LIABILITY MANAGEMENT
BACKGROUND NOTE ¹

This note on liability management is part of a series of background notes produced under the Gemloc Advisory Services Program as a by-product of its strategy to support the development of liquid local currency bond markets. Selected topics have been a key focus in the areas of work of the Advisory Services because of their catalytic impact on debt market development. They include primary market organization through primary dealers and liability management; repo markets; price dissemination and clearing and settlement arrangements².

Liability management is an essential component in the management of public debt. It can be used to pursue a wide variety of objectives. It can employ a number of different instruments. The objective of this background note is to review the various functions of liability management and to illustrate the usage of the main liability management instruments, especially buy backs and exchanges, with some country examples.

¹ This background note has been prepared to support World Bank technical assistance programs for the development of local capital markets. It is a work in progress and as such should not be quoted. Comments to asilva3@worldbank.org or baudouin.richard@live.be are welcome. This note will serve as a basis for a forthcoming handbook on the topic.

² Three notes have been produced so far on Primary Dealers, Liability Management and Repo Markets. Other notes will follow on Price Dissemination and Clearing and Settlement.
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LIABILITY MANAGEMENT
Background Note

1. INTRODUCTION
Liability Management (LM) is the process of restructuring outstanding borrowing(s) in order to improve the composition of the public debt portfolio.

LM can meet different objectives and encompass a wide variety of operations. It is implemented in several government securities markets. In fact, some LM operations are best undertaken from an early stage in the life of a market as they can support and accelerate its development. In particular, this applies to bond buy backs and bond exchanges. These powerful LM instruments may require only a focussed capacity building at the start.

The objective of this background note is to provide an overview of the various functions of LM and the major instruments that facilitate its implementation, and illustrate them through country examples. The note is structured to provide a brief definition of LM, describe its various functions in the context of government securities markets, and analyze the relevance and implementation of major LM instruments such as bond buy backs and bond exchanges.

1.1. Definition of LM
In the context of public debt management, LM encompasses all instruments used by a debt manager with a view to improve the structure of the debt by adapting it to guidelines set by the debt management strategy.

This definition encompasses a wide variety of operations, such as buying back old debt or exchanging old debt against new debt; transforming fixed-rate coupons into floating-rate coupons or vice versa; changing the currency denomination of old debt or hedging the foreign exchange risk on external debt, among others. These operations serve various functions (Section 2) and the amounts involved can be significant.

All LM operations have one feature in common. They restructure an outstanding debt. Their objective is not to provide any additional funding but to improve the composition of the outstanding debt.

2. FUNCTIONS OF LM
Initially, LM was used primarily as a risk management tool. It affects the structure of the debt, which determines the risks of the debt (refinancing, interest rate and currency risks).

Increasingly, LM has also been assigned a few additional objectives. For example, it can help in achieving some cost savings or in diversifying the investor base. This applies primarily in mature markets.

Currently, LM operations have five main functions: (1) to increase liquidity in government securities markets, (2) to manage risks in the debt portfolio, (3) to decrease the cost of new funding, (4) to
correct and/or take advantage of market distortions, and (5) to stabilize the market during periods of stress.

The various functions of LM are reviewed in detail below.

2.1. To increase liquidity in government securities markets
LM can enhance the liquidity of the government securities market in various ways.

2.1.1. Stimulating the creation of benchmark bond issues
Issuing benchmark bonds decreases the cost of funding for a DMO. Benchmarks increase the liquidity of the government securities market as they are widely traded. They also enhance the price transparency of other bonds issued within the same maturity range. Specific features and usefulness of benchmark bonds are reviewed in more detail in the appendix 1 of this note.

Benchmark bonds also create two risks for a DMO: refinancing risk and interest rate risk. Benchmarks are typically large bond issues. A large borrowing need is thus created when they mature and raises the question of whether the DMO will be able to borrow such a large amount without disrupting the market. A DMO also faces the risk of higher interest rates at the moment of refinancing. In addition, the issuance of an unusually large amount needed to refinance a maturing benchmark affects the desirable regularity in the DMO’s issuance activity. Thus, DMOs prefer a debt portfolio with a level maturity profile.

