



Refunding the MTA's Debt: The Importance of Getting it Right

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The Metropolitan Transportation Authority (MTA) has \$32 billion in long-term debt outstanding – more than 41 states and more than \$14,000 for each worker commuting daily into New York's central business district.¹ That is an impressively large sum, but public authority debt is not inherently a bad thing. The borrowed money paid for needed capital improvements that made the region's mass transit facilities function more effectively and that have long-term useful lives that justify paying for them with long-term borrowing.

Nonetheless, debt has become a problem for the MTA because its revenues are not keeping pace with its debt obligations. The interest and principal due on the bonds paying for capital improvements, known as debt service, is \$2.1 billion in 2012; that consumes nearly one-third of the revenue the MTA receives from fares and tolls and 17 percent of its total revenues including tax subsidies.² Ten years ago the sum was \$955 million and its share of fare and toll revenue was under one-quarter.³ This problem will get worse. By 2015 the debt service cost will be \$2.6 billion and still one-third of fare and toll revenue despite planned fare and toll increases.⁴

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Moreover, the MTA is likely to have to borrow more, and probably a lot more, for the foreseeable future. The MTA's current five-year capital plan spans the 2010-14 period. The first two years of that plan called for \$9.1 billion in spending, of which \$6.0 billion is financed with borrowing. The \$13 billion to be spent in the next three years will require another \$6.7 billion in new borrowing. By 2015 the MTA will have \$39 billion in outstanding debt.⁵ Even more ominously, the MTA now has no plan for how to pay for its multi-billion dollar capital needs after 2014. It is highly likely that added borrowing will be necessary for many years to come.

Fortunately, falling interest rates – now at historically low levels – can somewhat mitigate the MTA's problem. To their credit, MTA leaders are considering a large-scale refunding of outstanding debt, about \$7 billion worth.⁶ Other strategies deployed include cutting back on capital spending and forms of new borrowing, including a loan from the federal government that defers debt service costs. For the longer run additional revenues will be needed to support capital investments, but a timely, appropriately structured refunding of current debt can be a positive step.

Refunding is done right when it saves money and spreads debt service costs fairly over time; it is misused when it juggles the timing of debt service costs in a manner that lowers outlays in the short-term but increases the burden for managers and riders in later years, or when it generates reductions in short-term debt service by extending the terms of the debt beyond an appropriate period, putting unfair costs on riders and taxpayers in the more distant future. New Yorkers' grandchildren should not be paying for today's subway rides, but an inappropriate refunding could have that consequence.

Refunding the Right Way

The most desirable refunding is one that replaces one bond series with another bond series that involves borrowing an equivalent amount of money over the same time period at a lower interest rate. Substituting a lower interest rate for a higher interest rate without changing the other major terms of a loan is a good way to save money. Such opportunities arise when interest rates are falling, and the U.S. is currently in a period of quite low interest rates. Good opportunities are available.

Table 1: Illustration of "High to Low" Refunding				
Year	Original Debt Service	Refinanced Debt Service	Annual Savings	Present Value of Savings
1 thru 10	\$7,264,891	\$0	\$0	\$0
11	7,264,891	6,026,420	1,238,471	1,236,986
12	7,264,891	6,026,420	1,238,471	1,233,039
13	7,264,891	6,026,420	1,238,471	1,227,024
14	7,264,891	6,026,420	1,238,471	1,213,042
15	7,264,891	6,026,420	1,238,471	1,194,240
16	7,264,891	6,026,420	1,238,471	1,166,696
17	7,264,891	6,026,420	1,238,471	1,133,757
18	7,264,891	6,026,420	1,238,471	1,102,007
19	7,264,891	6,026,420	1,238,471	1,066,965
20	7,264,891	6,026,420	1,238,471	1,029,017
21	7,264,891	6,026,420	1,238,471	1,004,040
22	7,264,891	6,026,420	1,238,471	978,596
23	7,264,891	6,026,420	1,238,471	952,754
24	7,264,891	6,026,420	1,238,471	926,580
25	7,264,891	6,026,420	1,238,471	900,140
26	7,264,891	6,026,420	1,238,471	873,501
27	7,264,891	6,026,420	1,238,471	846,726
28	7,264,891	6,026,420	1,238,471	819,878
29	7,264,891	6,026,420	1,238,471	793,016
30	7,264,891	6,026,420	1,238,471	766,200
Total	\$145,297,823	\$120,528,407	\$24,769,416	\$20,464,206

Note: Initial Bond has \$100 million proceeds at 6 percent interest; refunding is for outstanding balance after 10 years at 3.75 percent interest, plus 0.5 percent for transaction costs.

