The framework for the implementation of monetary policy in the Large Value Transfer System environment

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Introductory Note

On 4 February 1999 the Canadian Payments Association introduced the Large Value Transfer System (LVTS). Coincident with the introduction of the LVTS, the Bank of Canada changed the framework for the implementation of monetary policy as outlined in this report.

This report follows Discussion Papers 1 (23 November 1995) and 2 (1 March 1996), which served as the basis for extensive consultations with the financial community. These consultations resulted in the resolution of various issues that had been identified in the Discussion Papers as well as a clarification of the Bank of Canada's operational approach.

Executive Summary

When implementing monetary policy, the Bank of Canada operates through its influence on the overnight interest rate. The Bank sets a 50-basis-point operating band for this rate and designs its framework in order to hold the rate within this band. Changes in the overnight rate, and in the Bank's operating band, are the first stage in the transmission mechanism whereby the monetary policy actions taken by the Bank affect total spending in the economy and, ultimately, inflation.

The method used by the Bank to implement monetary policy is closely linked to the system through which payments clear and settle on a daily basis. Currently, these payments are mainly in the form of cheques and other paper-based items, which clear overnight and are settled on a retroactive (back-dated) basis. Therefore, those financial institutions directly engaged in the final settlement of payments do not know the outcome of the daily clearings, or the end-of-day level of their settlement balance at the Bank of Canada, until the following morning. This uncertainty is central to the framework of policy implementation prior to the introduction of the LVTS.

The Canadian Payments Association will introduce the new electronic system for the transfer of large-value payments (the Large Value Transfer System or LVTS) on 4 February 1999. Among other things, this system will permit participating financial institutions to track their LVTS receipts and payments throughout the day and to know with certainty the net outcome of these flows by the end of the day. As a result, a significant part of the current uncertainty regarding settlement balances at the Bank will disappear. Hence, with the introduction of the LVTS, a new approach to monetary policy implementation will be needed.

This report sets out the framework under which monetary policy will be implemented in the LVTS environment. The framework's key feature continues to be an operating band of 50 basis points for the overnight interest rate. But, under the proposed system, the band's upper and lower limits are enforced differently. The upper limit continues to be the Bank Rate, the rate the Bank will charge participating financial institutions that require an overdraft loan to cover a deficit position and to permit settlement of the LVTS at the end of the day. The lower end of the band will be the rate of interest that the Bank pays to participating institutions with surplus settlement balances at the end of the LVTS day. These arrangements should discourage transactions in the market for overnight funds at rates higher or lower than this band.

Changes in this operating band and, hence, in the Bank Rate, will be announced early in the morning. In addition, the Bank will set a target rate for the overnight interest rate at the midpoint of the operating band. This target rate is the level at which the Bank is prepared to directly intervene at midday in the market for overnight funds with either Special Purchase and Resale Agreements (SPRAs) or Sale and Repurchase Agreements (SRAs).

In practice, end-of-day deficits or surpluses in the settlement balances held by participating financial institutions at the Bank of Canada should be small. The framework includes a pre-settlement trading period for these institutions, following the close of client business, to allow them to undertake transactions to eliminate deficits or surpluses. Typically, the Bank will set the total level of balances for the system as a whole at zero.

1 Focussing the framework

The Canadian Payments Association (CPA) will introduce an electronic system for the transfer of large-value payments, the Large Value Transfer System (LVTS), on 4 February 1999. The Bank of Canada consulted extensively with a broad range of market participants in designing a framework for monetary policy implementation in the LVTS environment that will allow the Bank to influence the overnight interest rate in a simple and transparent manner.[1] This framework has been designed to encourage participants to deal directly with each other and with the market in general, rather than with the Bank of Canada, when they adjust their surplus or deficit positions.[2]

2 Key features of the proposed framework

2.1 Operating band

As the centrepiece of its policy implementation, the Bank of Canada will continue to announce a 50-basis-point operating band for the overnight interest rate in the money market.[3] The upper and lower limits of this band will be established by the rates applied to the end-of-day LVTS overdraft loans and deposits of the LVTS participants settling with the Bank of Canada, rather than through the rates reinforced by open market buyback operations in the overnight market as was the case prior to the LVTS.[4]

The rates applied to participants' positions with the Bank of Canada are expected to establish the boundaries of the operating band for the following reasons:

1. Discussion Paper 1, 23 November 1995 and Discussion Paper 2, 1 March 1996, reprinted in the *Bank of Canada Review*, Winter 1995-1996 and Spring 1996. See also, "A Primer on the Implementation of Monetary Policy", D. Howard, *Bank of Canada Review*, Autumn 1998.