LM can support the issuance of benchmark bonds in two ways: it allows DMOs to create benchmark bond issues that are larger and in a faster manner. The same instrument, a bond buy back or a bond exchange is used in both cases.

2.1.1.1. Retiring debt with short remaining life to maturity
Bond buy backs and/or bond exchanges enable DMOs to gradually retire from the market benchmark bonds with a short remaining life to maturity. These LM operations are tantamount to refinancing part of the maturing benchmark ahead of time. By virtue of being spread over time, the refinancing and interest rate risks of the DMO are decreased. This enables DMOs to create larger benchmark issues as the corresponding risks can be managed.

In mature markets, DMOs usually start buying back or exchanging benchmark bonds twelve months before their maturity date. Typically, about 50 percent of the initial outstanding amount is thus refinanced ahead of time.

2.1.1.2. Retiring illiquid debt
Bond buy backs and/or bond exchanges also enable DMOs to retire illiquid bonds issues\(^6\) from the market. These operations enhance the liquidity of the government securities market in two ways. First, they create an additional funding need which can be met by issuing a standard instrument. The destination stock is typically a current benchmark as the objective is to secure a liquidity premium for future re-openings. So, the creation of this additional funding need allows the DMO to create benchmark bond issues faster. This technique is particularly useful in periods of limited borrowing requirements. Second, retiring illiquid bonds from the market reduces the fragmentation of the market by decreasing the number of maturities outstanding.

Retiring illiquid bond issues from the market in order to stimulate the creation of benchmarks is a widespread practice. As examples, the UK DMO has a permanently open window to buy back “rump

\(^6\) also called “off-the-run” bonds
stocks". Likewise, Korea has a standing program for exchanging off-the-run bonds against on-the-run bonds. When the euro was introduced in January 1999, the Dutch DMO made an exchange of "legacy bonds" for an amount equal to 20 percent of its total bond portfolio, in the process reducing its number of maturities outstanding from 39 to 15.

2.1.2. Other ways in which LM enhances liquidity
LM can enhance the liquidity of the market in ways other than stimulating the creation of benchmark bonds. Some illustrations are mentioned below.

Retiring illiquid bonds enhances price transparency. This beneficial impact is sometimes referred to as “yield curve optimization” or “cleaning the curve.” Repurchases and exchange offers enhance price discovery as valuation of the bonds is updated by the market. Regular buy backs or exchanges enhance trading activity. Dealers purchase off-the-run bonds more actively if they are confident that they can liquidate their position.

2.2. To decrease risks in the debt portfolio
LM facilitates the management of three main risks that a DMO is confronted with: refinancing risk, interest rate risk and currency risk.

As regards refinancing risk, smoothing the maturity profile is an objective in itself, apart from the need to manage the refinancing risk that results from the creation of large benchmarks. The “ideal” maturity profile from an overall risk management standpoint is similar to an annuity. Such a maturity profile minimizes both refinancing and interest rate risks.

As regards interest rate risk, smoothing the maturity profile also decreases market risk, as mentioned above. Interest rate swaps can have the same effect by lowering the amount of floating-rate debt.

As regards currency risk, currency swaps or foreign exchange forwards allow the DMO to manage foreign exchange exposure in the debt portfolio. However, emerging markets are usually confronted with one important limitation in this respect. Usually, the currency exposure on the external debt can be switched from one foreign currency to another; however, it cannot be hedged against the issuer’s domestic currency. Aside from the impact of possible foreign exchange regulations, this is the case as the forward price of a currency is technically derived from the interest rate differential between the two currencies involved, for the period considered. The required domestic interest rate reference is generally lacking in emerging markets.

2.3. To decrease the cost of new funding
This is the area where new funding activity and LM mix.

The objective of new funding activity is to secure the amount of funds required to roll over maturing debt or to meet a new financing requirement. The new funding activity is determined by cash flows.

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7 A “rump” gilt is one declared by the DMO, in which gilt-edged market makers (GEMMs) are not required to make two-way markets. The current list of rump gilts is published on the DMO website (www.dmo.gov.uk). Rump gilts are those that have been reduced in size to less than GBP 850 million (nominal) in issue. The government will not sell further amounts of “rump” gilts to the market but the DMO is always prepared, when asked by a GEMM, to bid a price of its own choosing for such gilts.
8 Legacy bonds are those denominated in the former national currencies of the Member States of the European Monetary Union
9 See section 2.1.1
The objective of LM is to adjust the structure of the debt according to guidelines set by the debt management strategy.