Table 1 illustrates a high-to-low refunding with a hypothetical example: the investment ten years ago in the repair and renovations of four subway stations at \$25 million each for a total cost of \$100 million. The purchase was financed with a 30-year bond series paying an average of 6 percent interest with equal or “level” debt service payments in each year. This reflects the then-current interest rates. The 30-year period reflects the expected useful life of the station improvements; after 30 years they will again need renovation and repair. The equal annual debt service

payments reflect the equal benefits riders receive in each year; with appropriate maintenance, the stations are not more useful in any one year than another.

Assume the borrowing is refunded after ten years; that is, the remaining outstanding bonds are recalled and paid off, and new bonds are issued in an equivalent amount. Due to falling interest rates, the new bonds need pay an average interest rate of only 3.75 percent. They are repaid over the next 20 years with level debt service. This structure retains the same useful life of the subway station repair and renovations and the same equal distribution of benefits over the useful life of the investments. Note that the proceeds of the new bonds must be greater than the remaining principal on the initial bonds, because there are additional transaction costs

related to issuing the new bonds. These transaction costs must be considered in calculating any savings from a refunding; based on historical examples, those costs are assumed to be 0.5 percent of the refinanced principal in this and subsequent illustrations.

The savings from the refunding can be calculated in two ways. First is the nominal dollar amount of the difference between the annual and total debt service over the 20 year period. By this calculation the initial bond would have cost about \$145 million and the new bond costs about \$120 million for a savings of about \$25 million. The second method measures the “present value” of those savings. The present value concept recognizes that savings in the future are worth less than savings today, and “discounts” the future years’ savings. In most financial transactions of this nature the discount rate applied to savings is the interest the savings would earn if invested in federal securities (known as the arbitrage yield). In this case the discounted or present value savings are about \$20 million. By either method, this refunding is clearly a good deal for the borrower.

Deviation #1 – Back-loading Payments

The potential benefits of a refunding are reduced when the new borrowing reshuffles the timing of payments in order to lower costs most favorably in the short run. (A practice characterized by insiders as “scoop and toss.”) Table 2 illustrates this type of refunding. The same \$100 million initial 30 year bond series is refinanced after ten years at the same new rate of 3.75 percent. However, in this case the debt service costs in the first five years are lowered disproportionately by requiring that only interest on the new balance be paid in those years; then the entire principal plus interest is repaid in the last 15 years.

Year	Original Debt Service	Refinanced Debt Service	Annual Savings	Present Value of Savings
1 thru 10	\$7,264,891	\$0	\$0	\$0
11	7,264,891	3,140,414	4,124,477	4,119,534
12	7,264,891	3,140,414	4,124,477	4,106,389
13	7,264,891	3,140,414	4,124,477	4,086,356
14	7,264,891	3,140,414	4,124,477	4,039,792
15	7,264,891	3,140,414	4,124,477	3,977,175
16	7,264,891	7,400,988	-136,097	-128,209
17	7,264,891	7,400,988	-136,097	-124,589
18	7,264,891	7,400,988	-136,097	-121,100
19	7,264,891	7,400,988	-136,097	-117,250
20	7,264,891	7,400,988	-136,097	-113,080
21	7,264,891	7,400,988	-136,097	-110,335
22	7,264,891	7,400,988	-136,097	-107,539
23	7,264,891	7,400,988	-136,097	-104,699
24	7,264,891	7,400,988	-136,097	-101,823
25	7,264,891	7,400,988	-136,097	-98,917
26	7,264,891	7,400,988	-136,097	-95,990
27	7,264,891	7,400,988	-136,097	-93,047
28	7,264,891	7,400,988	-136,097	-90,097
29	7,264,891	7,400,988	-136,097	-87,145
30	7,264,891	7,400,988	-136,097	-84,198
Total	\$145,297,823	\$126,716,884	\$18,580,939	\$18,751,229

Note: Initial Bond has \$100 million proceeds at 6 percent interest; refunding is for outstanding balance after 10 years at 3.75 percent interest with interest payments only for the first five years, plus 0.5 percent for transaction costs.