2. The term *participants* is used in this paper for those members of the CPA who participate in the LVTS. These institutions settle directly on the books of the Bank of Canada.

3. The Bank of Canada currently calculates the average cost of overnight financing for major dealers as a measure of the overnight rate. Dealers obtain overnight funds from call loans, buyback arrangements (repos), and swapped foreign exchange transactions. There is also a large overnight market for wholesale and interbank deposits, which are not collateralized and which are not included in the Bank's measure. As a result of differences with respect to legal format, collateral requirements, etc., interest rates on the various overnight instruments may differ slightly. However, all the principal overnight rates move closely together because of market arbitrage, and the modest differentials are not important from the viewpoint of monetary policy. The Bank will consider changes to the measurement of the overnight rate over time to take account of the changing financial environment.

4. Prior to the LVTS, the Bank announced changes in its operating band simultaneously by press release and by intervening in the money market with offers of Special Purchase and Resale Agreements (SPRAs) or Sale and Repurchase Agreements (SRAs) to signal the new upper or lower limit.

- Deficits on the books of the Bank of Canada at the end of the LVTS day will be financed at the Bank Rate, defined as the upper end of the operating band, by a collateralized overdraft as per pre-LVTS rules. That is, participants will be able to finance a deficit at the end of the day at the Bank Rate upon the pledge of eligible collateral to the Bank of Canada.[5] This will likely put a cap on the rates they will be prepared to pay during that day for overnight borrowings in the market.
- Participants with surplus balances at the end of the LVTS day will receive interest on those balances at a rate 50 basis points below the Bank Rate, i.e., the bottom of the operating band.[6] A participant will therefore be unlikely to accept a lower rate on its overnight funds from a borrower in the market. Thus, the floor on overnight rates will likely be the Bank Rate less 50 basis points.
- Changes in the operating band and, hence, in the Bank Rate, will be announced at 9 a.m. on the effective date.[7] In this manner, the rates applicable to accounts at the Bank of Canada at the end of the day will be known with certainty by money market traders early in the day.

2.2 Pre-settlement trading

As explained in Section 3, the overall supply of settlement balances will be precisely controlled by the Bank of Canada. In general, the level of settlement balances in the system will be maintained at zero each day so that overnight rates in the market will typically be within the band and not at the boundaries.

The LVTS will have a *pre-settlement trading period* of half an hour, after the close of client business (6 - 6:30 p.m.).[8] Pre-settlement trading will allow each participant to achieve close to a zero balance, regardless of the distribution of client payments. Participants in surplus positions as a result of client transactions could lend to those with deficits, and movements in interest rates will typically be constrained by the limits of the operating band.

5. The Bank of Canada has expanded the list of collateral eligible for pledging to the Bank of Canada in support of intra-day credit in the LVTS, LVTS advances, and Automated Clearing Settlement System (ACSS) advances. In addition to Government of Canada direct obligations, Government of Canada guaranteed obligations, provincial and provincially guaranteed debt, the list of eligible collateral includes “Special Deposit Accounts” at the Bank of Canada and NHA MBS securities.

6. The end-of-day LVTS balances described in this paper should not be confused with the “Special Deposit Accounts” at the Bank of Canada, which serve as collateral and bear interest at the published overnight rate less 1/16 of 1 percentage point.

7. All time references are to Eastern Time.

8. For one month after the introduction of LVTS, the pre-settlement period has been extended to one hour to ensure that participants can adjust business practices to the new environment. This extension will be reviewed during the trial period.

2.3 Target rate for the overnight interest rate

Within the operating band of the proposed system, the Bank has a specific *policy target rate* at which it will be prepared to enter into Special Purchase and Resale Agreements (SPRAs) or Sale and Repurchase Agreements (SRAs). This will be the midpoint of the band.

- The Bank is prepared to enter into open market transactions in the overnight market at the midpoint of the operating band.
- At 11:45 a.m., if overnight funds are generally trading above the indicated target level, the Bank will enter into SPRA transactions. That is, the Bank will offer to transact SPRAs in amounts up to individual predetermined limits. Conversely, if overnight funds are generally trading below the indicated target level, the Bank will enter into SRA transactions in amounts up to predetermined limits.[9] If the overnight rate is trading around the target level, the Bank will not intervene.
- The eligible counterparties to these transactions are the *primary dealers,* a subgroup of government securities distributors that have reached a threshold level of activity in the Government of Canada debt markets.[10]

With the target level known early in the day and the Bank not intervening until midday, participants will be encouraged to trade with each other during the morning when a large proportion of daily funding activity occurs.