In practice, the two above-mentioned objectives can be linked. This is the case as the new funding activity of a DMO is actually a function of two variables: what it needs vs. what it can get. What a DMO needs is a certain amount of funds in a certain currency for a certain maturity (e.g., 5 years). What the DMO can get is what the market is willing to offer to it at a reasonable cost. The two may not match. For example, the market may have an interest only for 10-year maturities and not for 5-year instruments. Alternatively, the market may offer the DMO the maturity that it wants but only in different currency.

LM can help a DMO in transforming what it can get into what it needs. An illustration follows below, combining a new funding with a currency swap (CS) or an interest rate swap (IRS).

Case 1: A DMO wants to borrow 5-year USD. The market is offering it 5-year EUR on more attractive terms. The DMO can transform a EUR borrowing into a USD borrowing with a currency swap. A currency swap is basically an exchange of funding.

Case 2: A DMO wants to borrow for a 5-year maturity. The market is offering it only a 10-year maturity on attractive terms. With an IRS, the DMO can effectively transform a 10-year fixed-rate coupon into a 5-year fixed-rate coupon for the first 5 years and a 5-year floating-rate coupon for the last 5 years. The floating-rate coupon for the last 5 years is neutral from a debt management standpoint as, in 5 years, the debt manager can (if necessary) either keep the floating-rate coupon or do an IRS to transform it into a fixed coupon at the then prevailing market conditions.

2.4. To correct and/or to take advantage of market distortions

Sometimes, certain bonds trade at a yield higher than normal above the curve. This may be the case for various reasons: the coupon of the bond is out of the market, or the bond is seldom traded because its outstanding amount is too small, or its maturity is unattractive for the market, or its holdings are concentrated in a few hands, etc.

With a bond buy back or a bond exchange, the distortion in the curve is eliminated and a cost saving can be obtained in the process. As an illustration, Brazil has done several operations of this type for its external debt; Nigeria bought back oil warrants in 2007 in a competitive auction, also allowing non-competitive bids; conversely, Mexico sold warrants allowing their holder to exchange USD debt against peso debt at the money forward price.

2.5. To come to the rescue of the market during periods of stress

During periods of stress the objective is to reallocate liquidity between instruments and funding sources. Turkey provided an illustration of this in June 2001. The DMO exchanged USD 8 billion short-dated nominal domestic debt into USD-indexed TRL debt or floating-rate TRL debt. This had the effect of simultaneously decreasing a liquidity overhang in the domestic market and removing net currency exposure in the banking system.

2.6. To reduce reported debt servicing costs or to decrease reported debt/GDP ratio

The reported debt servicing costs are reduced when a bond bearing a high coupon can be refinanced at a lower market rate. This operation involves two transactions. First, the DMO issues a
new bond. Second, the DMO either uses the proceeds to buy back the old bond or alternately it offers the new bond in exchange for the old one\textsuperscript{10}.

In both cases, the reported budget deficit is then decreased by an amount equal to the coupon differential. However, the amount of the outstanding debt is increased by an amount equal to the premium of the price of the old bond.

The net result is thus financially neutral on the issuer’s actual funding cost. The impact of the two operations (new issuance and bond buy back or bond exchange) net out.

| Box 1: Economics of Bond Buy Back and Issuance |
|---|---|---|
| **1. Assumptions** | **Old bond repurchased** | **New bond issued** |
| Nominal amount | 100 | 100 |
| Coupon | 8% | 4% |
| Maturity | 10 year | 10 year |

By definition, the current price of the old bond is 132.44 (= PV @ 4% of a stream of 10 annual cash flows of 8)

