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THE PAPER MONEY OF COLONIAL NORTH CAROLINA, 1712-1774

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ABSTRACT

Beginning in 1712, North Carolina's assembly emitted its own paper money and maintained some of its paper money in public circulation for the rest of the colonial period. This paper money has been reviled as an archetype of what was bad about the paper monies issued by American colonial legislatures. Yet little systematic analysis of North Carolina's paper money has been undertaken. We correct that here. We reconstruct North Carolina's paper money regime from original sources—providing yearly quantitative data on printings, net new emissions, redemptions and removals, amounts remaining in circulation, denominational structure, as well as the paper money's current market value in pounds sterling. We identify different paper money regimes based on how the assembly structured and executed its paper money laws. We model and estimate how the market value of this money was determined. We compare the quantity theory of money with an asset-pricing model that treats the money as zero-coupon bonds to see which explains the observed market value of the paper money better. The asset-pricing model wins by a mile. Finally, we explore counterfactual redemption architectures to show how redemption affected monetary performance in periods of value collapse.

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Beginning in 1712, North Carolina's assembly emitted its own paper money and maintained some of its paper money in public circulation for the rest of the colonial period. This paper money has been reviled as an archetype of what was bad about the paper monies issued by American colonial legislatures. Yet little systematic analysis of North Carolina's paper money has been undertaken. We correct that here. We reconstruct North Carolina's paper money regime from original sources—providing yearly quantitative data on printings, net new emissions, redemptions and removals, amounts remaining in circulation, denominational structure, as well as the paper money's current market value in pounds sterling. We identify different paper money regimes based on how the assembly structured and executed its paper money laws. We model and estimate how the market value of this money was determined. We compare the quantity theory of money with an asset-pricing model that treats the money as zero-coupon bonds to see which explains the observed market value of the paper money better. The asset-pricing model wins by a mile. Finally, we explore counterfactual redemption architectures to show how redemption affected monetary performance in periods of value collapse.

The British North American colonies were the first Western economies to emit sizable

amounts of paper money—called *bills of credit*. Colonial legislatures had these bills printed and

placed in their treasuries. They directly spent these bills on soldiers' pay, military provisions,

salaries, and so on. They also loaned bills on interest to their citizens, who secured these loans by

pledging their lands as collateral. These colony-specific, legislature-issued paper monies formed

an important part of the circulating medium of exchange in many colonies (Brock, 1975; Grubb,

2016a; Newman, 2008). They were the only paper monies in circulation. No public or private

incorporated banks issuing paper banknotes, redeemable on demand in specie, existed in colonial

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America (Hammond, 1991, pp. 3-67).

North Carolina was an early adopter of paper money, being the second of the southern colonies, after South Carolina, to emit paper money. It was also the only colony to emit paper money from the beginning of its existence as a separate colony through the rest of the colonial period. Spanning from 1712 through 1774, North Carolina maintained one of the longest continuous paper money economies among the 13 colonies.

Yet, North Carolina's paper money is woefully understudied. Little is known about the magnitudes in circulation, how the various emissions of paper money performed, and what determined the value of the paper money in circulation. This has not stopped scholars from deriding colonial North Carolina's paper money as an archetype of what was bad about colonial paper monies (Brock, 1975, pp. 112-, 428-41; Bullock, 1900, pp. 129-74; Ernst, 1973, pp. 82-3, 206-7; Smith, 1985, pp. 1,188, 1,194-7). Exactly why it was bad, however, is poorly articulated and not coherently explained. Even the yearly data on North Carolina's paper money flows are sketchy. Tabulated continuous yearly data on the amount in circulation exist only for the years 1748-1768 (see Appendix Table 1), and even those data are questionable.

We correct this by reconstructing yearly data, over the entire history of colonial North Carolina's paper money regime, on the face value of gross emissions, net emissions, redemptions and removals, amounts in public circulation, and denominational structure. These new data not only fill in what is currently missing in the literature, but correct the existing data in the literature for errors of omission, errors of transcription, and errors of interpretation. We also provide the first systematic analysis of what determined the market value of North Carolina's paper money over its entire history.

Much can be learned from colonial North Carolina's paper money regime that has not yet

been explored. The assembly spent considerable time, energy, and legal space on structuring its paper money emissions, namely on what the denominational composition would be, how and when the money would be redeemed and removed from circulation, how it would be emitted out of the treasury, and so on. In this sense, there was a sequence of paper money regimes across subsequent emissions rather than a singular regime over the entire colonial period. Some emissions paid interest, most did not. Some emissions were a legal tender, some were not. Some emissions were handwritten; other emissions were typeset on a printing press. Some emissions were loaned to citizens who pledged their lands as collateral; most were spent directly out of the treasury to pay military expenses, salaries, and other government debts.

