Newfoundland and Labrador's Debt Management Strategy: Is Replacing High-Interest, Long-Term Sensible?

Wade Locke (March 25, 2021)

Some people see the solution to Newfoundland and Labrador's long term debt problem as simply rolling over expensive debt from past years to more affordable arrangements, without the need for dramatic expenditure reductions and/or increases in fees and taxes. This seems like a magic bullet – the Government of Newfoundland and Labrador gets a more manageable debt service profile, without having to reduce the standard of living of its constituents.   Simply by renegotiating with province's bondholder(s) to have the higher-interest-rate (higher-coupon-rate) debt replaced with lower-interest-rate (lower-coupon-rate) debt, the debt problem appears to effortlessly dissipates.

Accepting the apparent appeal of debt switching, it is important to appreciate that no matter how impressive the financial finagling is in a smoke-and-mirrors trick, it remains a trick even if you are distracted with the use of more fancy mirrors and coloured smoke. The bottom line is that early redemption of high-interest-rate debt will only give the illusion of lower interest costs, but the end result will, in fact, be more debt and increased payments through interest and penalties.

Dealing with Newfoundland and Labrador's debt situation will still require hard decisions: reduce provincial expenditures and/or increase provincial taxes and fees. Transforming our massive debt into a more manageable problem, Newfoundland and Labrador needs to generate budgetary surpluses that can, in turn, be utilized to bring provincial debt down to a more reasonable level. There is no magic bullet that will cure our (fiscal) ills. Without taking hard decisions, there is no magician, no savoir, no premier and no prime minister who can mitigate our debt problem and its associated anxiety, except in the short term and then, only for the blissfully ignorant who choose not to see.

Admittedly, on the surface, the argument for replacing high-cost with low-cost debt has appeal and seems to be a workable solution, especially, given the lower-interests which characterize current financial markets. By way of illustration and as shown in Figure 1 below, there ought to be no disputing that there are the lower interest rates on Government of Canada long-term bonds. Interest rates rate have declined from a peak of nearly 18% to under 2% currently. Admittedly, the Governments of Canada and Newfoundland and Labrador would have different risk profiles and would be subject to different debt costs associated with floating bonds of the same maturity and the same principal. However, there is a close relationship between the interest rate on long-term Government of Canada bonds and the coupon rate (adjusted for risk) that would prevail on Government of Newfoundland and Labrador bonds (see Figure 2).