<table>
<thead>
<tr>
<th><strong>2. Cash flows</strong></th>
<th><strong>Cash</strong></th>
<th><strong>Coupons</strong></th>
<th><strong>At maturity</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Repurchase of old bond</td>
<td>(132.44)</td>
<td>8% = 8</td>
<td>100</td>
</tr>
<tr>
<td>Issuance of new bond</td>
<td>132.44</td>
<td>4% = (5.30)</td>
<td>(132)</td>
</tr>
<tr>
<td>Net</td>
<td>0</td>
<td>2.70</td>
<td>(32)</td>
</tr>
</tbody>
</table>

(32) = future value @ 4% of the annual saving of 2.70 during 10 years

The same technique as above can be used to decrease the debt/GDP ratio. This is possible when the bonds being repurchased or exchanged trade below par. The accounting impact of this transaction is the mirror image of the repurchase of a bond with a high coupon

2.7. LM functions specific to mature government securities markets

LM operations are carried out for a variety of additional reasons. These can be to diversify the investor base (e.g., Belgium has swapped foreign currency issuance into domestic debt to that effect); or to reap genuine\textsuperscript{11} cost savings by taking advantage of a “swap window” (e.g., UK DMO’s USD issuance in 2007); or to create a funding need (in early 2000, Denmark made recurrent buy backs so as to be able to keep issuing despite its budget surpluses); or to decrease the stock of debt (in 2000, France did bond buy backs to that effect). LM can even be a powerful tool to enhance the image of a sovereign borrower in the market. An illustration is the exchange done by Brazil of the “C” bond for a new “A” bond in July 2005.

\textsuperscript{10} As an illustration, in 2006, Columbia combined auctions and tenders to extinguish high-coupon debt and consolidate different long-dated maturities into one single issue.

\textsuperscript{11} In contrast to the “cosmetic” savings described in the previous section
Finally, LM operations can also be a way for DMOs to obtain high quality information on the depth and breadth of the market for various securities. They provide DMOs with feedback from the market that DMOs can use to adapt their borrowing program in order to lower cost and volatility.

Box 2: Brazil C-bond exchange for a new A-bond

The C-bond exchange was meant to exemplify the progress towards economic reforms that Brazil had made by 2005. Eleven years after the restructuring that resulted in the creation of the C-bond, the National Treasury wished to eliminate one of the last evidences of the country’s past instability. The new A-bond did not bear the Brady stigma. It is similar to the C-bond. However, it has no call option, a longer maturity and an amortization schedule shifted forward in time.

On July 22, 2005, investors exchanged an original principal amount of USD 4.2 billion of Brazil’s outstanding 8% bond due 2014, known as the C-bond, for USD 4.4 billion of a new global bond due 2018, the A-bond.

3. BOND BUY BACKS AND EXCHANGES

3.1. Objectives of bond buy backs and exchanges

The main objectives pursued by bond buy backs and exchanges, as discussed in the previous section, are: to support the creation of large benchmarks by smoothening the redemption profile (section 2.1.1.); to help build large benchmarks faster by retiring old, less liquid bonds from the market (section 2.1.1.); to achieve budget savings or to decrease the reported debt/GDP ratio by repurchasing or exchanging bonds with a high coupon or bonds trading below par, respectively (section 2.4.).

A common denominator of bond buy backs and exchanges is to increase market liquidity both directly and indirectly. They increase market liquidity directly by supporting the creation of benchmarks and by reducing the number of outstanding bond issues. They increase market liquidity indirectly as dealers take positions more actively (particularly in purchasing off-the-run bonds) if they know that they can liquidate their holdings in regular bond buy backs or bond exchanges.

Yet another objective, specific to bond exchanges, can be to help investors restructure their portfolio in an efficient manner. The advantage for the issuer is to increase investors’ market participation. It also helps maintain market stability when the composition of an index changes.

3.2. Two types of buy backs

Buy backs can either be over the counter (OTC) or in the framework of a reverse auction. In the first case, the buy backs are done “piecemeal” (one at a time) over a certain period. In the second case, all buy backs are done simultaneously.

The OTC buy back can itself be carried out either bilaterally or in the framework of a buy back window.