Colonial North Carolina's economy and political history is incomplete without a full explication of its paper money regimes and how they performed. Many of the political conflicts between the assembly (the Lower House) and the Governor, as well as with the British Board of Trade and the Crown, involved paper money. The participation of North Carolina in colonial wars and Indian wars depended on paper money. Lastly, the internal economy and the size and timing of the tax burdens imposed were affected by paper money emissions. As such, the political, economic, and social history of colonial North Carolina is informed by, and must be consistent with, the paper money data and analysis provided here.[2]

The paper proceeds as follows: first we reconstruct the yearly data on paper money flows and exchange values. This reconstruction includes articulating the various structures created by the assembly for executing each emission and examining the denominational structure of the paper money emitted. Second, we estimate the present value of the paper money as barter assets

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[2] For example, A. Roger Ekirch (1981) fails to incorporate paper money into his political and social history of colonial North Carolina. Thus, much is left incomplete.

and compared that with the observed market value of the money. Third, we model what determined the observed market value of the paper money and test the model's performance. The analysis includes comparing the contributions of the quantity of paper money in circulation with its real asset present value. Lastly, we explore counterfactual redemption architectures to understand monetary performance in periods of value collapse.

Data Reconstruction

The annual amounts of paper money authorized, net new emissions placed in public circulation, redemptions and removals from circulation, and the amounts remaining in circulation cannot be directly taken from existing records. These data must be reconstructed using forensic accounting techniques. The records of the treasurers of colonial North Carolina have not survived, or been yet found. The statutory laws of North Carolina provide information on authorized paper money emissions and redemption structures, though the complete text of all paper money laws have not survived, especially for the earliest emissions. Occasional retrospective reports on emissions, redemptions, and amounts in circulation by Governors, or other unattributed government personnel (the "no author" reports), recount some details of emissions and redemptions. These reports are spotty and their sources unclear. The Governors, even by the late colonial period, complained that the accounting procedures followed by the treasurers were irregular and hard to decipher. Thus, the respective reports based on treasurers' accounts could easily contain inaccuracies. After 1748, the treasurers more systematically reported summary details of paper money redemptions and removals from circulation to the Lower House which were then recorded in the Lower House minutes.

All these sources are combined to reconstruct the most internally consistent and coherent annual data series on paper money flows possible. Interpolations and estimation techniques are

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required to fill in missing data for some years. Table 1 provides the outcome of this data reconstruction exercise, and Appendix Table 1 compares our data reconstruction with that in the prior literature. Figure 1 displays the reconstructed face value amounts of North Carolina's paper money in circulation, as well as the value-consistent amounts when adjusted to account for legislated changes in face value. Figure 2 displays the same data per white capita. The following describes the forensic accounting reconstruction that went into the data reported in Table 1 and displayed in Figures 1 and 2. The pre-1748 data relies more on retrospective reports by Governors, and on interpolation and estimation techniques to fill in missing data, whereas the post-1747 data relies more on treasurer reports recorded in the minutes of the Lower House to track paper money flows.

a. 1712 through 1747

North Carolina was administratively separated from South Carolina in 1711. North Carolina authorized six emissions of paper money between 1711 and 1747 totaling 140,500£$_{NC}$ (£$_{NC}$ = North Carolina paper pounds). This total is the amount authorized to be created, of which 74,000£$_{NC}$ was to be used to execute one-for-one swaps with existing bills already in circulation. Thus, total net new emissions were 66,500£$_{NC}$. All six emissions had a face value at redemption of 1.5£$_{NC}$ = 1£$_S$ (£$_S$ = pounds sterling). Emissions #1, #2, #3, and #4 were made a legal tender, with emissions #1, #2, and #3 also a legal tender for rated commodities (commodities accepted at a set rate for paying taxes). See Table 1 for reference to emission numbers. The legal tender status of emission #5 is unclear. Emission #6 was not made a legal tender. Emissions #1, #2, #3, #4, and #5 were handwritten, as no printer existed in the colony at that time. Emission #6 was the first emission to be printed on a press (Table 1; Newman, 2008, pp. 314-5). All six emissions are assumed to go into circulation in the year authorized, or in the following year if authorization

Table 1 *North Carolina Paper Money, 1712-1774: Yearly Emissions, Redemptions, and Amounts in Circulation*