As a real-world illustration of this argument applied to Newfoundland and Labrador, consider Debenture Series 6K, which is a $450 M bond issued by the Government of Newfoundland and Labrador. This bond was issued in two parts – the original bond involved $250 M issued on June 30, 2000 and the bond was re-opened on December 1, 2000 for another $200 M. The bond has a coupon rate of 6.55%, an annual interest payment of $29.48 M, a sinking fund rate of 1.125% and matures on October 17, 2030. Interestingly, the Government of Newfoundland and Labrador can borrow currently at a weighted-average borrowing rate of approximately 3%.
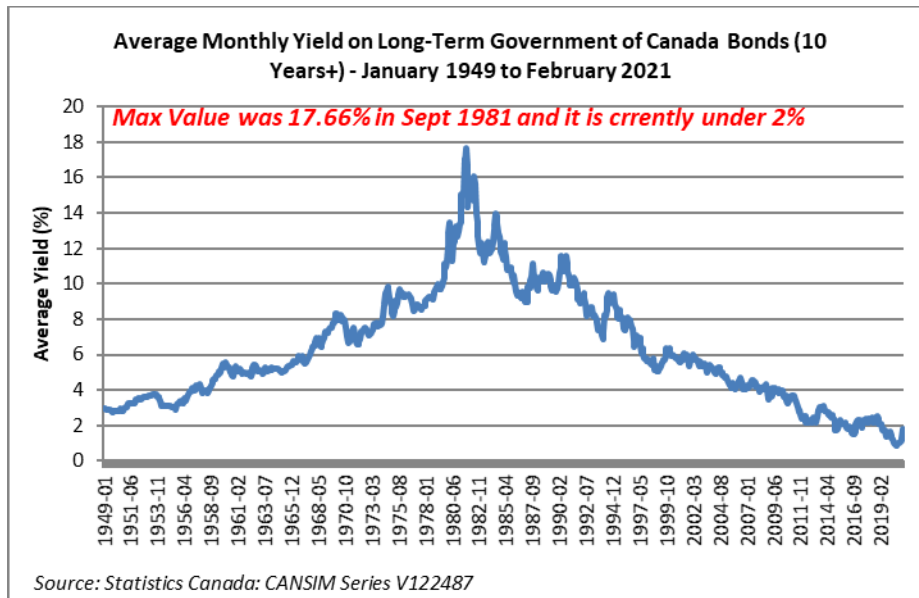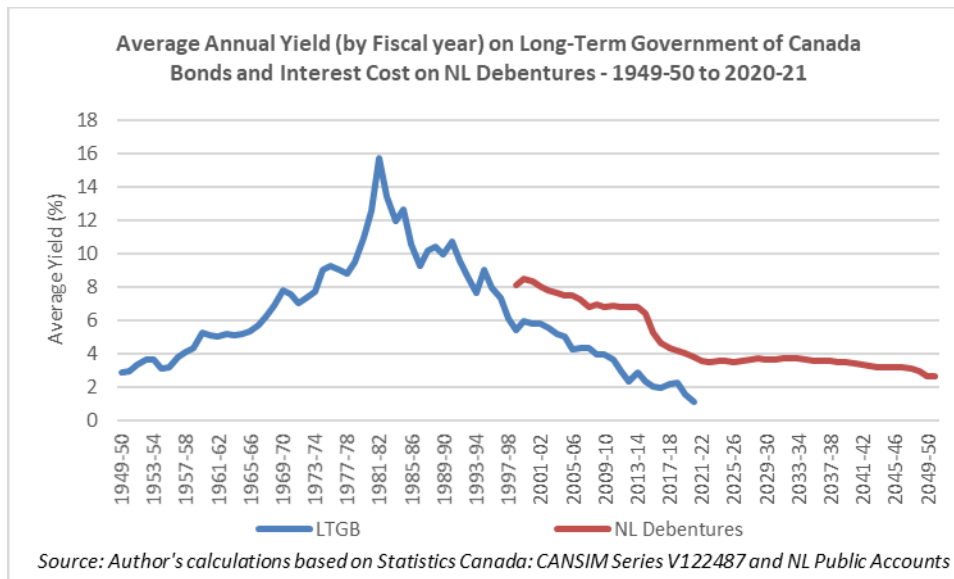
Figure 1: Long-Term Government Bonds

Average Monthly Yield on Long-Term Government of Canada Bonds (10 Years+) - January 1949 to February 2021

Max Value was 17.66% in Sept 1981 and it is crrently under 2%

Source: Statistics Canada: CANSIM Series V122487

Figure 2: Comparing NL Debt to Long-Term Government of Newfoundland and Labrador

Average Annual Yield (by Fiscal year) on Long-Term Government of Canada Bonds and Interest Cost on NL Debentures - 1949-50 to 2020-21

LTGB — NL Debentures

Source: Author's calculations based on Statistics Canada: CANSIM Series V122487 and NL Public Accounts

The sinking Fund associated with Series K is illustrated by Figure 3 below. For the purposes of this analysis, the sinking fund accumulated balance (i.e., its growth) was projected forward using the sinking funding contribution rate 1.125% of the bond principal ($450 M) and 3% applied to the accumulated balance. The sinking fund for Series K that was utilized in this analysis is illustrated in Figure 4 below.