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12 Brazil has achieved the same objective during extremely volatile market conditions by doing simultaneous buying and selling auctions. The National Treasury simultaneously organized auctions to buy and sell the same instrument (NTN-B in May 06 and NTN-F in Oct 08) in order to provide price parameters to the market. The initiative has been successful as it has enabled some investors to do coordinated portfolio reallocations, whilst making other investors confident to maintain their position.
Bilateral buy backs are concluded at a negotiated price. The price, generally not published, is negotiated by the issuer, either directly with the counterpart or using an intermediary. In the latter case, the issuer gives a mandate to a primary dealer to buy back a specific bond within a specified deadline. The treasury then sets the amount, the settlement date, the maximum price and the intermediary’s fee. This procedure is practiced in Italy, for example. Using an intermediary has the advantage of possibly minimizing the impact on market prices. The drawback is a lack of transparency.

A buy back window applies when the issuer makes the market a standing offer to buy back some securities. The offer is valid over a certain period of time. The price is published. It is generally fixed for the duration of the window.

Reverse auctions are most often of the multiple price category. The rationale is that an investors’ willingness to sell a security is more difficult to gauge than their interest in buying it. The relevant securities may be concentrated in a small number of portfolios. Some investors may also be reluctant to sell securities that fit in their portfolio.

The timing of the announcement of a reverse auction varies from a quarterly schedule (UK) to 3 days ahead of the operation (Greece). Generally, reverse auctions are announced a couple of weeks in advance. The advantage of a reverse auction over an OTC buy back is that an auction helps create a marketing event. Their drawback is that they correspondingly increase the issuer’s “image risk” if the operation is not successful.

3.3. Four types of bond exchanges
Bond exchanges can be done in four different ways: a fixed-price exchange, an exchange auction, a bilateral exchange, and two separate auctions.

3.3.1. Fixed-price exchange
The exchange ratio is set by the treasury. Different types of exchange ratios are used in practice. For example, dirty price destination stock / dirty price source stock (UK, Ireland, Denmark, Sweden) or clean price destination stock / dirty price source stock (Belgium).

Fixed-price exchanges are attractive to both investors and traders. Investors have no winner’s curse risk. Traders are effectively offered a call option by the issuer. The drawback for the treasury is that it bears market risk, i.e., the risk of an adverse change in market prices whilst processing the operation.

3.3.2. Exchange auction
The exchange ratio is set by the market. Market practice varies as to whether the auctioned price is a uniform price (Belgium, Denmark, Spain, UK) or of multiple prices (Finland, Sweden, UK).

Bids can be submitted according to two different formats. Either the treasury sets clean price of destination stock and the market bids clean price for source stock (Denmark, Netherlands, Spain), or the treasury sets clean price of source stock and the market bids clean price for destination stock (UK, Sweden).

The advantage for the issuer of an exchange auction over a fixed-price exchange is that the former creates no market risk. The risk is borne by the bidders.
3.3.3. Bilateral exchange

A bilateral exchange is the bond exchange equivalent of an over-the-counter buy back (section 3.2.). In the euro zone, this procedure is used primarily by Greece and Sweden. Greece uses the prevailing price in the secondary market with scope for negotiation depending on the characteristics of the bond being exchanged and the investment policy and needs of the counterpart.

3.3.4. Two separate auctions

This procedure combines a bond buy back with the issuance of new stock (one hour later, as in Finland). The separate carrying out of the two operations makes them both more straightforward for the DMO to process and attractive to a wider group of investors. The risk for the treasury is to have a funding shortfall if the amount issued at the auction is smaller than the amount bought back.

3.4. Procedures

An issue specific to bond exchanges is the number of stocks included in the exchange. Market practice varies from one source bond to multiple destination bonds (e.g., Belgium during the nineties: one short-dated source bond against up to 8 destination bonds), to a 1:1 ratio (Netherlands, Sweden, UK). A 2:1 ratio is applied in Ireland and Spain.

Four procedure items are common to buy backs and exchanges: the timing of the announcement, the eligible participants, the price-setting reference, and the accounting.

3.4.1. Timing of the announcement

A widespread practice is to inform the market that the DMO is ready to repurchase bonds with a short remaining life to maturity (Belgium, Finland, UK, Sweden) and/or to repurchase off-the-run illiquid bonds that have a relatively small amount outstanding (Italy, UK).