Year	EM #	Face Value of Authorized Newly Printed Emissions £NC	Face Value of Net New Emissions £NC	RED_t Face Value of Amounts Redeemed & Destroyed £NC	M_t Face Value of Amounts Remaining in Circulation £NC	Estimated Interest Earned on Paper Money Land Bank Loans £NC	Face Value = Legislated Par at Redemption: 1£_S = X£_NC X =
1712	#1	4,000	4,000	0	4,000	0	1.50
1713	#2	8,000	8,000	0 (2,000)	12,000 (10,000)	0	1.50
1714	#3	24,000	12,000 (14,000)	2,000	22,000	0	1.50
1715				2,000 (1,499)	20,000 (20,501)	0	1.50
1716				2,000 (1,499)	18,000 (19,002)	0	1.50
1717				2,000 (1,499)	16,000 (17,503)	0	1.50
1718				800 (1,499)	15,200 (16,004)	0	1.50
1719				800 (1,499)	14,400 (14,505)	0	1.50
1720				800 (1,005)	13,600 (13,500)	0	1.50
1721				800 (1,005)	12,800 (12,495)	0	1.50
1722	#4	12,000	0	800 (495)	12,000	0	1.50
1723				0	12,000	0	1.50
1724				0	12,000	0	1.50
1725				0	12,000	0	1.50
1726				0	12,000	0	1.50
1727				0	12,000	0	1.50
1728				0	12,000	0	1.50
1729				0	12,000	0	1.50
1730	#5	40,000	30,000	2,000	40,000	1,875	1.50
1731				0	40,000	0	1.50
1732				0	40,000	0	1.50
1733				0	40,000	0	1.50
1734				0	40,000	0	1.50
1735	#6	52,500	12,500	500	52,000	2,400	1.50
1736				500	51,500	2,400	1.50
1737				500	51,000	2,400	1.50
1738				500	50,500	2,400	1.50
1739				500	50,000	2,400	1.50
1740				604	49,396	2,400	1.50
1741				605	48,791	2,394	1.50
1742				604	48,187	2,388	1.50
1743				605	47,582	2,382	1.50
1744				604	46,978	2,376	1.50
1745				605	46,373	2,370	10.00
1746				604	45,769	2,365	10.00
1747				605	45,164	2,359	10.00
1748a				604	44,560	2,353	10.00
1748b	#7	21,350	11,409	0	17,350	0	1.33
1749				1,532	15,818	0	1.33
1750				0	15,818	0	1.33
1751				558	15,260	0	1.33
1752				1,091	14,169	0	1.33
1753			4,000	761	17,408	0	1.33
1754	#8	40,000	39,000	1,568	54,840	0	1.33
1755				1,028	53,812	0	1.33
1756	#9	3,400	4,339	1,881	56,270	0	1.33

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1757	#10-11	14,806	10,991	4,466	62,795	0	1.33
1758	#12	7,000	7,000	5,905	63,890	0	1.33
1759	#13-14	9,500	8,995	6,438	66,447	0	1.33
1760	#15	12,000	12,000	5,853	72,594	0	1.33
1761	#16	20,000	20,000	622	91,972	0	1.33
1762				10,011	81,961	0	1.33
1763				0	81,961	0	1.33
1764				11,943	70,018	0	1.33
1765				0	70,018	0	1.33
1766				5,498	64,520	0	1.33
1767				7,775	56,745	0	1.33
1768				0	56,745	0	1.33
1769	#17	20,000	20,000	0	76,745	0	1.33
1770				14,941	61,804	0	1.33
1771				12,586	49,218	0	1.33
1772	#18	60,000	60,000	12,477	96,741	0	1.33
1773				0	96,741	0	1.33
1774				0	96,741	0	1.33

Sources: Brock (1975, pp. 108-112, 428-45); Clark, Saunders, and Weeks [cited as *CR* hereafter] (v. 1, p. 839; v. 2, pp. iv-v, 50, 296, 575-8, 608-24; v. 3, pp. 142-56, 151, 154, 175, 177-9, 189, 259, 266-9, 271, 285-325, 475-89, 561-622; v. 4, pp. 102, 115-55, 178-80, 382-414, 418-9, 501-11, 514-5, 527-31, 552-77, 651-5, 719-52, 770-91, 814-34, 838-43, 855-66, 997-9, 1,022, 1,073, 1,293-5, 1,298, 1,341-2, 1,346; v. 5, pp. 58, 73-5, 210-11, 234-5, 307-9, 556-7, 726-7, 851, 898-900, 1,083-4, 1,088; v. 6, pp. 197-9, 378, 396, 435, 504-5, 693-4, 811, 825-6, 829, 944, 949-50, 1,154, 1,162, 1,166, 1,174, 1,185-6, 1,205-8, 1,267, 1,274, 1,277, 1,282-5, 1,289, 1,304, 1,308-11; v. 7, pp. 61-88, 393-4, 565-94, 627, 644, 649, 653, 661-3, 666, 683, 924-86; v. 8, pp. 9, 105-41, 144-8, 211-5, 261, 302-46, 387, 397-420, 427, 433-4, 440, 443, 453-4, 459-63, 471-3, 478, 697; v. 9, pp. 166-7, 142, 147-222, 226, 230-5, 368-70, 454-6, 464, 475-6, 478, 494-523, 549-50, 557, 563, 572-7, 580, 582-4, 586, 647-51, 653-5, 733-88, 874-953, 1,187-1,205; v. 23, pp. 54-5, 90-1, 94-5, 98, 112, 217, 292-6, 392-8, 516-8, 539-41, 781-3, 850-1; v. 25, pp. 157-8, 173-5, 234-5, 331-3, 345-8, 350-2, 361-4, 370-2, 394-5, 457-8); *Earliest Printed Laws* (pp. 90-2, 157-8, 173-5); McCusker (1978, p. 215); Newman (2008, pp. 314-20).