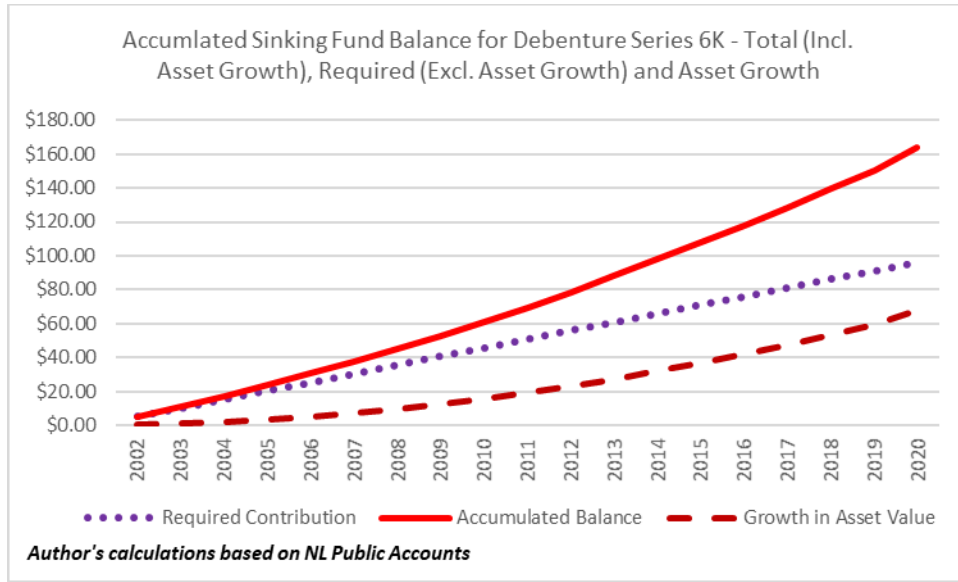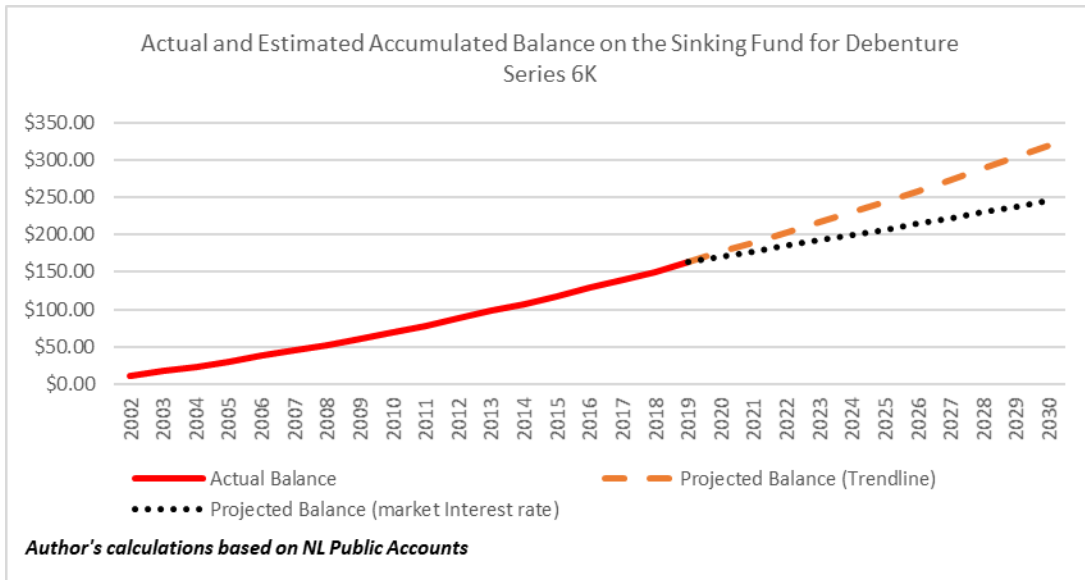*Figure 3: Series K Sinking Fund to 2019-20*

Accumlated Sinking Fund Balance for Debenture Series 6K - Total (Incl. Asset Growth), Required (Excl. Asset Growth) and Asset Growth

Legend: ●●●● Required Contribution — Accumulated Balance – – Growth in Asset Value

Author's calculations based on NL Public Accounts

Figure 4: Series K Sinking Fund to 2030-31

Actual and Estimated Accumulated Balance on the Sinking Fund for Debenture Series 6K

Legend: — Actual Balance – – Projected Balance (Trendline) ●●●● Projected Balance (market Interest rate)

Author's calculations based on NL Public Accounts

Note that 21 years has passed since the Debenture Series 6K was issued initially. To illustrate the implications of renegotiating at a reduced interest rate (i.e., from 6.55% to 3.00%) for a 30-year bond in year 21 for the remaining 9 years to bond maturity, consider the statistics presented in Table 1 below. In assessing the analysis presented in this analysis, it is important to understand, the following:

- brokerage fees and legal fees associated with renegotiating bond terms have not been considered. These extra costs will reduce the net benefits achievable from renegotiating the bond terms.
- the analysis assumes that there is one identifiable bond and one bondholder with whom the government needs to renegotiate, but bonds may have been resold to other investors and the

coupon may be stripped from the principal and sold as revised financial instruments so it may not be possible to actual repurchase the initial bond.