Other practiced procedures are: an annual calendar of planned operations (Belgium up to ‘98); 3 weeks advance notice (UK); 1 week advance notice (Sweden, Finland), and 2 days advance notice (Ireland).

3.4.2. Eligible participants

The most common practice is to limit participation in a buy back or exchange event to the primary dealers (PDs). All holders of bonds must then submit their bids through a PD.

However, there are exceptions. For example, in Denmark, all entities authorized to trade on the Copenhagen Exchange are eligible to participate. In Spain, all market members can participate, although some extra time is given to PDs.

3.4.3. Price-setting reference

Typically, the reference is the observed market prices (average of market quotes) over a certain period, making allowance for the refinancing cost (particularly for short-dated bonds) or internal analytics (cheap / dear).

3.4.4. Accounting

The securities are generally cancelled. However, they can also be held with a view to being used by the DMO either as collateral in the repo market or to alleviate tensions in the secondary market.

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13 A bond exchange attracts only those investors who are interested in both selling the old bond and acquiring the new one. By contrast, a bond buy back attracts all investors interested in selling, and an auction attracts all investors interested in buying the relevant security. The two groups of investors need not overlap.

14 usually less than 12 months
3.5. Risks common to buy backs and exchanges

Three risks are common to both procedures. First, there is the risk of market price manipulation after the announcement of the operation. Second, there may be a budgetary cost if a premium has to be paid to obtain a significant amount of the source stock. Third, there is the possibility of locking in an unattractive forward rate.

An additional risk to the DMO is the “reputation (image) risk” if the operation is not successful. In order to manage market expectations, some DMOs inform that they have no target amount to exchange or buy back as their principal concern is to be of service to the investor community by offering them an efficient way to rebalance their securities portfolio.

When the source stock is illiquid, some DMOs similarly inform the market that they will maintain a sufficient size of the outstanding stock to ensure a minimum tradability. Such an announcement is fair to the extent that a DMO may wish to avoid giving investors the impression that they are being trapped. At the same time, the announcement might be counterproductive as the risk of confronting an altogether illiquid market is an incentive for investors to sell the relevant securities. The offer of a buy back window (section 3.2.) is perhaps the most efficient procedure. It offers investors a way out, but the price is at the DMO’s discretion.

3.6. Relative advantages and drawbacks of bond buy backs and bond exchanges

Buy backs offer two advantages. They are the easiest and most flexible procedure. They also attract a wider investor base. Investors participating in a bond exchange must have an interest both in selling the source stock and in buying the destination stock. Yet, buy backs yield approximately the same result as a bond exchange when they are combined with a subsequent bond issuance. However, buy backs create two risks for the treasury: a refinancing risk and an unknown exchange ratio if they are complemented by a subsequent issuance of bonds.

Bond exchanges have advantages as well. The issuer bears no refinancing risk and investors benefit from being able to switch from a less liquid to a more liquid bond. Exchanges may alter the duration of the debt if the exchange is not a switch of stock of similar maturity. Altering the duration of the debt portfolio through an exchange may be an explicit goal of the DMO (especially, to increase the duration). Conversely, it may be an unintended consequence of the operation, in which case, investors may be reluctant to utilize exchanges to avoid any unintended alteration of the duration of their portfolio. These and other considerations make exchanges more complex transactions.

3.7. Best market practices

There is no “one-size-fits-all” procedure in government securities markets. Yet, some procedures seem to work well often. The objective of this section is to summarize such procedures that can be characterized as best market practices.

3.7.1. Bond exchange and bond buy back policy

The DMO is transparent about the objectives pursued and the mechanics of the procedure.

Specifically, the DMO informs the market that (i) the objective of these operations is to either smoothen the redemption profile of public debt by decreasing the amount outstanding of benchmark bonds with a short remaining life to maturity or retire illiquid bonds from the market; (ii)

15 Belgium
16 Spain
for benchmark bonds, the securities will begin to be offered for exchange “x”\textsuperscript{17} months before their maturity date; (iii) for illiquid bonds, the securities selected for the operations will usually be chosen by the DMO after consulting with its PDs.