Notes: EM # = emission number by chronological count. £$_{NC}$ = North Carolina paper pounds at face value. £$_S$ = pounds sterling. See text for construction. Numbers in parentheses are alternative estimates. See text for explanation. The difference between authorized emissions and net new emissions is due to currency swaps of new bills for old bills and for interest owed on old bills, to new bills never spent out of the treasury, and to new bills released at a later date than authorized. The 1745-1748 change in the legislated rate of redemption was a partial default on the outstanding paper money in circulation and not a change in face value designation on that money. The 1748a and 1748b values capture the change over from the old to the new paper money and the legislated change in the par at redemption value.

was late in the year. No evidence to the contrary can be found. The records are not detailed

enough to tell if some authorized bills sat idle in the treasury for some period before being spent

into circulation.

The Tuscarora Indian War broke out in 1711. This war threatened the existence of the

colony. Emission #1 and #2, in 1712 and 1713, respectively, where issued to fund this war. The

acts passed by the North Carolina assembly authorizing these emissions have not survived. The
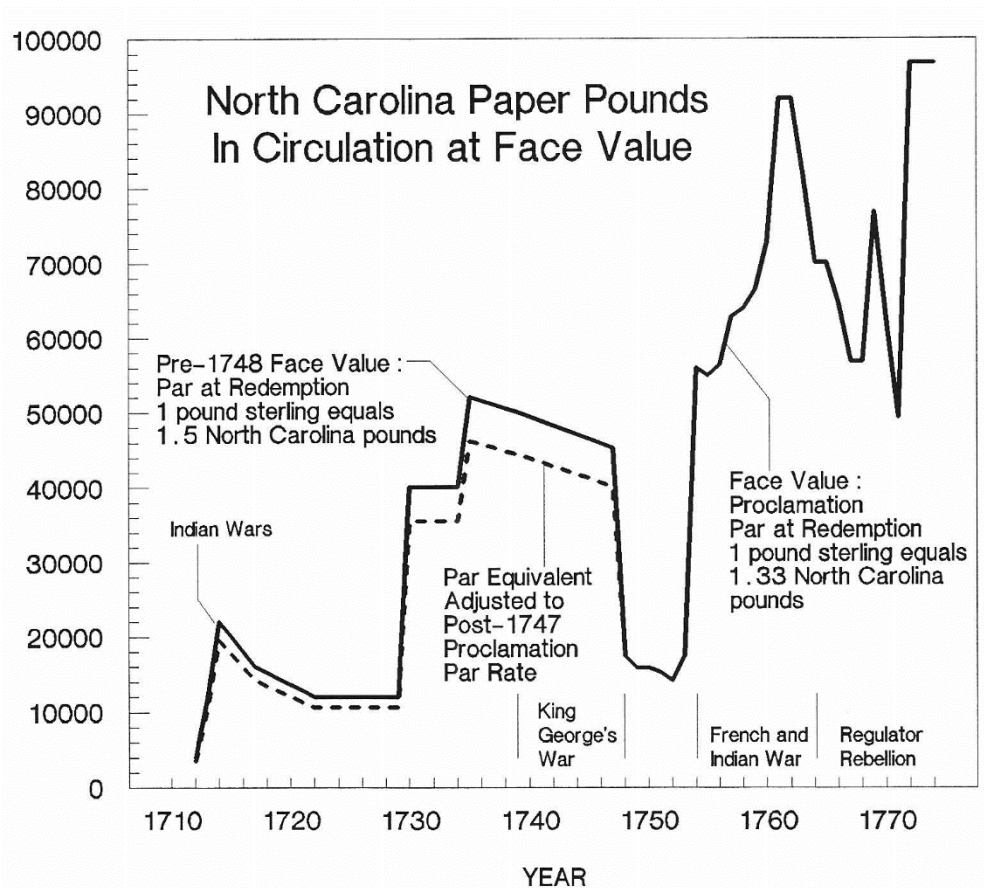
Figure 1.   *Colonial North Carolina Paper Pounds in Circulation at Face Value, 1712-1774*

Source: Table 1.

information about them comes from contemporary letters and retrospective letters written by

Governors. Both emissions paid interest. That interest rate cannot be found in the contemporary

records. The first interest rate used by the assembly regarding paper money was 6.25 percent in

the 1729 paper money act (see below). That 6.25 rate will be used to calculate the interest paid

on these emissions.