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The savings in this case are exclusively short term. In the first five years the debt service costs are about \$4 million less annually for a five-year total reduction of nearly \$21 million. But debt service costs are higher by nearly \$136,000 annually in all the subsequent years. Over the 20-year period the total debt service costs are down about \$19 million in nominal terms – about 24 percent less than the savings in the previous example without the back-loaded payment schedule. After discounting the present value savings decline from over \$20 million to under \$19 million. It is not as good a deal as the one in the first illustration, in that more is being paid in total in order to get a few years of lower annual costs.

This is an undesirable public finance practice in two ways: (1) the total costs are increased, sacrificing almost one-quarter of the potential savings. (2) The costs are not distributed in accord with the benefits from the investment, but are “back-loaded” onto taxpayers and riders in the later years. That is, fares and/ or tax subsidies are kept lower in the first five years, but have to be increased in the later years. People would be paying less to use the subway stations in the first five years and more to use them in the later 15 years.

Deviation #2 – Stretching Debt

Another variation of refunding is to lower annual debt service costs by extending the period over which the loan is repaid. By “stretching” the debt it is possible to lower annual costs, but total interest costs increase. Table 3 illustrates this type of refunding.

In this illustration the initial 30-year bond series is also refunded after ten years; however, the new bond series extends for another 30 years rather than just the 20 years remaining on the initial issue. The longer time period requires an interest rate that is still below the initial bond series (4

Year	Original Debt Service	Refinanced Debt Service	Annual Savings	Present Value of Savings
1 thru 10	\$7,264,891	\$0	\$0	\$0
11	7,264,891	4,842,945	2,421,946	2,419,043
12	7,264,891	4,842,945	2,421,946	2,411,325
13	7,264,891	4,842,945	2,421,946	2,399,561
14	7,264,891	4,842,945	2,421,946	2,372,218
15	7,264,891	4,842,945	2,421,946	2,335,449
16	7,264,891	4,842,945	2,421,946	2,281,583
17	7,264,891	4,842,945	2,421,946	2,217,169
18	7,264,891	4,842,945	2,421,946	2,155,079
19	7,264,891	4,842,945	2,421,946	2,086,551
20	7,264,891	4,842,945	2,421,946	2,012,340
21	7,264,891	4,842,945	2,421,946	1,963,494
22	7,264,891	4,842,945	2,421,946	1,913,737
23	7,264,891	4,842,945	2,421,946	1,863,199
24	7,264,891	4,842,945	2,421,946	1,812,013
25	7,264,891	4,842,945	2,421,946	1,760,309
26	7,264,891	4,842,945	2,421,946	1,708,214
27	7,264,891	4,842,945	2,421,946	1,655,853
28	7,264,891	4,842,945	2,421,946	1,603,348
29	7,264,891	4,842,945	2,421,946	1,550,817
30	7,264,891	4,842,945	2,421,946	1,498,377
31	0	4,842,945	-4,842,945	-2,891,706
32	0	4,842,945	-4,842,945	-2,787,856
33	0	4,842,945	-4,842,945	-2,684,819
34	0	4,842,945	-4,842,945	-2,582,786
35	0	4,842,945	-4,842,945	-2,481,940
36	0	4,842,945	-4,842,945	-2,382,450
37	0	4,842,945	-4,842,945	-2,284,474
38	0	4,842,945	-4,842,945	-2,188,161
39	0	4,842,945	-4,842,945	-2,093,644
40	0	4,842,945	-4,842,945	-2,001,049
Total	\$145,297,823	\$145,288,353	\$9,470	\$15,640,792

Note: Initial Bond has \$100 million proceeds at 6 percent interest; refunding is for new 30 year issuance of outstanding balance after 10 years at 4 percent interest, plus 0.5 percent for transaction costs.

percent versus 6 percent) but is higher than in the two previous illustrations using 20-year periods. The annual debt service is \$2.4 million lower than for the original bond series in each of the first 20 years, but in the extended last ten years there is new debt service cost totaling nearly \$48.5 million. Overall the nominal debt service cost is \$24.8 million more than in the first illustration, and the present value savings are \$4.8 million or 24 percent less.

The illustrative “stretch” refunding can be criticized on two grounds. First, the costs (in nominal and present value terms) are increased. Second, the repayment period is unfair in the sense that it is imposing costs on future riders and taxpayers without giving them any benefits. That is, if the initial borrowing was financed over the 30-year useful life of the station improvements, then the added ten year stretch is covering a period after which the stations need additional repairs and renovations. In the last ten years people will be paying for something that no longer provides meaningful benefits.

