NOTE 7: DERIVATIVE INSTRUMENTS

A. Summary Information

Component Unit – University of North Carolina System

The following table summarizes the University of North Carolina (UNC) System's significant derivative instruments. It includes the fair value balances and notional amounts of derivative instruments outstanding at June 30, 2020, classified by type, and the changes in fair value of such derivative instruments for the fiscal year then ended (dollars in thousands).

			Fair Value Measurements Using			
Type	(a) Changes in Fair Value	(b) Fair Value at June 30, 2020	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Notional
UNC at Chapel Hill:						
Cash flow hedges:						
Pay-fixed interest rate swaps	$ (47,459)	$ (157,130)	$ —	$ (157,130)	$ —	$ 250,000
Investment derivatives:						
Pay-fixed interest rate swaps	$ (390)	$ (1,843)	$ —	$ (1,843)	$ —	$ 11,040
U.S. dollar equity futures	$ 35,682	$ 5,686	$ 5,686	$ —	$ —	$ 256,950
Foreign currency forwards	3,628	604	—	604	—	$ (96,970)
Total	$ 38,920	$ 4,447	$ 5,686	$ (1,239)	$ —	

(a) For the fiscal year ended June 30, 2020, the changes in fair value of cash flow hedges are classified as *deferred outflows of resources*, and the changes in fair value of investment derivatives are classified as *operating grants and contributions*.

(b) At June 30, 2020, the fair value balances of cash flow hedges outstanding are classified as *hedging derivative liability*. The fair value balances of investment derivatives outstanding are classified as *investments*, except that investment derivatives with a negative fair value are classified as *accounts payable and accrued liabilities*. For the UNC System, the total fair value of cash flow hedges at June 30, 2020 was negative $171.33 million.

The fair value measurements are categorized within the fair value hierarchy established by generally accepted accounting principles. The U.S. dollar futures classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. The pay-fixed interest rate swaps (cash flow hedges and investment derivatives) classified in Level 2 of the fair value hierarchy are valued using discounted cash flow techniques. The foreign currency forwards classified in Level 2 of the fair value hierarchy are transacted over-the-counter and valued directly from underlying exchange listed exchange rates.

B. Hedging Derivative Instruments

Component Unit – University of North Carolina System

The following table displays the objectives and terms of the UNC System's significant hedging derivative instruments outstanding at June 30, 2020 (dollars in thousands):

Type	Objective	Notional Amount	Effective Date	Maturity Date	Terms
UNC at Chapel Hill:					
Pay-fixed interest rate swap	Hedge changes in cash flows on variable rate debt	$100,000	12/1/07	12/1/36	Pay 3.314%; receive 67% of one-month LIBOR
Pay-fixed interest rate swap	Hedge changes in cash flows on variable rate debt	$150,000	12/1/11	12/1/41	Pay 4.375%; receive 67% of one-month LIBOR

The UNC System's significant hedging derivative instruments are exposed to the following risks that could give rise to financial loss:

UNC at Chapel Hill

Interest rate risk. UNC at Chapel Hill (University) is exposed to interest rate risk on its interest rate swaps which is largely offset (or expected to be offset) by rates paid on variable-rate debt. In addition, the fair values of these instruments are highly sensitive to changes in interest rates. Because rates have declined significantly since the effective dates of the swaps, both of the swaps have a negative fair value calculated as of June 30, 2020. As rates rise, the value of the swaps will increase, and as rates fall, the fair value of the swaps will decrease.

Basis risk. The University is exposed to basis risk on the swaps to the extent there is a mismatch between variable bond rates paid and swap index rates received.

Termination risk. The swap agreements use the International Swaps and Derivatives Association (ISDA) Master Agreement, which includes standard termination events, such as failure to pay and bankruptcy. Termination could result in the University being required to make an unanticipated termination payment. The swaps may mandatorily terminate if the University fails to perform under terms of the contract.

Information on debt service requirements on long-term debt of the primary government and component units and net cash flows on associated hedging derivative instruments is presented in Note 8E.

C. Investment Derivative Instruments

Primary Government

The North Carolina Department of State Treasurer External Investment Pool (External Investment Pool) has investments in equity and commodity futures, foreign currency forward and spot currency contracts. More detailed information about the External Investment Pool is available in a separate report (see Note 3A).