For illiquid bonds, the DMO further informs the market that (i) the exchanges will stop when the outstanding amount of the “source bond” (i.e., the illiquid bond) is reduced to a certain minimum amount \textsuperscript{18} and (ii) from that point onwards, the DMO might offer to buy back the bond OTC, i.e., offer a price to PDs upon request.\textsuperscript{19}

### 3.7.2. Organization of bond exchange

**Calendar:** Bond exchanges are organized following a regular calendar (e.g., monthly). The exchange takes place as soon as possible after a standard bond auction.\textsuperscript{20} No target exchange amount is announced.

**Procedure:** The exchange is structured as an auction on a uniform price basis. The DMO sets the price of the destination bond (i.e., the benchmark that will be issued in the framework of the exchange). Only PDs can participate in the auction.

### 3.7.3. Organization of bond buy back

**Calendar:** Bond buy backs are organized following a regular calendar (e.g., monthly). The buy back takes place as soon as possible before a standard bond auction\textsuperscript{21} or a standard bill auction.\textsuperscript{22} No target exchange amount is announced.

**Procedure:** The buy back is structured as a reverse auction on a uniform price basis\textsuperscript{23}. Only PDs can participate in the auction. The DMO sets the price of the destination bond (i.e., the benchmark that will be issued in the framework of the exchange).

### 3.7.4. Choice between bond exchanges and bond buy backs in emerging markets

For benchmark bonds, the maturity profile of the debt seems to be smoothened most efficiently by doing bond exchanges first, and bond buy backs thereafter.\textsuperscript{24} Bond exchanges are a first choice as they create no refinancing risk. However, buy backs are a more powerful instrument and may be preferred as the maturity date of the benchmark approaches.

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\textsuperscript{17} usually 12 months  
\textsuperscript{18} This is the amount below which the bond is perceived to be totally illiquid.  
\textsuperscript{19} By so doing, the DMO pleases investors as the auction or buy back has further increased the illiquidity of the bond. Some DMOs may consider it to be more prudent, however, to make a specific announcement for every bond concerned rather than making it a policy for all bonds outstanding, the amount of which is below a certain amount. The objective is to avoid the risk of the DMO being overwhelmed by a large number of buy back requests.  
\textsuperscript{20} The rationale is explained in the next paragraph wherein it is recommended that that DMO sets the price of the benchmark that will be issued in the framework of the exchange. This price is easier to determine when the benchmark has recently been auctioned.  
\textsuperscript{21} This helps the DMO in quantifying the amount of its financing needs ahead of the auction (e.g., Finland has a buy back auction immediately followed by a standard auction). Some DMOs, however, prefer to minimize the refinancing risk by following the opposite sequence (e.g., Brazil).  
\textsuperscript{22} This procedure may be particularly attractive to the extent that (i) both operations often have the same value date when a bond buy back is done one day before an auction of bills; (ii) the refinancing risk is limited with an auction of bills.  
\textsuperscript{23} The objective is to attract more aggressive bids by a larger number of participants. However, where standard auctions are done on a multiple price basis, it may be advantageous to apply the same basis to buy back auctions in order to apply standardized procedures.  
\textsuperscript{24} E.g., exchanges during the first 6 months followed by buy backs during the next 6 months
For illiquid bonds, bond exchanges seem to be the best choice. They raise no refinancing risk for the DMO. There is no urgency for retiring the securities from the market.
Appendix 1

BENCHMARK FEATURES AND DEVELOPMENT TECHNIQUES

1. Introduction

Building benchmarks requires a comprehensive debt management strategy. Both the issuance policy and liability management operations are involved in the process. For emerging markets, several reforms are typically needed in both the primary and the secondary market.

2. Importance of market liquidity

A market is liquid when a large amount of securities can be bought or sold promptly, at little cost and with no significant impact on market prices. Simply put, a security is liquid when it can be easily converted into cash and vice versa.

Investors are willing to pay a premium to buy securities that are liquid. Liquid securities allow a more flexible investment strategy than securities that are difficult to acquire or to sell. Since the yield of a fixed income security decreases when its price rises, DMOs have a vested interest in enhancing the liquidity of their government securities market. It decreases their cost of funding.

A certain number of prerequisites have to be met for a market to be liquid. A security is liquid when it is widely traded. In order for a security to be widely traded, it must be easy for investors to find a matching trading interest. In order to simplify the matching of trading interests, the amount outstanding of the relevant security must be large and the price must be easy to determine (“price transparency”).