Colonel Alexander Spotswood wrote to the Board of Trade on May 8, 1712 from

Virginia that, to prosecute the Indian War, North Carolina had raised 4,000£$_{NC}$ (Clark, Saunders,

and Weeks [cited as *CR* hereafter], v. 1, p. 839). North Carolina Governor George Burrington, in

a letter to the Lords of Trade and Plantations on May 19, 1733, stated that war broke out in 1711
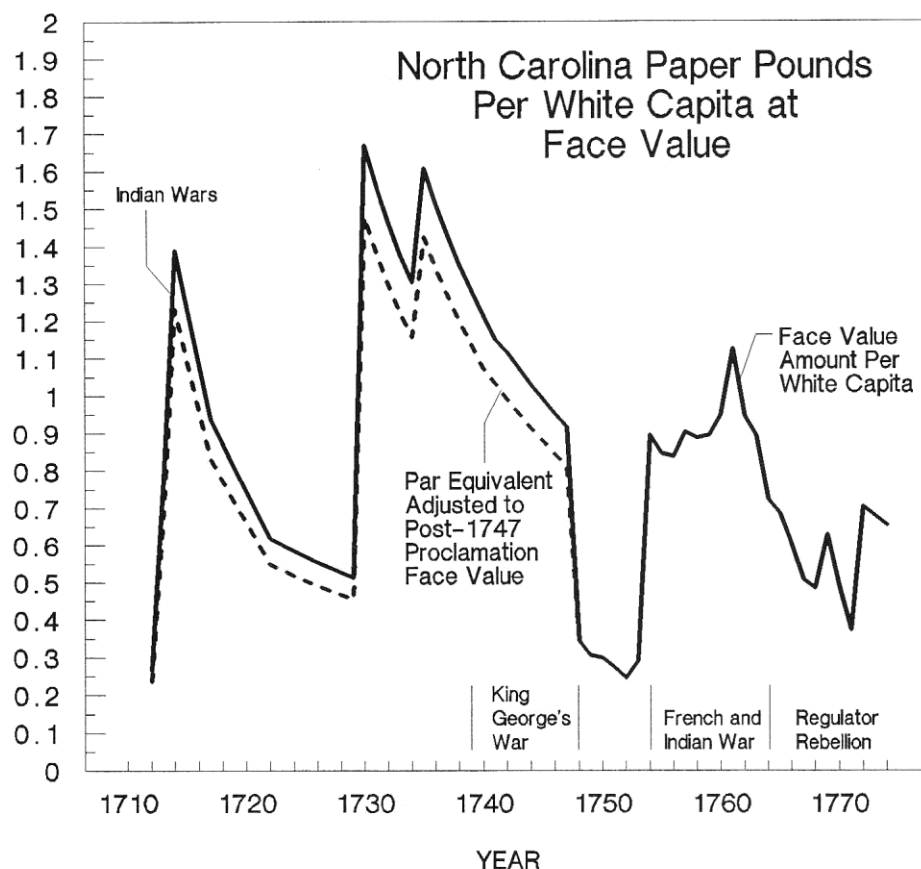
Figure 2. *Colonial North Carolina Paper Pounds in Circulation at Face Value per White Capita, 1712-1774*

Sources: Table 1, Figure 1, Carter, *et al* (2006, v. 5, p. 652).
Notes: Interpolated values between decadal benchmarks are used for population. Face value at redemption pre-1748 is 1.5£$_{NC}$ = 1£$_S$. Face value at redemption post-1747 is 1.33£$_{NC}$ = 1£$_S$.

and though the assembly had laid on taxes they could not collect them and so emitted 4,000£$_{NC}$ bills of credit paying interest to fund the war (*CR*, v. 3, p. 484). A report by the assembly in 1741 stated that 4,000£$_{NC}$ were emitted in 1712 and 8,000£$_{NC}$ were emitted in 1713, bringing the total in 1713 to 12,000£$_{NC}$. The report also stated that in 1713 part of this sum was sunk (redeemed and removed from circulation) via taxes (*CR*, v. 4, p. 576).

