

How should we design deep and liquid markets? The case of government securities

This note presents a list of general principles and more specific policy recommendations for the creation of deep and liquid government securities markets,¹ partly based on the findings of the Study Group on Market Liquidity under the auspices of the Committee on the Global Financial System (CGFS) of the G10 central banks.² Many factors affect market liquidity. Institutional factors such as securities law, the regulation and supervision of dealers, and accounting rules are important. Equally, environmental factors such as the macroeconomic situation and changes in the issuer's creditworthiness play a role. The main focus of this note, however, is on "markets", especially on market design.

Following the recent financial crises, there seems to be a growing consensus that deep and liquid financial markets, especially government securities markets, are needed to ensure a robust and efficient financial system as a whole.³ The guidelines identified in this note are not intended as a code of good practice. Rather, the objective is simply to distil from the experience of mature markets a set of principles and recommendations that might be of assistance to other countries in their efforts to develop and secure properly functioning government bond markets.

It must be emphasised that this note does not advocate that governments increase their borrowing merely for the sake of promoting bond market liquidity. Rather, the guidelines apply to any financing needs of governments.

The structure of the note is as follows. In the first section, the question of why particular attention should be paid to government securities is discussed. In the second section, five guiding principles for the design of deep and liquid markets are identified. In the third section,

¹ In this note, deep and liquid markets are defined as markets where participants can rapidly execute large-volume transactions with little impact on prices. This definition is also used in the Study Group (BIS (1999a), *Market Liquidity: Research Findings and Selected Policy Implications*, Basel, May).

² Following a decision by the Committee on the Global Financial System (at that time the Euro-Currency Standing Committee) in December 1997, the Study Group, composed of central bank economists and market analysts, conducted research on the determinants of market liquidity. Their report (BIS (1999a)) was published on 3 May, 1999.

³ Following the globally observed financial market turmoil, several forums, such as APEC, are trying to formulate sound practices to develop government securities markets.

five policy recommendations for the enhancement of market liquidity are listed:⁴ 1) *ensuring an appropriate distribution of maturities and issue frequency so as to establish large benchmarks at key maturities*; 2) *minimising the liquidity-impairing cost of taxes*; 3) *ensuring the transparency of sovereign issuers, issue schedules, and market price and trade information, with due attention being paid to the anonymity of market participants*; 4) *ensuring safety and standardisation in trading and settlement practices*; and 5) *developing repo, futures and options markets*. In the last section, the role of central banks is discussed.

1. The importance of government securities markets

One of the fundamental features of market liquidity is the self-fulfilling process whereby liquid markets become more liquid. Participants are more willing to transact and take positions in markets where they expect liquidity to continue at a high level for the foreseeable future, while this willingness to transact in turn contributes to enhanced liquidity. Given this, it may be most productive to identify a financial market whose ample liquidity would benefit financial markets as a whole. Such a market is defined here as a core financial market.

In most cases, a government securities market is the most natural candidate for such a market. This is because, being virtually free from credit risk, the yield curve for government securities serves as a benchmark in pricing other financial assets. As a result, government securities are often used by dealers as a major hedging tool for interest rate risk, and as underlying assets and collateral for related markets, such as the repo, futures and options markets.

However, in countries where the supply of government bonds is not sufficient, markets for private instruments, such as interest-rate swaps, can potentially provide a core financial market. To increase the liquidity of such a market, the same guiding principles can basically apply, although they may need to be adapted somewhat.

2. Guiding principles for policy recommendations

In order to formulate practical policy recommendations for deep and liquid markets, it may be helpful to identify a set of interrelated guiding principles. These can then be used to draw more specific policy recommendations, which can be adjusted to suit particular market situations.

Guiding principle 1: A competitive market structure should be maintained.

Financial instruments are traded through a wide variety of mechanisms, including over-the-counter (OTC) markets, organised exchanges, and a number of systems and structures that

⁴ The order in which these principles and recommendations are listed should not be taken to imply that some are more important than others. Their relative importance is likely to differ significantly from one national market to another.

cannot be neatly placed in either of these categories. Which platform sees the bulk of trading of a particular asset class depends on the degree of standardisation of the underlying instrument, the size and sophistication of the participants in the market, and a host of other institutional, regulatory and historical factors. Trading often moves from one platform to another, as the financial system evolves, participants' needs change and advances in information technology are implemented. Therefore, it may be difficult to draw any general conclusions on the appropriate configuration of trading platforms.