Component Unit – University of North Carolina System

The University of North Carolina System's investment derivative instruments are exposed to the following risks that could give rise to financial loss:

UNC at Chapel Hill

Interest rate risk. The University is exposed to interest rate risk on its interest rate swap. The fair value of this instrument is highly sensitive to interest rate changes. Because rates have changed since the effective dates of the swap, the swap has a negative fair value as of June 30, 2020. The negative fair value may be countered by a reduction in total interest payments required under the variable-rate bonds, creating lower synthetic interest rates. Because the coupons on the University's variable-rate bonds adjust to changing interest rates, the bonds do not have corresponding fair value increases. The negative fair value is the calculated value as of June 30, 2020. As the yield curve rises, the value of the swap will increase and as rates fall, the value of the swap will decrease. The University pays 5.24% and receives Securities Industry and Financial Markets Association (SIFMA) Swap Index rate. On June 30, 2020, SIFMA Swap Index rate was .13%. The interest rate swap has a notional amount of $11.04 million and matures November 1, 2025.

Foreign currency risk. Foreign currency forward contracts are utilized from time to time to minimize the risk and exposure to fluctuations in the exchange rates of foreign currencies. Forward contracts based in foreign currency obligate the buyer to purchase an asset (or the seller to sell an asset), such as a physical commodity or a financial instrument, at a predetermined future date and price. The University's foreign currency investment derivatives are denominated in U.S. currency. More detailed information about the University's exposure to foreign currency risk is presented in Note 3C.

Credit risk. The University is exposed to credit risk on its foreign currency forward contracts. A third-party brokerage and advisory firm is used to assist in entering into the contracts. The foreign currency forward contracts are used to hedge direct or indirect foreign currency exposure within the University's investment portfolio. If collateral is required to be posted on these types of securities, the broker will request the required margin balance be posted in the appropriate cash account. If the cash balance is reduced in that account (due to ongoing losses on the position), then a margin call may be made. If the margin call is not funded, then the position could be immediately closed out by the broker. In the case of the foreign currency forward contracts that were in effect at June 30, 2020, no margin or collateral was required to be posted on those positions due to the broker's assessment of the fund's credit quality and a three-month contract period.

In the case of these foreign currency forward contracts, there is an associated receivable from the counterparty (the foreign currency is sold at the forward price on the contract expiration date) and an associated liability to purchase that foreign currency at the prevailing market price. The receivable and liability result in a net asset or net liability on the position overall. At June 30, 2020, the contract net asset was $604 thousand. Once the contract is closed out, the net asset balance is received from the broker at settlement, or the brokerage account is funded for any net liability at settlement. The broker settles the other side of the trade with the counterparty accordingly.

The counterparty on the University's foreign currency forward contract is JPMorgan Chase, a large and reputable domestic financial institution. The brokerage and advisory firm used to assist in hedging foreign currency risk performs constant due diligence and monitoring of the credit risk of the counterparties used. As of June 30, 2020, the credit ratings of the counterparty was A2 with Moody's Investors Service, AA- with Fitch Ratings, and A- with Standard & Poor's. This indicates a very low level of counterparty credit risk on these instruments, as all three ratings agencies consider these counterparty obligations to be of a high-quality investment-grade level.

D. Synthetic Guaranteed Investment Contracts

Primary Government

In the Supplemental Retirement Income Plan of North Carolina, 401(k) Plan, there are synthetic guaranteed investment contracts (SGICs) within the North Carolina Stable Value Fund. SGICs are unallocated insurance contracts. There is one SGIC with The Prudential Insurance Company of America (Prudential), one SGIC with Nationwide Life Insurance Company (Nationwide Life), one SGIC with American General Life Insurance Company (American General), and one SGIC with Transamerica Life Insurance Company (Transamerica Life) which are all fully benefit responsive. The SGICs provided an average credit rating yield of 2.92%, 2.77%, 2.75%, and 2.41%, respectively. The fair value of the securities covered by the contracts as of December 31, 2019, is $1.582 billion and the contract value is $1.551 billion. The contracts are unrated and have a maturity of less than one year.

In the North Carolina Public Employee Deferred Compensation Plan, 457 Plan, there are SGICs within the North Carolina Stable Value Fund. SGICs are unallocated insurance contracts. There is one SGIC with Prudential, one SGIC with Nationwide Life, one SGIC with American General and one SGIC with Transamerica Life which are all fully benefit responsive. The SGICs provided an average credit rating yield of 2.92%, 2.77%, 2.75%, and 2.41%, respectively. The fair value of the securities covered by the contracts as of December 31, 2019, is $322 million and the contract value is $315 million. The contracts are unrated and have a maturity of less than one year.

Both the Supplemental Retirement Income Plan of North Carolina and the North Carolina Public Employee Deferred Compensation Plan have entered into wrap contracts with Prudential, Nationwide Life, American General, and Transamerica Life to assure that the crediting rate on participant investments will not be less than zero. The wrap contracts with Prudential, Nationwide Life, American General, and Transamerica Life were determined to have no value.