The act authorizing emission #3 stated that in 1714 the remaining part of the 12,000£$_{NC}$ from emissions #1 and #2 with up to two years of accrued interest were to be swapped for emission #3 bills (*CR*, v. 25, p. 157). This statement leaves open the possibility that some of

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emission #1 and #2 bills had been redeemed and removed from circulation in 1713. However, while poll and real estate taxes had been laid, there is no indication that these taxes were collected in 1712 and 1713, or that bills were redeemed and burned in those years (Brock, 1975, p. 108). The major disruption caused by the Tuscarora Indian War also makes it unlikely that taxes to redeem and remove bills from circulation were effectively collected in 1712 and 1713 (La Vere, 2013; Lefler and Powell, 1973, pp. 67-80).

In Table 1, we assume that no bills were redeemed and removed from circulation in 1712 and 1713. This leaves 12,000£$_{NC}$ in circulation at the end of 1713. An alternative estimate is provided in parentheses. If some taxes were collected in 1713, say similar to the amounts designated to be collected in 1714, namely 2,000£$_{NC}$, then the amount of bills left in circulation at the end of 1713 would be 10,000£$_{NC}$. This alternative also affects the currency swap part of emission #3 in 1714 discussed below.

The act authorizing emission #3 was passed in 1714. The law was confirmed (2 George I) in 1715. There is some confusion in the literature caused by this. Some authors state the act was in 1715 and some in 1714. As far as can be determined the act was put into operation in 1714. It authorized 24,000£$_{NC}$. The bills paid no interest. Emission #1 and #2 bills still outstanding, along with their accrued interest, were to be swapped for emission #3 bills by early 1715 (*CR*, v. 3, p. 485; v. 4, pp. 418, 576; v. 23, p. 95; v. 25, pp. 157-8). The accrued interest was paid in emission #3 bills. These bills would not be redeemed for their face value in specie equivalence for many years. As such, the effective present value of the interest paid was substantially less than 6.25 percent in specie equivalent face value—making the effective interest rate less.

If the full amounts of emissions #1 and #2 were still outstanding in 1714, then 12,000£$_{NC}$ old bills would be swapped for new bills, leaving the net new emission amount from emission #3

to be 12,000£$_{NC}$. Given an interest rate of 6.25 percent per year paid on old bills, the accrued amount of interest paid to old-bill holders in emission #3 bills was 1,000£$_{NC}$ (two years of accrued interest on 4,000£$_{NC}$ of emission #1 and one year of interest on the 8,000£$_{NC}$ of emission #2). That would leave the assembly with net new spendable bills out of emission #3 of 24,000£$_{NC}$ − 12,000£$_{NC}$ − 1,000£$_{NC}$ = 11,000£$_{NC}$.

An alternative estimated net new emission amount of 14,000£$_{NC}$ is listed in parentheses in Table 1. This alternative assumes that 2,000£$_{NC}$ in taxes were collected in emission #1 bills in 1713 and removed from circulation. Thus, interest paid in emission #3 bills would be 750£$_{NC}$ (two years of accrued interest on 2,000£$_{NC}$ of emission #1 and one year of interest on the 8,000£$_{NC}$ of emission #2). The net new spendable amount in 1714 under this alternative was 24,000£$_{NC}$ − 10,000£$_{NC}$ - 750£$_{NC}$ = 13,250£$_{NC}$. Under any estimate, the amount in public circulation at the end of 1714 remains the same. The difference in the estimates is simply over the division of the same amount between interest payments and spending on government debt repayments (*CR*, v. 25, p. 157).

The assembly passed an act in 1714, confirmed in 1715, to raise 2,000£$_{NC}$ annually toward redeeming and removing emission #3 bills from circulation. It was to be operative until all the bills currently outstanding were redeemed and removed from circulation. These taxes included a 15 shilling poll tax and a 2 shillings 6 pence per one hundred acre land tax (*CR*, v. 3, p. 189; v. 23, pp. 90-1). Assuming this amount of tax was first collected in 1714, leaves the amount in circulation at the end of 1714 as 22,000£$_{NC}$.

The course of redemption and removals from 1715 through 1722 can be estimated by pro-rated back-projection given the amount stated to be in circulation at the end of 1717 and 1722. Thomas Pollack wrote to Charles Eden on November 13, 1717 that 16,000£$_{NC}$ were in

circulation (*CR*, v. 2, p. 296). A report by the assembly in 1741 on the history of their emissions stated that at the end of 1722 there were 12,000£$_{NC}$ in circulation. If 2,000£$_{NC}$ in bills were taxed out of circulation each year from 1714 through 1717 that would leave 16,000£$_{NC}$ in circulation at the end of 1717 as Pollack indicated. To get from 16,000£$_{NC}$ to 12,000£$_{NC}$ by the end of 1722, an average of 800£$_{NC}$ would have to be taxed out of circulation from 1718 through 1722. Those estimates are used as the best guess for redemptions and the implied amounts left in circulation in Table 1 in those years.