- there may be several investors/institutions involved in the original bond purchase or through resale and the objectives, needs, willingness to renegotiated and under what conditions may complicate the renegotiations. and
- the purchase of bonds is a repeated game and the dynamic incentives involved in repeated games may be influenced by political priorities and information asymmetries.

These factors will tend to complicate the renegotiation and will then reduce the chances of the government being able to emerge as a winner in such negotiations.

While a more detailed analysis is presented following the summary table, from the perspective of government, the interest saving are not worth the increased cost associated with the increased bond price or the early redemption penalty.

Table 1: Summary Statistics Associated with Rolling Over Bond Series K to Take Advantage of Lower Interest Rate (From 6.55% to 3.00%)

	Duration	Maturity	Bond Price ($M)	Early Redemption Penalty	Interest Payments $M	Annual Coupon ($M)	PV @6.55%	PV @3.00%
Original Bond Contract	Years 1 to 30	30 Years	$450		$884	$29	$0	
Revised Contract Part 1	Years 1 to 21	21 Years	$450		$619	$29	$0	
Revised Contract Part 2	Year 22 to 30	9 Years	$450		$122	$14		$0
Early Redemption Penalty	Year 21		$574	$124				$67
Borrowing Penalty (3%)	Year 22 to 30	9 Years			$34	$4		$0
Revised Combined					$898			$67
Bondholder Difference					$14			
Government Difference					-$14			

Detailed Explanation of Bond Rollover for Series K in Year 21 of the 30 Year Maturity Date

Under the original bond contract, the bondholder(s) purchased Government of Newfoundland and Labrador Debenture Series K for an initial bond price of $450 M in relative year 0 utilized in this analysis or, in real time, the actual bond was purchased by the bondholder(s) on June 30, 2000. That is, in this analysis, June 30, 2000 or fiscal year 2000-01 should be interpreted as definitionally equivalent to relative year 0. As well, the Government of Newfoundland and Labrador Debenture Series K has a maturity date of relative year 30 or October 17, 2030 in fiscal year 2030-31. The maturity date means that the bond principal of $450 M is to be repaid to the bondholder on October 17, 2030. Additionally, the coupon rate specified for this bond series was 6.55%, which meant that the bondholder(s) would receive annual interest payments from the Government of Newfoundland and Labrador equal to $29.48 M (see equation 1).

$$Original\ Annual\ Interest\ Payments = 6.55\% * \$450\ M = \$29.48\ M \qquad eqn\ (1)$$

In addition, as a requirement of this particular bond contract, the Government of Newfoundland and Labrador established a sinking fund, where the sinking funding reduces the risk of default at maturity because there will be asset in the sinking fund that have some value that can be used to offset the cost of repaying the principal in relative year 30. Under Debenture Series K, the Government of Newfoundland and Labrador is committed to a required sinking fund contribution rate of 1.125% of the bond principal ($450 M). As shown in equations 2 and 3, respectively, the sinking fund commitment requires the government to investment $5.06 M annually in the sinking fund, which will reach a cumulative total investment of $151.88 M over the 30 years to bond maturity.

$$Annual\ Required\ Sinking\ Fund = 1.125\% * \$450\ M = \$5.06\ M \qquad eqn\ (2)$$

$$Cumulative\ Required\ Sinking\ Fund\ Contributions = 5.06\ M * 30\ years = \$151.88\ M \qquad eqn\ (3)$$

As shown in Figure 3 above and the Public Accounts of Newfoundland and Labrador 2019-20 (the most recent year available publicly), the required sinking contribution for debenture Series K (the purple dotted) line had reached $96.19 M, which is 19 years multiplied by $5.06 M per year.

