



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

Issuance of Century Bonds

April 14, 2016



Overview of 100-Year (“Century”) Bonds

- A century bond is a taxable fixed rate bond issued with a 100-year bullet maturity.
- The modern use of century bonds began in the early 1990’s when corporate borrowers such as Walt Disney and Coca Cola used this structure to create equity-like capitalization at low long-term rates.
- Tax-exempt borrowers are limited under the United States Internal Revenue Code to issuing debt with a maximum maturity of up to 120% of a project’s useful life.
- Taxable borrowers are typically able to issue bonds with a longer final maturity; however maturity is limited to 30 years by the State of North Carolina Statutes.



Market Rationale for Century Bonds

- From a borrower's perspective, this approach allows for long-term capitalization to fund a variety of needs.
 - » **Equity-Like Capitalization:** Perceived as a form of "equity" given refinancing risk is greatly reduced for a significant period of time. This is particularly applicable for not-for-profit borrowers without access to true equity; bond proceeds can be used for general corporate purposes.
 - » **Central Bank Funding Approach:** Bond proceeds can be used to fund a capital bank that manages and invests funds over time to provide for long-term renovation and development of campuses and infrastructure.
 - » **Inflation Hedge:** The long-term fixed borrowing rate can serve as a means to partially offset a borrower's rising operating costs in the future attributed to inflation.
- From an investor's perspective, these bonds allow life-insurance companies and pension funds to match their long-term liabilities with assets of a like maturity.



The WALT DISNEY Company



Cleveland Clinic



The Coca-Cola Company



Massachusetts
Institute of
Technology



Bristol-Myers Squibb





Historical Interest Rates

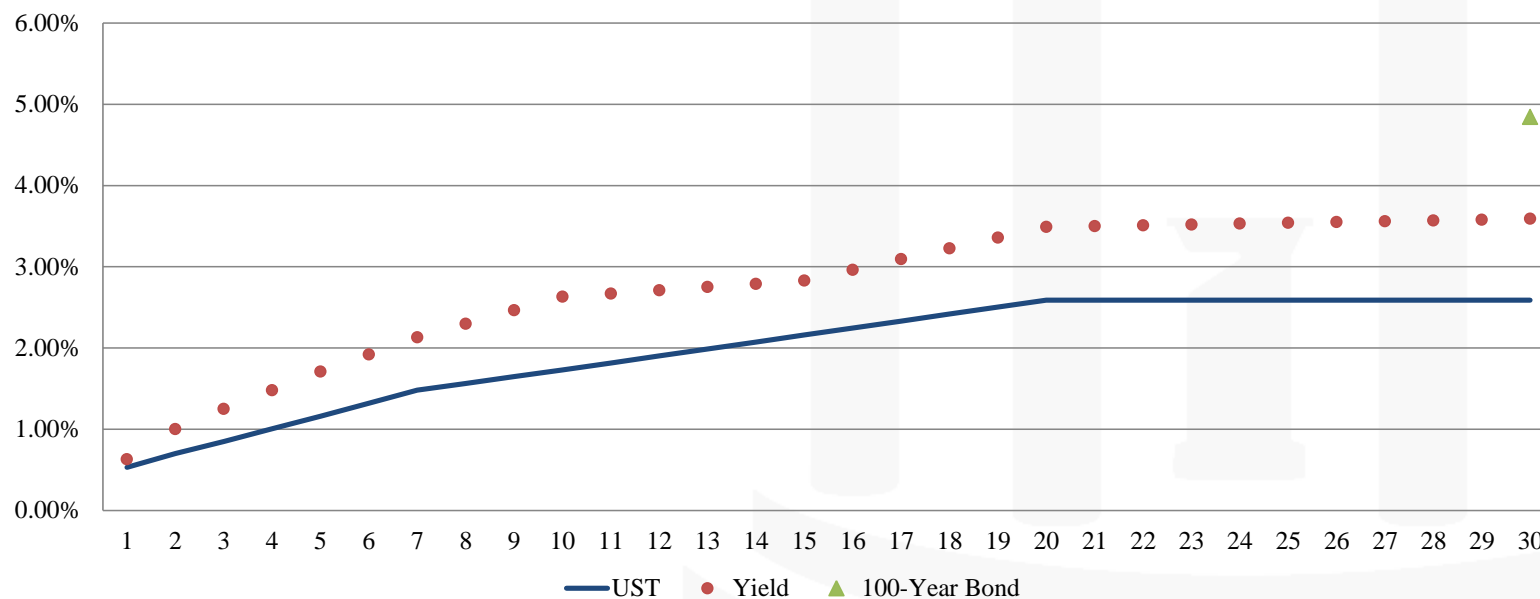
- The 30-Year US Treasury yield is the benchmark rate for taxable century bond issues.
- Since 1977, the 30-Year Treasury yield has averaged 6.60% and is currently 2.59%.
- The 30-Year Treasury yield reached its all-time low of 2.25% in February 2015.