An alternative estimate is provided in Table 1 in parentheses. It assumes that the Pollack statement is not an observation but a deduction based on the assumption that the 2,000£$_{NC}$ tax obligation was in fact fulfilled each year. Thus, the Pollack statement is set aside and only the 12,000£$_{NC}$ left in circulation at the end of 1722 as stated in the 1741 assembly report is used. Second, taxes were reduced over this period. The poll tax was reduced from 15 shillings to 10 shilling in 1720 and then to 5 shilling in 1722 (Parker, 1928, p. 108). The average yearly amount of bills redeemed and removed, to get from 22,000£$_{NC}$ in circulation in 1714 to 12,000£$_{NC}$ in 1722, pro-rating this average amount by the percentage reduction in the poll tax and assuming no population growth, yields the numbers in parentheses in Table 1. These alternative numbers are not that different from the best-guess numbers.

The assembly passed the act authorizing emission #4 in 1722. It authorized 12,000£$_{NC}$. All these bills were to be swapped one-for-one with the bills still outstanding, thought to be 12,000£$_{NC}$. This number corroborates the other sources that indicated that by the end of 1722 the amount in public circulation was 12,000£$_{NC}$. The reason given in the act for the bill swap was that the current bills had been outstanding so long and had experienced such wear and tear in hand-to-hand usage that "most of them are very much Defaced and others being for such large

Sums are not so Usefull" (*CR*, v. 25, p. 173; see also Appendix Table 4).

The act also removed all prior taxes used to redeem and remove bills from circulation and instituted in their place a 5 shilling poll tax that was to be used only for "Defraying the Contingent Charges of the Government" (*CR*, v. 25, p. 174). Bills paid in as taxes were re-spent by the government as opposed to being burnt as was done before. A report by the assembly in 1736 also claimed that the 12,000£$_{NC}$ in bills in circulation in 1722 were "the only Currency or portable Medium of Trade subsisting in the Province." It also indicated that no provision was made to redeem and remove these bills from circulation (*CR*, v. 4, p. 178). Governor Burrington in his 1733 report to the Board of Trade repeated these assessments (*CR*, v. 3, p. 485). Because emission #4 was a pure one-for-one swap of bills, it did not add to the amount in public circulation. Because no taxes to redeem bills were enacted, that amount stayed in circulation through 1729 when the next paper money act was passed by the assembly.

In late 1729 the assembly passed the paper money act for emission #5 which went into effect in 1730. The act has not survived. Information about the emission can be found in letters from Governor Burrington to the Duke of Newcastle on July 2, 1731 and the Lords of Trade and Plantation on May 19, 1733; and reports on the history of paper money in the colony made in 1736, 1740, and 1741 (*CR*, v. 3, pp. 142-56, 475-89, v. 4, pp. 178-9, 419, 576-7; v. 23, p. 112).

The act authorized 40,000£$_{NC}$ to be created, of which 10,000£$_{NC}$ was to be swapped one-for-one for emission #4 bills that were thought to be still outstanding. It was also thought that 2,000£$_{NC}$ bills from emission #4 had been lost. In 1735 this 2,000£$_{NC}$ reappeared as not lost. These sums corroborate the assumption above that no bills were redeemed between 1723 and 1729 and so the full 12,000£$_{NC}$ of emission #4 remained in circulation from 1722 through 1729. The 1729 act declared emission #4 bills "not to be current" and made them "obsolete." The swap

was executed as 9,555£$_{NC}$ bills were so recorded as swapped and destroyed in the minutes of the Lower House of the assembly between April 20 and May 1, 1731. On February 21, 1735 a further 446£$_{NC}$ bills of emission #4 were ordered destroyed, bringing the total swapped to 10,001£$_{NC}$. No taxes were enacted to redeem and remove this 10,000£$_{NC}$ from circulation. As with emission #4, these bills when received for tax payments would be re-spent by the government (*CR*, v. 3, pp. 154, 294, 323-4, 486-7; v. 4, pp. 142-6, 178-80, 419, 568-83, 998).

The rest of emission #5, 30,000£$_{NC}$, was to be loaned to citizens, who pledged their lands as security, for a period of 15 years (to 1744) at a 6.25 percent annual interest rate paid to the government. The principal would be repaid at 1/15th each year, with those amounts removed from public circulation and destroyed. Any excess principal paid would be re-loaned to 1744. Appendix Table 2 charts the intended structure of the land bank portion of emission #5 (*CR*, v. 3, pp. 154, 486-7; v. 4, pp. 142-6, 178-80, 419, 576).