2.4 An illustration of the framework (Figure 1)

The existence of a 50-basis-point spread between the rate charged on overdrafts (BR) and that paid on deposits (DEPR) should provide a fairly strong cost incentive for participants to adjust their positions in the market rather than to rely on the central bank facilities for end-of-day positions. Thus the cost of overnight loans in the market is likely to fluctuate between the rate on positive LVTS settlement balances and the Bank Rate. Since the typical spread between bids and offers on overnight funds in the market is about 1/8 per cent, in principle it should be possible for lenders and borrowers to negotiate a rate that is mutually more favourable than the rates available at the Bank of Canada at the end of the day. Thus, the rate spread at the central bank encourages the participants to hold roughly zero balances every day, and the Bank expects limited use to be made of its end-of-day settlement facilities. If persistent or extended use of the overdraft and deposit facilities were to become common, the Bank might take this as evidence that the 50-basis-point spread was too narrow.

9. The aggregate total of primary dealer limits for either SPRAs or SRAs is initially set at $950 million.

10. With the introduction of the LVTS, the Bank of Canada is eliminating the regular Purchase and Resale facility (PRA) that had been available at Bank Rate to non-bank jobbers.

3 Process for neutralizing government and Bank of Canada flows

In aiming at a zero settlement balance for the system each day, the Bank will neutralize certain public sector flows that affect the financial system. These include all receipts and disbursements of the federal government as well as the Bank of Canada's own transactions and those of its clients. The government flows potentially affect settlement balances because the Bank acts as the government's banker. Thus, a net disbursement by the government on a given day would increase the settlement balances of the participating institutions in the absence of any offsetting transaction by the Bank; a net receipt of the government would reduce their balances.

Public sector transactions that affect the financial system fall into two categories: those that will be transacted directly in the LVTS and for which the Bank of Canada will have full information at the time the actual payments are made; and those paper-based payments and receipts for which the Bank will acquire full information by 3 p.m. and which will be settled with one or more LVTS payments**.**

The transactions made through the LVTS include most large federal government disbursements and receipts (including Receiver General deposits) and issues and retirements of marketable government debt as well as foreign exchange transactions and Bank of Canada open-market and client transactions. These transactions will settle either directly via the LVTS or through other clearing and settlement systems that themselves settle through the LVTS (for example, the Debt Clearing Service (DCS) of the Canadian Depository for Securities).

Paper-based items will include many smaller government transactions such as personal taxes, pension payments, and Canada Savings Bond sales and redemptions. The Bank of Canada will be able to calculate the net effect of such government receipts and disbursements before the end of the day because the clearing institutions will continue to present such government items to the Bank by 3 p.m. each afternoon, a practice known as *pre-presentation.*[11] Settlement for these items will take place the same afternoon, by means of one, or a limited number of, LVTS payment(s) per participant. These transfers will cover the payment obligations in favour of the participant or the government.

The Bank will therefore have full information on the net effect of all public sector flows affecting the financial system on a given day. It will neutralize the net receipt or disbursement accurately in its setting of the level of settlement balances for the system before the pre-settlement trading period.

11. As is now the case, paper-based items not presented to the Bank of Canada by the 3 p.m. cutoff will remain with the financial institution overnight and therefore will not affect the level of settlement balances in the system on that particular day.

3.1 The transfer of Government deposits

The transfer of government deposits, which has been the traditional instrument for neutralizing public sector flows and for setting the level of settlement balances in Canada, will continue to be used for this purpose. The current *drawdown and redeposit mechanism* for transferring government deposits has to be changed, because, on a day with a net disbursement by the government, the Bank will not be able to “draw down,” i.e., debit, the government’s account with a participant.[12]

Daily auctions of government deposits will therefore be used to effect the transfer. That is, the required change in the level of government deposits held by financial institutions will equal the difference between the total amount of government balances auctioned and the total amount maturing.

- The government will continue to auction balances that are determined to be in excess of its daily operating requirements through a term deposit auction at 9:15 a.m.
- A cushion of Receiver General balances will be held to meet any unforeseeable daily transaction requirements of the public sector. Shortly after the actual net effect of Bank of Canada activity and the government’s receipts/disbursements becomes known in the afternoon, the appropriate quantity of Receiver General deposits will be tendered to ensure a zero supply of settlement balances in the system.This quantity (equal to the cushion less unexpected net public sector payments for the day) will be auctioned at about 4:15 p.m. for same-day settlement through the LVTS.
- The difference between the government’s maturing deposits and its new term deposits tendered at both the morning and afternoon auctions will neutralize the net government disbursements or receipts and any Bank of Canada flows for the day.