Nevertheless, as a fundamental strategy, maintaining a competitive market structure is important. Competition among dealers can heighten liquidity by increasing the pressure for a narrowing of bid-ask spreads. In the case of exchanges, while their number is limited, dynamic competition between the leading exchange and other exchanges, and between the OTC market and organised exchanges, contributes to market liquidity. In this sense, it is necessary to maintain a "contestable market", that is a market where the dominant players can be challenged by new entrants if they attempt to exploit their monopoly or oligopoly power.⁵

Guiding principle 2: A market should have a low level of fragmentation.

Other things being equal, market liquidity tends to be enhanced when instruments can be substituted for one another, since the market for each of them will be less fragmented. This is because high substitutability (or less fragmentation) means that there is a larger trading supply of securities. When the trading supply is large, it is easier to meet transaction demand. Of course, one should be aware of the trade-off between having a large volume of homogeneous products, which generally increases liquidity, and having heterogeneous products, which address the specific needs of market participants. Issuing bonds at several "key maturities" from the short to the long end of the yield curve, so as to meet the demands of various investors may be helpful in resolving this trade-off.

Guiding principle 3: Transaction costs should be minimised.

Market liquidity depends on the ease with which market participants can carry out transactions. Thus, other things being equal, lower transaction costs contribute to higher market liquidity. Transaction costs comprise several components, such as taxes, the costs of sustaining the necessary infrastructure and compensation for liquidity provision services. Some components are market-driven and some are exogenous to the market. In either case, if transaction costs, either direct or indirect, are high, the gap between the effective price received by the seller of a financial instrument and that paid by the buyer will be large. In such a situation, it will be difficult to match sell and buy orders, resulting in low market liquidity. Furthermore, if transaction costs are high enough to constitute an entry barrier, the market will attract fewer dealers and investors, also resulting in low market liquidity. However, some transaction costs, such as those involved in ensuring a sound payments infrastructure, are necessary to improve the overall robustness of the market. Therefore,

⁵ At the same time, excessive fragmentation would need to be avoided and any new exchanges would need to follow sound market practices, as discussed below in guiding principles 2 and 4.

transaction costs should be minimised as long as this does not reduce the security of the market in question.

Guiding principle 4: A sound, robust and safe market infrastructure should be ensured.

A sound, robust and safe market infrastructure, defined to comprise payment and settlement systems, the regulatory and supervising framework as well as market monitoring/surveillance, is a prerequisite for a properly functioning market. It promotes active participation, it can help to make the market more resilient to external shocks and contributes to continuous price discovery, thereby enhancing market liquidity.

Guiding principle 5: Heterogeneity of market participants should be encouraged.

Heterogeneity of market participants in terms of transaction needs, risk assessments and investment horizons enhances market liquidity. While ensuring participation of various types of domestic investor may be the primary concern, it may also be helpful to abolish rules preventing non-residents holding domestic assets and resident investors holding overseas assets. Non-residents, who usually hold government securities of a certain country in the context of global portfolio allocation, tend to have different risk exposures from resident investors, and thus may react differently to new information. Therefore, when necessary, measures should be implemented to ensure a level playing field between resident and non-resident investors. At the same time, before implementing any such steps, due attention should be paid to the sequential development of domestic markets, as highlighted by the recent episodes of financial market turbulence in emerging markets.

3. Policy recommendations

Based on the guiding principles set out above, the following practical policy recommendations for deep and liquid markets can be identified. When considering these recommendations, it should be recognised that creating deep and liquid markets also entails costs, such as those associated with establishing clearing and settlement systems and with the pool of human resources devoted to trading activity. These costs vary depending on the stage of development of the market in general, and market size in particular, and should be factored into the assessment of the potential benefits of implementing the various recommendations. It should also be emphasised that the relevance of these recommendations to any given market will vary with the characteristics of that market.

Recommendation 1 (Desirability of coherent debt management strategies)

An appropriate distribution of maturities and issue frequency should be ensured as a means of establishing large benchmark issues at key maturities.

