

- b) Arbitrage and the hedging of derivatives risk by proprietary traders improves the liquidity of the underlying market. For most trades executed by a derivatives market maker in the derivatives market, there will be a hedging transaction executed in the underlying market. This clearly has a major beneficial effect on the liquidity of that underlying market.

There are many conditions required to create and support a successful derivatives market – too many to cover here in the context of a high level document like this. The subject is addressed in more detail in a separate AMSL white paper, *Derivatives Market Development*.

### **Other products**

From time to time, market innovation yields new products that prove very successful and changes the way that people trade. Exchange-traded derivatives were certainly one of those innovations.

Another important development is the “structured product”: warrants, exchange traded funds and convertible bonds are all examples that have emerged over recent years.

Sometimes, regulatory policy inhibits the introduction of such products. Where this is the case, it is worth examining why the policy is in place and whether there are ways to modify it – again preserving the benefits of prudent regulation, particularly with regard to market manipulation and risk management – so as to improve the attractiveness of the market to investors.

One of the products that can occur naturally is tradable rights issues which are sometimes issued by companies who wish to invite new share subscriptions. These can be listed for a short time and, partly because of the leverage element, prove very popular with investors. Subject to sensible regulation, there is no reason why exchanges should not facilitate the introduction of such products if investors are keen to trade them.