Interest rates on government deposits

Over time, competition and arbitrage in the market should ensure that the average rate of interest at the auction for one-day term deposits will be close to the going overnight rate. In any event, the tendered rates on one-day deposits on any day are unlikely to go beyond the limits of the operating band.

12. In the pre-LVTS system, direct clearers bid each week for a share of the government’s daily demand balances for the following week, although the actual quantity of such balances is unknown. Government demand balances at the financial institutions could be increased (redeposit) or reduced (drawdown) on a daily basis. The fact that the LVTS is a “credit-push” rather than a “debit-pull” payment system, i.e., a system where the payer’s financial institution initiates the transfer of funds to the payee’s institution, means that the drawdown/redeposit would no longer be a practical tool for transferring the government’s deposits between its accounts at financial institutions and its account at the Bank of Canada.

The Market Timetable

9 a.m.	Announcement of change in operating band (if any) (a change implies change in target, i.e. intervention rate)
9:15 a.m.	Cutoff time for bids for Receiver General (RG) term deposit auction
9:30 a.m.	Release of RG term deposit auction results
11:45 a.m.	SPRAs or SRAs offered and transacted (if any)
3 p.m.	Cutoff time for presentation of government items to Bank of Canada
4 p.m.	Payment exchange for DCS
4:15 p.m.	Cut-off time for bids for RG deposit auction
4:30 p.m.	Release of RG auction results
6 p.m.	Close of LVTS client (third-party) transactions
6-6:30 p.m.	Pre-settlement trading
8 p.m. or earlier	Settlement of LVTS balances at the Bank of Canada

4 Treatment of balances from the process of clearing paper-based payment items

4.1 Retroactive settlement

Paper-based payment items such as cheques are currently cleared overnight, using the Automated Clearing Settlement System (ACSS). This system will remain in place. The institutions concerned indicated to the Bank of Canada a strong preference for retaining retroactive settlement for cheques. (Discussion Paper 1 pointed out that the alternative of next-day settlement, which is the most common method used in other countries, would also be acceptable to the Bank of Canada.)

4.2 Eliminating the calculation period (averaging period) for settlement balances

For reasons of operational simplicity the clearing institutions indicated a preference for a system of charging for overdrafts and remunerating positive balances emerging from the ACSS rather than the previous framework of a calculation or averaging period.

Prior to the LVTS, a calculation period was used to reduce the costs of random swings in the clearings, since surpluses on some days were offset against deficits on others in the same calculation period.[13] Simply eliminating the calculation period would have implied that the direct clearers would pay twice Bank Rate on any daily overdraft, while receiving nothing on deposits.

It was determined, however, that the cost benefits of averaging could be replicated by treating ACSS settlement accounts similarly to LVTS accounts. The Bank will charge for overdrafts and remunerate positive balances at a given spread around the target band for the overnight rate. There will still be an incentive to target zero balances, since the cost of financing a deficit in the money market will be less than the cost of an overdraft at the Bank of Canada, while the return on surplus funds will be higher in the market than at the Bank of Canada.

4.3 Interest charges on the retroactive ACSS settlement balance

For the start of the LVTS, the rate spread at the central bank facilities for ACSS balances will be 150 basis points above and below the operating band, i.e., a charge of Bank Rate *plus* 1 1/2 percentage points for daily overdrafts, and a remuneration on positive balances equal to the rate paid on positive LVTS balances *less* 1 1/2 percentage points.[14]

4.4 Implications for the money market

Since the rate spread at the Bank of Canada is wider for ACSS balances than for LVTS balances, interest rates on overnight deals settled via the ACSS could vary over a wider

13. To induce the clearing institutions to aim at zero balances, the Bank of Canada charged Bank Rate for overdrafts and Bank Rate again for any end-of-period cumulative deficit, and paid no interest on positive balances. See Implementation of Monetary Policy in a Zero Reserve Framework, Discussion Paper 3 (1 May, revised 6 September 1991).

14. Initially this rate spread was 250 basis points above and below the operating band but the Bank had indicated that the spread was subject to review. The rate spread was changed effective 1 April 1999.

range than those settled on the LVTS. The midpoint of both facilities will be the same, however, and, on average, trading levels should converge to the centre of the band.