As a general rule, the larger the trading supply of a financial instrument, the higher is its market liquidity. In the same vein, other things being equal, a larger issue size (that is, a larger amount of outstanding homogeneous securities with a common maturity date) enhances

market liquidity, leading to a greater volume available for trading on the market. The market-making function of dealers is facilitated if it is easy to obtain securities at low cost and if the risks associated with holding an inventory of the securities are limited.

Holding the government's borrowing requirement fixed, a country can enlarge the size of each specific securities issue by reducing the number of original maturities, appropriately distributed along the yield curve, so as to satisfy investors' demand for "key maturities". For example, in 1997, as government financing needs decreased, the United States stopped issuing three-year Treasury notes instead of cutting the overall issue amount throughout the yield curve.⁶

A country can also enlarge the issue size by reducing the frequency of new issues. In the United States, for example, against the background of an improving fiscal balance in 1998, the frequency of new issues of five-year Treasury notes was reduced from monthly to quarterly, and the amount issued at each auction was increased.⁶

One approach to establishing large issues is to conduct regular reopenings, whereby the identical security is offered in several consecutive auctions, rather than being supplied in a single auction. Regular reopenings allow issuers to create a large issue while paying lower risk premia to dealers, as dealers do not have to subscribe to large amounts of securities at once. In the context of ongoing government surpluses, the public issuer may also want to consider buying back its less liquid, older issues so as to permit larger issue sizes of its new offerings.

Recommendation 2 (Taxation)

The liquidity-impairing effect of taxes should be minimised.

Taxes in general tend to increase transaction costs, either directly or indirectly, and could thus hinder market liquidity. Therefore, when the government collects tax revenue on financial assets, it may be appropriate to weigh the potential increase in tax revenue against the potential decline in market liquidity. For example, direct taxes on market transactions create a wedge between the supply price and the demand price of a traded instrument, making it more difficult to match sell and buy orders. In this sense, such taxes are an impediment to the creation of deep and liquid markets. In recent years, fewer countries have imposed taxes on financial transactions. Even in countries where transaction taxes still exist, in order to minimise their liquidity-impairing effect, active market participants are often exempt from them.⁷

⁶ BIS (1999a).

⁷ BIS (1999a). If transaction tax rates are set high enough, they may drive trading offshore to such an extent that total revenue declines.

Recommendation 3 (Transparency)

Transparency of sovereign issuers and issue schedules should be ensured. Transparency of trading information should be encouraged, with due attention being paid to the anonymity of market participants.

Transparency is relevant to market liquidity in three different contexts: the transparency of issuers; the transparency of the issue schedule; and the transparency of market information.

Facilitating the pricing of risk by investors and improving the information available on the financial condition of issuers will tend to encourage participation and trading activity, thereby promoting market liquidity. In the case of sovereign issuers, the enhanced transparency that has resulted from implementation by many industrial countries of the IMF's Special Data Dissemination Standard, to which the CGFS contributed through its work on foreign exchange reserves, is an important step forward in this regard.

Second, predictability of issuance can enhance market liquidity. To this end, it may be appropriate for sovereign issuers to maintain a regular issuance cycle and to preannounce the issue schedule (including the characteristics and amounts of the securities to be issued) insofar as this is possible given fluctuations in cash management needs. By doing so, more investors will participate in the market, as it will be easier to formulate an investment strategy conducive to the construction of an optimal portfolio. A separate but related aspect concerns the availability of when-if-issued trading, that is, trading conducted between the auction announcement day, usually several days before the auction, and the auction day itself. If when-if-issued trading of government securities is available, market liquidity for securities just after an auction or issuance may be enhanced: it may be easier for market-makers to provide tight bid-ask quotations when the true values of securities have been well tested in the market before the auction takes place. Ensuring the transparency of both sovereign issuers and issue schedules is especially important for small open economies which rely on stable capital inflows from global investors.

Third, the degree of transparency which market participants observe in the trading process is also important, although the content of the appropriate set of information will differ from one market to another, depending on their specific characteristics.