$$Required\ Sinking\ Fund\ Contrib.\ to\ 2019 - 20 = 19\ years * \$5.06\ M = \$96.19\ M \qquad eqn\ (4)$$

Figure 3 also illustrates that the value of the funds invested in the sinking fund associated with Debenture Series 6K have also grown (see the brown dashed line in Figure 3 above). The accumulated value of asset in the sinking fund (the red line in Figure 3 above), according to the most recent data in the Public Accounts of Newfoundland and Labrador, currently equals $163.84 M: $96.19 M is accounted for by the mandatory contributions to the sinking fund and the residual $67.65 M is due to the growth in the value of the assets.

The assumption in this analysis is that the sinking fund will continue until it reaches the bond's date of maturity. At that time, the sinking fund will be liquidated to pay for a portion of the bond principal associated with Debenture Series 6K. Figure 4 above illustrates the growth paths of the sinking fund assumed in this analysis. The red line represents what is reported in the Public Accounts of Newfoundland and Labrador as the accumulated balance for the sinking fund ($163.84 M in 2019-20). This will continue to grow until bond maturity. By the time the sinking fund reaches the year of bond maturity, the mandatory contribution will have a cumulative total of $151.88 M (see equation 3 above).

As well, the value of the assets invested in the sinking fund, including addition investment from the mandatory contributions. To reflect this growth, two projections assumption were considered: (1) the value of the funds will grow at the market interest rate of 3.00%, which, when combined with the mandatory contributions, is illustrated by the black dotted line in Figure 4 above. With the market rate of interest assumption, the accumulated value of the sinking fund assets would be expected to reach $245.52 M by bond maturity. And (2), the value of the funds will grow at a second-degree polynomial

trend consistent with that experienced for Debenture Series 6K. When combined with the mandatory contributions, as illustrated by the brown dashed line in Figure 4 above, the accumulated value of the sinking fund assets is estimated to reach $319.64 M by bond maturity.

At this point, the analysis utilizes the growth path for the sinking fund implied by market interest rate because there is no obvious reason for why the investment performance in the sinking fund should outperform the market. As well, in this analysis that the sinking fund will, as originally intended, will be liquidated at maturity. It will then be utilized to repay, in part, the bond principal.

As a point of context, if the bond is held to maturity (i.e., for 30 years), the total interest payments from the Government of Newfoundland and Labrador to the bondholder(s) associated with Debenture Series K would total $884.25 M (see equation 5).

$$Cumulative\ Interest\ Payments = 30\ years * \$29.48\ M\ = \$884.25\ M \qquad eqn\ (5)$$

Before preceding further, it is important to recognize that the bond is a legally defined contract between the Government of Newfoundland and Labrador and the bondholder(s) and the terms of the contract (i.e., the bond) will not change unless both parties agree to the change. Consequently, unless there is some objective outside of trying to optimize the cashflow of the bond stakeholder's perspective, it is unlikely that new terms can be negotiated that will be to the detriment of an unwilling participate who would not have voluntarily agreed to the change.

Given this context, it is reasonable and relevant to recognize that the government borrowing costs, in general, have fallen dramatically since 2000 when the bond was initially purchased. This reduction in borrowing costs has also been experienced by the Government of Newfoundland and Labrador in the sale of its debentures (see Figures 1 and 2 above). Recognizing that the future is uncertain and the rate of interest on government debt may continue to fall, or even rise, in the near to medium term, it is clear that the ability of the Government of Newfoundland and Labrador to borrow money currently is significantly less than the 6.55% coupon rate agreed to in the original bond contract.

For the analysis presented below, it is assumed that the market interest rate for Government of Newfoundland and Labrador bonds, appropriately adjusted for risk to the bondholder(s), is approximately 3.00%, currently, and will continue that way for a period of time. However, since the bond has already been in effect and the Government of Newfoundland and Labrador has been paying interest for 21 years (i.e., from 2001-02 to 2021-22), those transactions are effectively sunk and no retroactive renegotiations are contemplated in this analysis. Rather, on a go-forward basis, the analysis presented below assumes a 3.00% market rate of interest for at least the next 9 years (i.e., until the bond's maturity date is realized).