Most market-related wholesale transactions will be settled through the LVTS, and this is where the Bank will focus its monetary policy operations.

In this environment, participants wishing to offset expected gains or losses in the paper clearings could transact with each other (e.g., by interbank transactions), for settlement via the ACSS, in order to avoid the costs of expected surpluses or deficits brought about by client transactions settling in the ACSS.[15] The Bank of Canada will not regard the interest rates emerging from these trades as significant indicators of the cost of overnight financing, especially as the market will be relatively thin and sensitive to transitory technical factors.

4.5 Payment cycle

The daily timetable of the payments system under the LVTS and retroactive settlement for the ACSS is illustrated in Figure 2. Paper-based payment items delivered to participants for credit on a given day will result in changes in the balances held at the Bank of Canada dated that same day, even though the clearing results will not be available, and settlement not completed, until midday the next day.

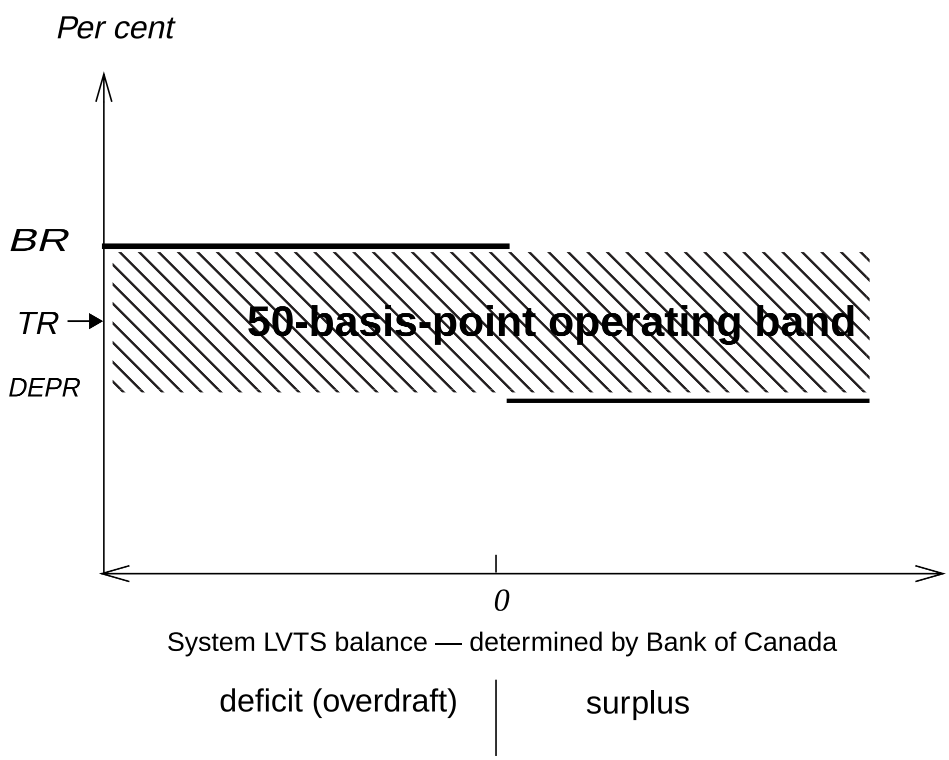
The ACSS balance for day T will be established upon settlement on day T + 1 (at midday). The Bank of Canada will then transfer a participant's positive balance (plus accrued interest) to the LVTS after midday settlement on day T + 1. A participant with a negative balance will either have to take a collateralized overdraft loan from the Bank of Canada dated day T and be required to repay that loan via the LVTS before the close of regular hours on day T + 1 with accrued interest or, to avoid posting additional collateral, could send an LVTS payment for the value of the loan plus accrued interest before the official close of the ACSS.[16] In either case, the balance for the LVTS at the close of day T + 1 will effectively incorporate the ACSS balances (negative or positive) from day T.

15. Deficits and surpluses among the clearers from the ACSS will automatically sum to roughly zero, since virtually all government and central bank items will settle through the LVTS (as described in Section 3).

16. Effectively, the LVTS payment serves as collateral for the ACSS overdraft loan until midday settlement, after which the funds will be applied to the repayment of the overdraft loan.

Figure 1

Operating band and target for the overnight rate



BR: the Bank Rate
DEPR: rate on positive balance = BR-0.50
TR: the target rate

Figure 2

Payments cycle: LVTS and retroactive ACSS settlement
(times approximate)