Indicative Pricing & Debt Service

UNC - Chapel Hill - Taxable Interest Rates			
Tenor	Benchmark Treasury	Spread to Treasury	Interest Rate
10 Years	10 Year	0.90%	2.63%
20 Years	30 year	0.90%	3.49%
30 Years	30 Year	1.00%	3.59%
100 Years	30 Year	2.25%	4.84%





Benefits and Considerations

BENEFITS

- Not subject to IRS restrictions on permitted use of bond proceeds.
- Long-term treasury rates are relatively low compared to history with potential to lock in attractive cost of capital over a long period of time.
- Can be used as funding mechanism to address deferred maintenance needs.
- Equity-like characteristics that increase may increase balance sheet flexibility
- Diversification of debt capital along the yield curve.

CONSIDERATIONS

- Issuing tax-exempt debt today for specific capital projects may achieve a lower cost of capital or shorter tenor.
- Depending on use of proceeds, may use up debt capacity for operating needs versus capital needs
- Repayment discipline and policy are critical given long-term nature of obligations and potential changes in administration over term of the debt.
- Low likelihood of economic benefit to redeeming bonds prior to maturity.
- Regardless of the use of funds, rating agencies will include the bonds as long-term debt in their credit analysis; management policy is critical.
- Relatively higher coupons may have greater upfront budgetary impact.
- Investment of proceeds may invoke unrelated business income tax (UBIT).



Illustrative Example

Reserve for Principal Repayment

- Higher education borrowers that issue century bonds typically set aside an initial reserve for future principal repayment. The reserve amount, investment assumption and fiscal discipline are the key variables in this analysis.
- Assuming a \$500 million century bond issue and a 5.00% reinvestment rate, the borrower would need to deposit approximately \$3.58 million today in order to have sufficient funds to repay principal in 100 years.
- Given the long time horizon, the ability to repay principal in the future is sensitive to changes in the reinvestment rate.
- As a comparison, assuming a \$500 million 30-year bond issue and a 5.00% reinvestment rate, the borrower would need to deposit approximately \$113.64 million today in order to have sufficient funds to repay principal in 30 years.

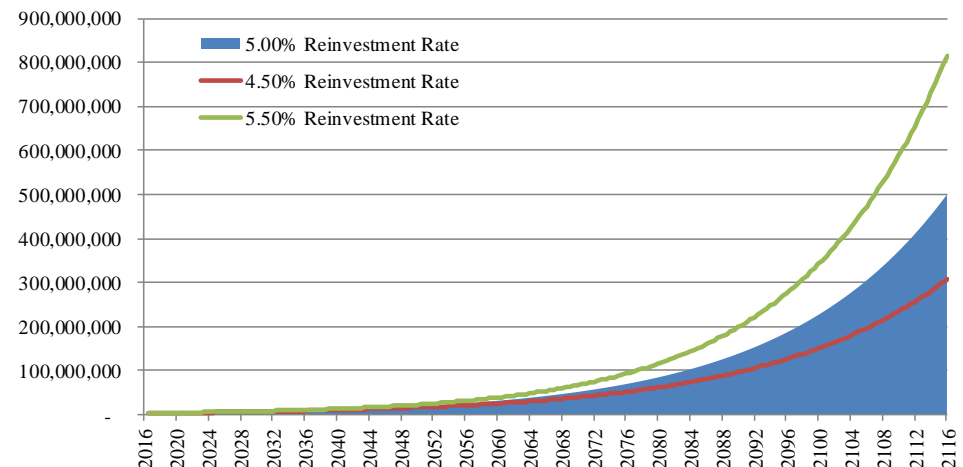


100-Year Bond Example

Reserve for Principal Repayment

- As shown in the graph on the right, a 50 basis point difference in the average reinvestment rate over 100 years can result in an ending balance ranging from \$307 to \$814 million.
- From a different perspective, if the borrower were to deposit \$10 million today, the reserve fund would need to earn at least 3.95% in order to grow its balance to \$500 million in 100 years for principal repayment.