The main usefulness of benchmarks is to enhance the price transparency of other bonds.

3. Definition of a benchmark bond

A benchmark bond is a standard against which the yield of other bonds can be measured. For example, if a 5-year bond yields 5% and a 6-year bond yields 5.25%, and if the 5-year bond is a benchmark, then the yield of the 6-year bond can be expressed as “benchmark + 0.25%.”

The purpose of expressing the yield of a bond by reference to a standard is linked to the difference between the level and the shape of a yield curve. The level of a yield curve is volatile as interest rates fluctuate up or down. By contrast, the shape of the yield curve (i.e., the spread between the interest rates applicable to different maturities) is more stable. Thus, in the aforementioned example, the yield of the 6-year bond can actually be inferred (or at least closely approximated) from the yield of the benchmark bond, irrespective of the level of interest rates. Most importantly, the yield of the 6-year bond can be assessed even in the absence of any recent trades in this bond.

The existence of benchmarks increases price transparency.

4. Main features of benchmark bonds

A benchmark bond is always a widely traded bond. A standard pricing reference must be permanently updated. It typically has a large amount outstanding and a wide placement in the market. A large amount outstanding increases the chances of finding a matching trading interest. A

25 The word “bond” is used here as a short cut for “security”. A t-bill can also be a benchmark.
security cannot be traded much if a large amount is concentrated in a few hands. **It generally has a standard maturity date.**\(^{26}\) This ensures that benchmarks are spread along the yield curve. The objective is to maximize the contribution of benchmarks to price transparency. A benchmark can be a reliable pricing reference only for neighbouring maturities. **Finally, a benchmark bond is usually**\(^{27}\) the latest standard maturity still being auctioned (“on-the-run bond”). These bonds are the most traded.\(^{28}\)

5. **Steps necessary to create liquid benchmarks with large amounts outstanding and balanced distribution**

(i) **The DMO must issue fungible securities,**\(^{29}\) the amount of which can be increased over time with multiple auctions. It must also limit the number of its outstanding maturities in order to create large benchmarks. The financing requirements of the government are not infinite.

(ii) **Auction rules must be implemented** in order to limit the maximum amount of bids and allocations so as to ensure a balanced distribution.

(iii) **Ideally, a market-maker program should be put in place** in order to maximize liquidity and price transparency.

(iv) **Risks created by large benchmarks need to be managed.** The creation of benchmarks mechanically leads to a concentration of maturities. This raises a refinancing risk as maturing benchmarks will need to be refunded. It also raises an interest rate risk as large amounts will need to be refunded at the same time and thus, at the same rate, which could be a problem if rates are high at that moment.

The risks created by large benchmarks can be managed with bond buy backs and bond exchanges. Both transactions help in levelling out the maturity profile of the debt. They enable DMOs to refinance ahead of time bonds that will be maturing shortly by issuing bonds with a longer life to maturity.

6. **In practice, a benchmark building strategy confronts DMOs with a number of practical questions for which the answers will market specific. Some of these questions are:**

(i) What should be the benchmark maturity dates?

(ii) What should be the benchmark size?

(iii) How long can a maturity remain a benchmark?

(iv) What is the corresponding issuance policy?

(v) How can a concentration of maturities be avoided?

(vi) What is the best procedure for shifting illiquid bonds into benchmarks?

(vii) How can the refinancing risk be best addressed?

7. **Conclusion**

Building benchmarks is crucial to increasing the liquidity of the market in order to decrease the DMO’s cost of funding. The process requires a comprehensive debt management strategy. It often requires the implementation of a set of reforms.

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\(^{26}\) E.g., 3-, 5-, 10-, 15-, 30-years

\(^{27}\) a transition period may be needed for a bond to reach benchmark size

\(^{28}\) There is also a technical justification: bonds are easiest to combine with derivative instruments when their yield is an annual amount equal to, or close to, the amount of the coupon. This implies that the market price of the bond be at, or close to, par. In general, only recently issued bonds quote at, or close to, par.

\(^{29}\) thus, plain vanilla securities