There is currently a view in Newfoundland and Labrador that the provincial government should roll over expensive debt from past years to more affordable arrangements. In the specific case of Debenture Series 6K, this would imply that the government might attempt to replace the coupon rate (6.55%) with the lower market rate of interest (3.00% in this analysis). If this coupon rate is revised from the original 6.55% to a market rate interest of 3.00% after relative year 21, then total interest payments associated

with this revised contract will fall from $884.25 M (see equation 5 above) to $740.58 M, based on an annual coupon of $29.48 M for 21 years plus an annual coupon of $13.50 M (i.e., 3.00% * $450 M) for the 9 years remaining to maturity (see equations 6 to 8 below).

$$21 \; years * \$29.48 \; M \; = \$618.98 \; M \qquad eqn \; (6)$$

$$9 \; years * \$13.40 \; M = \$121.34 \; M \qquad eqn \; (7)$$

$$\$618.98 \; M + \$121.34 \; M = \$740.48 \; M \qquad eqn \; (8)$$

Given that 21 years of the bond's life, as a financial instrument, has already elapsed, it is intuitively convenient to consider, at conceptually, the bond's cash flow as having two components: Part 1, consisting of the cash flow that has already occurred in the first 21 years and Part 2, comprised of the cash flow that is expected to occur in the next 9 years prior to bond maturity. Given this decomposition, it is interesting to note that the interest payments to the bondholder(s) from the Government of Newfoundland and Labrador under the first 21 years of the bond contract totaled $618.98 M (see equation 6 above). Likewise, the interest payments to the bondholder(s) from government expected for the next 9 years under the original contract terms would be $265.28 M (see equation 9 below).

$$9 \; years * \; \$29.48 \; M \; = \$265.28 \; M \qquad eqn \; (9)$$

In other words, the cumulative interest payments under the original contract terms would be expected to total $884.25 M (see equation 10 below).

$$\$618.98 \; M + \$265.28 \; M = \$884.25 \; M \qquad eqn \; (10)$$

If the interest rate applicable to the last 9 years of the bond contract were renegotiated from 6.55% to 3.00%, then the annual interest payments to the bondholder(s) will fall from $29.48 M per annum (see equation 1 above) to $13.50 M per annum (see equation 11 below), respectively.

$$3.00\% * \$450 \; M \; = \$13.50 \; M \qquad eqn \; (11)$$

Correspondingly, the cumulative interest payments during this 9-year period to maturity would fall from $265.28 M (see equation 9 above) to $121.50 M (see equation 12 below).

$$9 \ years * \$13.50 \ M \ = \$121.50 \ M \qquad eqn \ (12)$$

As shown in equation 13 below, this would imply that the Government of Newfoundland and Labrador would save $143.78 M in interest payments and simultaneously the bondholder(s) would lose $143.78 M in interest income as a result of this renegotiation.

$$\$265.28 \ M - \$121.50 \ M \ = \$143.78 \ M \ M \qquad eqn \ (13)$$

With this renegotiation and no further changes, interest income/payments fall from $884.25 M (see equation (5) above, to $740.48 M (see equation 8 above). Clearly, this renegotiation benefits the government by $143.78 M in reduced interest payments and costs the bondholder(s) $143.78 M in lost interest income.

From another perspective, it is possible to conceive of the renegotiation as a reduction in interest payments/income equal to $15.98 M per annum (see equation 14 below).

$$(6.55\% - 3.00\%) * \$450 \ M \ = \$15.98 \ M \ M \qquad eqn \ (14)$$

Assuming a 3.00% discount rate (i.e., the go-forward market rate of interest assumed in this analysis), as shown in equation 15 below, this difference in annual interest payments to bond maturity has a present value of $66.86 M in 2000-01 (i.e., in relative year 0).

$$PV = \sum_{t=22}^{30} \frac{\$15.98 \ M}{(1.03)^t} = \$66.86 \ M \qquad eqn \ (15)$$

Converting this present value estimate into its equivalent value in relative year 21 - the year in which the bond is assumed to be rolled over, as shown in equation 16, has a value of $124.38 M.

$$Value \ of \ Interest \ Reduction \ in \ Year \ 21 = \$66.86 \ M * (1.03)^{21} = \$124.38 \ M \qquad eqn \ (16)$$

Since the bondholder(s) cannot be forced to renegotiate the original bond contract, $124.38 M would have to be transferred to the bondholder(s) in relative year 21 to be financially neutral.