Time Period	Beginning Balance	Earnings	Ending Balance
Year 0 - 10	3,582,588	2,287,900	5,870,488
Year 11 - 20	5,870,488	3,748,990	9,619,479
Year 21 - 30	9,619,479	6,143,157	15,762,636
Year 31 - 40	15,762,636	10,066,279	25,828,915
Year 41 - 50	25,828,915	16,494,770	42,323,684
Year 51 - 60	42,323,684	27,028,601	69,352,285
Year 61 - 70	69,352,285	44,289,509	113,641,794
Year 71 - 80	113,641,794	72,573,518	186,215,312
Year 81 - 90	186,215,312	118,920,160	305,135,471
Year 91 - 100	305,135,471	194,864,529	500,000,000



For illustration purposes only; assumes 5.00% average reinvestment rate for 100 year period, compounded semiannually.

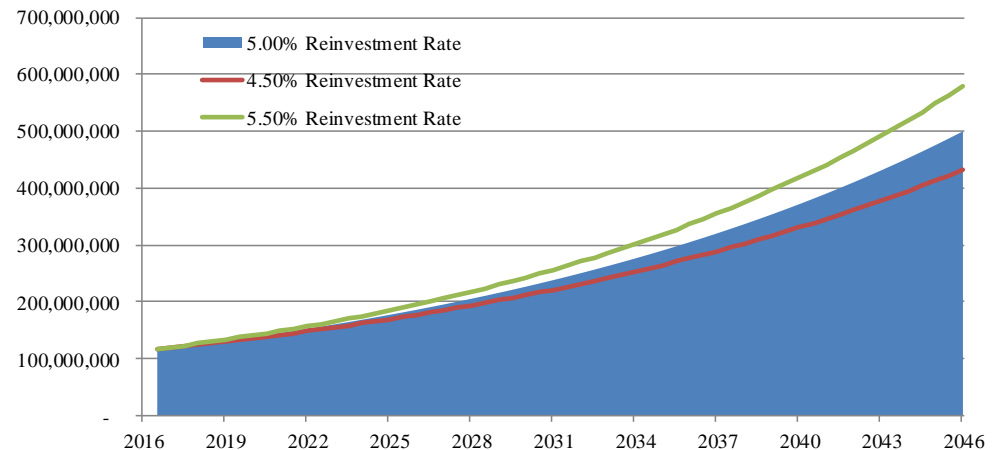


30-Year Bond Example

Reserve for Principal Repayment

- As shown in the graph on the right, a 50 basis point difference in the average reinvestment rate over 30 years can result in an ending balance ranging from \$432 to \$579 million.
- From a different perspective, if the borrower were to deposit \$10 million today, the reserve fund would need to earn at least 13.47% in order to grow its balance to \$500 million in 30 years for principal repayment.

Time Period	Beginning Balance	Earnings	Ending Balance
Year 0 - 10	113,641,794	72,573,518	186,215,312
Year 11 - 20	186,215,312	118,920,160	305,135,471
Year 21 - 30	305,135,471	194,864,529	500,000,000
Year 31 - 40			
Year 41 - 50			
Year 51 - 60			
Year 61 - 70			
Year 71 - 80			
Year 81 - 90			
Year 91 - 100			



For illustration purposes only; assumes 5.00% average reinvestment rate for 30 year period, compounded semiannually.



Century Bonds for Higher Education Borrowers

- Century bonds have emerged in the higher education sector over the past four years with \$4.8 billion issued by ten institutions including three public universities – University of California, Ohio State University and Ohio University.
- In addition to the transactions shown below, there have been century bond transactions for other not-for-profit borrowers including District of Colombia Water and Sewer Authority (\$350 million) and Cleveland Clinic (\$400 million).