Generally speaking, in a dealer market, the dissemination of prevailing prices to the broader trading community, including end-users, will help enhance market liquidity. For example, in 1992, GovPX, a joint venture of primary dealers and five of the six inter-dealer brokers, was established to release real-time trade information to the public in the United States. This step is said to have further enhanced the liquidity in the US Treasury market. By contrast, the disclosure of information on specific orders which endangers the anonymity of market participants would require careful consideration, as it might discourage dealers from making markets. A move towards anonymity of market-makers in the inter-dealer Italian government securities market in 1997 was found to have led to improved liquidity in the sense of a narrower bid-ask spread and smaller market impact of large trades.⁶

Recommendation 4 (Trading rules and infrastructure)

Safety and standardisation in trading and settlement practices should be ensured.

Standardised, robust trading rules and a safe infrastructure help reduce hidden transaction costs and thus promote market liquidity. This applies both to the underlying market and to related markets, such as those for repos, futures and options. It is especially important that participants can rely on a set of core conventions and practices, given the trend in some markets towards a proliferation of trading platforms.

Safety in trading and settlement is a prerequisite for the existence of deep and liquid markets, as more investors will be willing to trade in a safe market. In this sense, it is desirable to shorten settlement lags to T+3 or shorter, and to adopt delivery-versus-payment (DVP) practices. T+3 settlement and DVP have become common in the government securities markets of developed countries. If improved settlement practices for government securities are extended to the wider universe of fixed income securities, demand for arbitrage and hedging transactions could emerge, thus further enhancing market liquidity.

Second, standardisation of trading and settlement practices generally increases market liquidity, in cases where previous disparities in these practices had impeded trading incentives. When these practices are standardised, the supply of securities effectively becomes larger, resulting in less market fragmentation. In addition, standardisation may encourage participation by non-residents, thereby adding to the heterogeneity of market participants and contributing to market liquidity. In this respect, it may be noted that in organised exchange markets, it is straightforward to achieve this standardisation. While there is no consensus on which practices should be standardised, rules and practices for delivery fails, through which dealers can postpone the delivery of securities at some penalty costs, are a good candidate.

Third, the ability to make short sales is also an important element of liquidity-enhancing trading rules. If short sales are not allowed, dealers cannot respond to customers' buy orders quickly. This impediment to the market-making function would cause a decline in market liquidity. Many countries adopt measures to facilitate short sales, including securities lending and/or repo markets, rules and practices for delivery fails, and special security lending and/or repo facilities through which the authorities can provide the securities in short supply.⁶

Recommendation 5 (Related markets)

Repo, futures and options markets should be developed.

If hedging, arbitrage and speculative transactions can be conducted easily, market liquidity as a whole is enhanced. To this end, the development of related markets such as repo,⁸ futures and options markets is important. Repo transactions enable dealers to finance long positions and cover short positions, allowing them to respond to customers' needs quickly. A well-

⁸ Repo transactions in this context include securities lending and the buy/sellback of securities.

structured futures market reduces hedging costs, and thus makes it easier to take cash market positions.⁹ An options market also facilitates flexible hedging and arbitrage.

As a result, encouraging the development of these related markets, in tandem with the underlying cash markets and on the basis of a sound legal, regulatory and operational infrastructure, would contribute to market liquidity.

4. The role of central banks

Central bank activities inevitably have an impact on market liquidity, corresponding to the various roles that central banks perform in the financial system. First, since central banks decide monetary policy, the information they communicate, such as policy decisions, statistics and notifications of open market operations, is rapidly incorporated into market prices. Second, as major market participants, central banks conduct open market operations using government securities, and accept government securities as collateral, thereby affecting the trading supply of securities. Third, most often, as providers of clearing and settlement services for government securities, central banks influence underlying market liquidity conditions. Given these roles and in the light of their responsibilities for financial stability, central banks have pursued their efforts to develop well-functioning markets and should closely monitor liquidity conditions in markets where liquidity could dry up under stress.

At the same time, knowledge of the dynamics of market liquidity is still limited.¹⁰ For example, the understanding of the mechanisms causing the evaporation of market liquidity under stress is still at an early stage.¹¹ Central banks should therefore continue to investigate the dynamics of market liquidity and encourage investigations by policy-making and academic institutions.

⁹ BIS (1999b), *Implications of repo markets for central banks*, Basel, March.

¹⁰ One of the research papers in BIS (1999a), “Expectations and market microstructure when liquidity is lost”, may provide a possible starting point for future study.

¹¹ For an analysis of a specific case, see the BIS report on “A review of financial market events in autumn 1998”, October 1999.