In the real world of bonds and finance, this would be manifested through a bond price adjustment of $124.38 M or the revised bond price in relative year 21 would increase to $574.38 M from $450 M and the bond would sell for a premium of $124.38 M. This bond price adjustment can be thought of as penalty on the government for the early redemption of the bond and the renegotiation of the terms of the bond to a lower rate of interest.

Adding the early redemption penalty to the renegotiated interest payments, the bondholder(s) will receive $864.86 M in interest and early redemption penalties, calculated as $740.48 M in renegotiated interest payments plus the early redemption penalty of $124.38 M (see equation 17 below).

$$Interest\ \&\ Penalties = \$740.48\ M + \$124.38\ M = \$864.86\ M \qquad eqn\ (17)$$

Alternatively, relative to the original bond terms, the undiscounted losses to the bondholder(s) is estimated to be $19.42 M (see equation 18 below).

$$Losses\ to\ Bondholders = \$884.25\ M - \$864.86\ M = \$19.42\ M \qquad eqn\ (18)$$

At this point, it is important to emphasize that the losses to the bondholder(s) are equivalent to the savings to government. In other words, the Government of Newfoundland and Labrador would be expected to save $19.42 M in cumulative interest payments over the life of the bond as a financial instrument, but this would be undiscounted.

To better appreciate whether the government is really a net winner from these transactions, it is convenient to think of the renegotiated bond contract as consisting of two components, at least conceptually. Part 1 of the renegotiated terms of the bond contract can be thought of occurring between relative year 0 and relative year 21, which covers the period 2000-01 to 2021-22 and has already transpired and, consequently, is not open for renegotiation. To better appreciate the intuition of benefits and costs associated with these renegotiations, think of Part 1 as involving a contract in which the bond has an initial purchase price of $450 M, has a coupon rate of 6.55% and the principal is repaid in relative year 21. With these terms, as shown in equation 19 below, the present value of this contract has a value of 0, when the discount rate of 6.55% is utilized. This simply ensures that the initial purchase price equals the present value of the interest payments plus the principal repaid in relative year 21.

$$PV\ Part\ 1\ of\ Revised\ Contract = \$450\ M - \sum_{t=1}^{21} \frac{\$29.48\ M}{(1.0655)^t} - \frac{\$450\ M}{(1.0655)^{21}} = 0 \qquad eqn\ (19)$$

Now, Part 2, pertaining to the remining 9 years of the bond contract, involves the Government of Newfoundland and Labrador paying the adjusted bond price or the early redemption penalty of $124.38 M) to the bondholder(s) in relative year 21, continuing to borrow $450 M from the bondholder(s) in relative year 21, paying interest of $13.50 per year (i.e., 3.00% * $450 M) for the next 9 years, and repaying $450 M in relative year 30. Taking all of these transactions into account, the cumulative undiscounted interest costs would total $121.50 M (see equation 12 above). This, when combined with the reborrowing of the principal and repayment in 2030 and utilizing the market rate of interest (3.00%), corresponds to a present value of -$66.86 M for government, (see equations 20 and 21 below). Note from equation 16 above, this corresponds to $124.38 M in relative year 21 or equivalently, this is the early redemption penalty relative year 21.

$$PV\ Part\ 2\ (Gov) = \frac{\$450\ M}{(1.03)^{21}} - \sum_{t=22}^{30} \frac{\$13.59\ M}{(1.03)^t} - \frac{\$450\ M}{(1.03)^{30}} - \frac{\$124.38\ M}{(1.03)^{21}} = -\$66.86\ M \qquad eqn\ (20)$$

$$PV\ Part\ 2\ (Gov) = \$241.90 - \$56.50M - \$185.39\ M - \$66.86\ M = -\$66.86\ M \qquad eqn\ (21)$$