Sometimes arguments are made to counter these criticisms of back-loaded or stretch refundings. The additional present value cost is justified based on a short-term need for savings in spending due to unanticipated fiscal crises caused by emergencies or severe economic conditions. A desire to defer fare increases or to expand borrowing is not such a justification.

The allocation of costs over a longer period of time may be justified by the argument that the initial borrowing period underestimated the useful life of the project. An example is that the subway station improvements will last for 40 years rather than the originally planned 30 years due to more intense maintenance. Such arguments should be viewed with skepticism – the initial loan was probably designed on a sound basis – but debates over appropriate useful lives of assets such as subway station improvements can have plausible arguments on both sides.

The MTA Experience in 2002 – A Mixed Bag

In 2002, under the pressure of scarce capital resources and an operating budget squeeze similar to today’s circumstances, the MTA initiated a refunding of nearly all its outstanding debt. The refunding had clear positive features. Interest rates were lowered, and the refinancing included indenture reforms (that is, changes in the revenue streams for the bonds) that enhanced the marketability of MTA bonds.

Nonetheless, that refunding resulted in added overall costs. The MTA estimated the increase in future nominal debt service payments at nearly \$4.3 billion and the present value change at a *negative* \$56.9 million.⁷ The undesirable consequences resulted from offsetting the lower

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interest rates with a combination of stretching the debt and back-loading debt service payments.

The 2002 transactions were multiple and complex involving the issuance of 18 series of four different types of revenue bonds, bond anticipation notes and the use of reserve funds from previously issued debt. Some proceeds were used for new capital needs as well as refunding. Consequently, it is not possible from available MTA documents to recreate precisely the “before” and “after” debt service schedules for the entire package of transactions. However, Table 4 presents estimates for the change in annual nominal debt service obligations related to about \$10 billion in refunding bonds for which the relevant data is available.

As shown, total debt service payments increased nearly \$2.6 billion from \$16 billion to \$18.6 billion. The added obligations were completely loaded in the later part of the new debt schedule. The debt was stretched by three years beyond 2030, and those last three years account for nearly \$1.5 billion or 58 percent of the net addition to nominal debt service. In addition, debt service was increased in each year over the period 2017-2030. In contrast debt service was reduced in each year from 2002 to 2016, with the largest reductions in the first two years. In brief, a large future price was paid for substantial immediate relief and some moderate intermediate years' savings.

The short-term savings from the refunding were used primarily for two purposes. First, they helped the MTA balance its operating budget without large fare increases. Second, they

Table 4: Change in Debt Service Schedule From MTA 2002 Refunding
(dollars in thousands)

Year	Debt Service Prior to Refunding	Debt Service After Refunding	Savings in Debt Service
2002	\$356,467	\$95,105	\$261,362
2003	819,684	405,909	413,775
2004	789,439	595,035	194,404
2005	786,669	627,241	159,428
2006	776,226	627,390	148,836
2007	775,806	622,761	153,045
2008	793,015	628,981	164,034
2009	817,503	629,651	187,852
2010	804,141	629,070	175,071
2011	804,038	629,735	174,303
2012	783,150	621,418	161,732
2013	728,837	612,691	116,146
2014	733,515	612,332	121,183
2015	773,747	611,252	162,495
2016	727,928	612,925	115,003
2017	542,222	612,433	(70,211)
2018	510,618	646,450	(135,832)
2019	502,310	669,818	(167,508)
2020	485,147	669,242	(184,095)
2021	474,229	669,679	(195,450)
2022	429,274	638,174	(208,900)
2023	380,898	640,724	(259,826)
2024	363,490	575,116	(211,626)
2025	287,387	592,208	(304,821)
2026	287,419	593,626	(306,207)
2027	226,623	580,108	(353,485)
2028	155,198	566,426	(411,228)
2029	99,909	566,289	(466,380)
2030	40,054	552,252	(512,198)
2031	-	552,148	(552,148)
2032	-	754,456	(754,456)
2033	-	189,222	(189,222)
Total	\$16,054,943	\$18,629,867	(\$2,574,924)

Source: Authors' calculations based on data in Official Statements from MTA Transportation Revenue Bonds Series 2002 A-G, TBTA General Revenue Senior Debt Series 2002B,C,&F, TBTA General Revenue Subordinate Debt Series 2002 D,E,&G, and MTA Dedicated Tax Funds Bonds Series 2002A&B.

enabled the MTA to take on new debt to finance its capital program. In addition to the refunding in 2002, the MTA issued “new money” bonds totaling \$6.6 billion in 2002-2004.⁸ The debt service from the refunding and these new bonds help explain the large and growing debt service burden the MTA currently faces.