Closing Date	Borrower	Ratings	Par Amount	Maturity	Coupon	Spread to 30yr UST
04/08/1996	Yale University	Aaa/AAA/AAA	125,000,000	2096	7.375%	0.700%
11/01/1996	Massachusetts Institute of Technology	Aaa/AAA/AAA	75,000,000	2096	7.250%	0.600%
06/27/1997	Boston University	A1/A/NR	100,000,000	2097	7.625%	0.950%
05/18/2011	Massachusetts Institute of Technology	Aaa/AAA/AAA	750,000,000	2111	5.600%	1.300%
08/10/2011	University of Southern California	Aa1/AA/AA	300,000,000	2111	5.250%	1.740%
10/19/2011	Ohio State University	Aa1/AA/AA	500,000,000	2111	4.850%	1.700%
11/29/2011	California Institute of Technology	Aa1/AA+/AA+	350,000,000	2111	4.700%	1.800%
02/21/2012	University of California	Aa1/AA/AA+	860,000,000	2111	4.860%	1.650%
03/22/2012	Tufts University	Aa2/AA-/NR	250,000,000	2112	5.017%	1.650%
03/29/2012	University of Pennsylvania	Aa2/AA+/NR	300,000,000	2112	4.674%	1.400%
06/26/2012	Bowdoin College	Aa2/NR/NR	128,500,000	2112	4.693%	2.000%
04/30/2013	Hamilton College	Aa2/NR/NR	103,000,000	2113	4.750%	1.980%
04/08/2014	Massachusetts Institute of Technology	Aaa/AAA/AAA	550,000,000	2114	4.678%	1.080%
11/06/2014	Ohio University	Aa3/A+/NR	250,000,000	2114	5.590%	2.500%
04/01/2015	University of California	Aa2/AA/AA	500,000,000	2115	4.770%	2.300%



Recent Higher Education Century Bonds

(Use of Proceeds)

Institution	Use of Proceeds
Bowdoin College	<ul style="list-style-type: none">A portion will be used in the near-term for capital projects; the majority of proceeds will be used to refinance outstanding debt in 2019 and create more permanent capitalization.
Hamilton College	<ul style="list-style-type: none">Proceeds will be used to refinance outstanding debt in 2012 and 2017. This long-term funding is expected to serve as a hedge against declining demographic/economic trends.
Massachusetts Institute of Technology	<ul style="list-style-type: none">The proceeds from these bonds will enable the continued acceleration of the campus renewal program and other strategic research buildings and infrastructure projects.
Ohio University	<ul style="list-style-type: none">Plan to use a central bank concept to fund ongoing deferred maintenance needs and reinvestment in facilities.
Ohio State University	<ul style="list-style-type: none">Intend to use proceeds as part of existing internal bank to fund capital projects including medical center expansion, student housing, and infrastructure improvements.
Tufts University	<ul style="list-style-type: none">Proceeds will be used to pay for capital and infrastructure projects in the University's five-year plan, including deferred maintenance, building renovations and upgrades in IT systems.
University of California	<ul style="list-style-type: none">Creating revolving fund (i.e. central bank) at the campus level to provide funding for deferred maintenance. Included financial metrics and repayment set aside for each campus.
University of Pennsylvania	<ul style="list-style-type: none">Created a Century Bond Program with input from facilities and real estate services to fund ongoing building energy efficiency projects and deferred maintenance.



Case Study: The Ohio State University (“OSU”)

- In October 2011, OSU became the first public university to issue century bonds with a \$500 million issue.
- The century bond proceeds were used across campus for a variety of projects under the University’s broader capital five year capital program.
- At the time of issuance, the University's total capital program was expected to cost approximately \$2.0 billion through 2014 and funded primarily with debt.
- The most significant projects funded by the century bond issue were for construction of a new cancer and critical care hospital for the Ohio State University Health System.
- The projects that were funded from the bond issue were included in the University’s central bank and presumably as internal loans are repaid, the University will have funds that can be recycled for future needs during the life of the 100 year bonds.
- Separately, the University also set aside cash to be invested in order to create a reserve for repaying principal on the century bond issue.



UNC-Chapel Hill Deferred Maintenance

- Carolina is a beautiful campus with historical buildings, which is an attractor for our students, faculty and staff.
- However, as the first public university, Carolina also has an inventory of aging buildings.
- Our current deferred maintenance infrastructure for State appropriated buildings is more than **\$650 million**.
- More than 60% of our buildings are beyond the age of 25 years which is a typical life cycle for most building systems.
- Many of our older buildings also have life safety and code issues when combined with aging building systems limit our ability to meet our research and teaching demands..



Space for Innovation

Facility Use Agreements

Unit	#	ASF
Biology	3	3,000
School of Medicine (incl. Lineberger)	12	1,796
Applied Physical Sciences Dept.	4	1,466
School of Pharmacy	4	1,340
Physics & Astronomy	1	80
Biology / School of Medicine	1	46
Chemistry	1	40
Total		7,768sf

- School of Medicine (SOM)
- SOM / Lineberger Cancer Center
- School of Pharmacy
- Biology
- Biology / SOM
- Chemistry
- Physics & Astronomy
- Applied Physical Sciences + Kickstart

Circles sized by research space ASF, excluding support space, building service, and circulation.





Capital Campaign

- Campaign Matching
- Pledge loans





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Questions?