The corresponding cash flows from the perspective of the bondholder is given in equation 22 below.

$$PV\ Part\ 2\ (Bondholder) = -\frac{\$450\ M}{(1.03)^{21}} + \sum_{t=22}^{30} \frac{\$13.59\ M}{(1.03)^t} + \frac{\$450\ M}{(1.03)^{30}} + \frac{\$124.38\ M}{(1.03)^{21}} = \$66.86\ M \qquad eqn\ (22)$$

As noted in equations (15) and (16), without the bond price adjustment of $124.38 M in year 21, the government would be better off and the bondholder would be worse off, in present value terms, by $66.86 M. In other words, while there is a slight difference in the undiscounted interest payments, net of the bond price adjustment, $19.42 million, in present value terms there is no net gain. Specifically, the interest payments and the bond price adjustment to the bondholder is worth $66.86 M, but the reduced interest payments relative to the original bond contract, see equations 15 and 16, is $66.86 M in present value terms, assuming a discount rate of 3.00%. In other words, the revised bond price of $124.38 M in year 21 just compensates the bondholder for the present value of reduced interest payments associated with the renegotiation.

Another question that needs to be addressed is: where does the government get the money to pay the early redemption penalty. This analysis assumes that the value of the assets in the sinking fund will grow at the market rate of interest (i.e., 3.00%). As well, the sinking fund will be used, as originally intended, to help pay off part off the principal at bond maturity (i.e., in relative year 30). Therefore, in this analysis, the Government of Newfoundland and Labrador is assumed not to have an extra $124.38 M laying around that can be simply paid to the bondholder(s) for the early redemption penalty. As such, it is assumed that the early redemption penalty will be borrowed from the bondholder(s) at the market interest rate (3.00%) in relative year 21 and paid off in relative year 30 at bond maturity. This early

redemption penalty loan will involve annual interest payments of $3.73 M (3.00% * $124.38 M) for cumulative interest payments of $33.58 M over the 9 years (i.e., 9* $3.73 M). Given the parameters assumed in this analysis, the present value, as shown in equations 23 and 24, has a value of $66.86 M in year 0 when a 3.00% discount rate is utilized or $125.38 M in year 21.

$$PV = \frac{\$124.38\ M}{(1.03)^{21}} - \sum_{t=22}^{30} \frac{\$3.73\ M}{(1.03)^{t}} - \frac{\$124.38\ M}{(1.03)^{30}} = \$66.86\ M \qquad eqn\ (23)$$

$$PV = \$66.86 - \$66.86 - \$66.86 = -\$66.86 \qquad eqn\ (24)$$

To recap: the Government of Newfoundland and Labrador pays to the bondholder(s) $884.25 M under the original contract. However, under Part 1 of the revised contract, the government pays $618.98 M in interest payments or the first 21 years, $121.50 M in interest payments for the last 9 years, $124.38 M in early redemption penalties, and $33.58 M in loan interest payments associated with the early redemption loan for a total or $898.44 M. While the difference in undiscounted payments by the Government of Newfoundland and Labrador is $14.19 M, calculated as shown in equation 25, in present value terms the difference is zero.

$$Interest\ \&\ Penalties = \$898.44\ M\ (renegotiated) - \$884.25\ M\ (original) = \$14.19\ M \qquad eqn\ (25)$$

Even if the Government of Newfoundland and Labrador had the $124.38 M laying around to pay early redemption to save itself the early redemption loan interest of $33.58 M, it still would have had an opportunity cost of the same amount in foregone interest income because it could have invested $124.38 M in its sinking fund for the next 9 years and earned $33.58 M in interest income, assuming the return on sinking fund investments was the 3.00% market interest.

The bottom line is that early redemption of high interest debt will only give the illusion of lower interest costs when the end result will, in fact, be more debt and higher interest payments and penalties. Managing Newfoundland and Labrador's debt situation will still require hard decisions with respect to reducing provincial expenditures and/or increasing province taxes and fees. These difficult choices are necessary to generate run budgetary surpluses which can then be utilized to bring provincial debt down to a more manageable level. There is no magic bullet that will cure our (fiscal) ills, there are only hard choices and a reduced standard of living as we go forward!