The 2012 Refunding – Getting it Right

There are significant opportunities for savings from high-to-low interest rate exchanges. These savings should not be offset with shuffling and stretching of debt service payments. This is a temptation, because some of the motives are the same – to help balance the operating budget and to permit additional new borrowing for the capital program in the absence of new revenue streams.

In 2010 the MTA board adopted a policy which puts some constraints on potential misuses of refunding. The Board requires a minimum of net present value savings of 3 percent of the par value of the refunded bonds.⁹ Thus, a refunding of \$6 billion of outstanding debt would require at least \$180 million in present value savings. By this standard the 2002 package would not have been allowed. However, this standard is not sufficient to prevent significant future misuses. As the earlier examples illustrated, it is possible to achieve present value savings with a refunding that stretches debt and/or backloads debt service.

The City Comptroller and State Comptroller have sought to prevent adverse future consequences from refunding of debt under their jurisdiction with more comprehensive guidelines than those set by the MTA board.¹⁰ In addition to minimum present value savings of 3 percent (and in some cases 5 percent) the Comptrollers prohibit stretching of debt (the maturity period cannot be extended) and require that each year of the period have nominal dollar savings in debt service (preventing back-loading). The MTA is subject to the State Comptroller’s guidelines, and the Board should not seek any exemptions.

This year may provide the MTA with an opportunity for significant savings from refunding a major portion of its outstanding debt. The refunding should follow guidelines that promote the greatest total savings and prevent the unfair passing of costs onto future taxpayers and straphangers.

Endnotes

¹ Debt Outstanding figures published on January 6, 2012 by the Metropolitan Transportation Authority, http://www.mta.info/mta/investor/pdf/2011/debt_outstanding.pdf. Rankings data for state data are taken from the US Census, State Government Finances, 2010, "Debt Outstanding at the End of the Fiscal Year," <http://www.census.gov/govs/state/>. Figures for commuting into the Manhattan Central Business District through MTA mass transit services published in Table 14C of the New York Metropolitan Transportation Council, *2010 Hub Bound Travel Report*, http://www.nymtc.org/files/hub_bound/2010_HUB_BOUND_TRAVEL_DATA.pdf.

² Metropolitan Transportation Authority, "MTA 2012 Budget Adoption Materials," December 19, 2011. <http://www.mta.info/mta/budget/pdf/2012BudgetAdoptionMaterials.pdf>.

³ Metropolitan Transportation Authority, "Combined Financial Statements Years Ended December 31, 2002 and 2001," <http://www.mta.info/mta/investor/pdf/2003app-b.pdf>.

⁴ Metropolitan Transportation Authority, "MTA 2012 Budget Adoption Materials," December 19, 2011. <http://www.mta.info/mta/budget/pdf/2012BudgetAdoptionMaterials.pdf>.

⁵ Metropolitan Transportation Authority, "2012-2014 Capital Funding Proposal Update," November 16, 2011, <http://www.mta.info/news/pdf/MTA2012FinalProposedBudgetNovemberFinancialPlan2012-2015BoardPresentation.pdf>.

⁶ Esme Deprez and Michelle Kaske, "New York's MTA May Refinance Most Debt Since 2002 as Borrowing Costs Fall," *Bloomberg*, January 25, 2012.

⁷ Metropolitan Transportation Authority, *Comprehensive Annual Financial Report for the Year Ended December 31, 2002*, pg. 44.

⁸ Authors' calculation based on data reported in Metropolitan Transportation Authority, *Comprehensive Annual Financial Report*, 2002 through 2004 editions.

⁹ Metropolitan Transportation Authority and Triborough Bridge and Tunnel Authority, "Bond and Other Debt Obligations Refunding Policy," adopted May 26, 2010.

¹⁰ See Office of the State Comptroller, "Debt Issuance Approval Policy Statement and Guidelines," retrieved February 10, 2012, http://www.osc.state.ny.us/pension/policystatement_guidelines020105.pdf.