On February 25, 1731 a new governor arrived, George Burrington. He declared the land bank portion of emission #5 invalid. He ordered that the principal and interest no longer be collected on the land bank loans (*CR*, v. 3, pp. 145-54, 175, 266-9, 271, 308-9, 486-7; v. 4, p. 178-9). Assuming that the first year of the land bank emission was operative, then 1,875£$_{NC}$ interest income was received by the government by the end of 1730, and the first 1/15th of the loan principal due at the end of 1730, 2,000£$_{NC}$, was paid in and removed from circulation. Thus, 40,000£$_{NC}$ was outstanding at the end of 1730, 28,000£$_{NC}$ on loan, 10,000£$_{NC}$ swapped for emission #4 bills, and 2,000£$_{NC}$ of emission #4 bills thought lost but which would reappear in 1735. This 40,000£$_{NC}$ would remain outstanding from 1730 into 1735.

Governor Burrington was relieved in 1734 and replaced by Governor Gabriel Johnston. Under Johnston's guidance the assembly moved to fix the paper money problem created by

Burrington. On March 1, 1735, the assembly passed its last paper money act before 1748, namely emission #6. It was the last emission whose face value at redemption was set at $1.5£_{NC} = 1£_S$. The act has not survived. Information about the emission can be found in reports on the history of paper money in the colony made in 1736, 1740, and 1741 (*CR*, v. 4, pp. 178-80, 419, 576-7; v. 23, p. 117).

Emission #6 printed $52,500£_{NC}$, of which $40,000£_{NC}$ was to be swapped one-for-one for bills currently outstanding from emission #5. The swapped amount corroborates that the amount in circulation at the end of 1734 was $40,000£_{NC}$. This swapped portion of emission #6 was to be considered as loaned out at 6 percent interest per annum for 10 years (to 1745). Any principal paid in before 1745 would be re-loaned at 6 percent per annum. The assembly ordered that all emission #5 bills were to be swapped for emission #6 bills by February 24, 1739. On February 27, 1739, the treasurer's report to the assembly indicated that they had $37,880£_{NC}$ in old bills in their hands that had already been or were in the process of being swapped. They also indicated that they had $3,300£_{NC}$ new bills in their hands to complete the required bill swap, as not all claims had been yet paid. The assembly ordered the swapped bills burned (*CR*, v. 4, pp. 382-411). These amounts corroborate that approximately $40,000£_{NC}$ bills were outstanding at the end of 1734.

The interest earned by the government would be $2,400£_{NC}$ per year, which is the amount assumed to be earned from 1735 through 1740, after which loan principal started to be removed from circulation. Of the $40,000£_{NC}$ swapped bills, $28,000£_{NC}$ were emission #5 loaned bills that the previously Governor had stopped principal and interest collection on. The other $12,000£_{NC}$ bills swapped had been emission #3 bills swapped for emission #4 bills that were then swapped for emission #5 bills, plus the $2,000£_{NC}$ in emission #4 bills thought lost that had reappeared in

1735. This 12,000£$_{NC}$ were not initially emitted on loan, but were bills spent by the government to cover debts. Holders of these swapped bills in 1735 were forced to now accept them as loaned sums upon which they would owe annual interest as well as principal repayment.

Suppose you sold the government some war materials and were paid in 1714 with emission #3 bills. If you just held these bills waiting for the government to redeem them via you fulfilling your government tax obligation, then you would be disappointed. The bills you received in 1714 would be swapped in 1722 for emission #4 bills that would then be swapped in 1730 for emission #5 bills that would then be swapped in 1735 for emission #6 bills that you now owed to the government as loan principal plus interest rather than as a claim against fulfilling your government tax obligations. You just got confiscated plus some.

The rest of emission #6 not swapped for old bills, i.e. 12,500£$_{NC}$, were new spending by the assembly, with 2,500£$_{NC}$ used to cover debts of the province still outstanding and 10,000£$_{NC}$ as a grant to the King to cover military expenses. A five shilling poll tax and a liquor duty were implemented for five years (to 1740) to redeem and remove these sums from circulation. In January 1740, the report on the state of paper money said that the amount of bills still outstanding was 50,000£$_{NC}$ (*CR*, v. 4, p. 419). Starting with 40,000£$_{NC}$ in circulation at the end of 1734, adding 12,500£$_{NC}$ new bills to this total in 1735, and then assuming that 500£$_{NC}$ was redeemed and removed from circulation each year via taxes from 1735 through 1739, yields 50,000£$_{NC}$ left in circulation at the end of 1739, see Table 1.

The initial taxes to redeem the 12,500£$_{NC}$ portion of emission #6 lapsed at the end of 1739. In 1740, and again in 1745, the assembly added a one shilling poll tax, the later to run for eight years, to redeem bills. Taxes, however, could be paid in rated commodities and not solely in bills. In 1740, the assembly also ordered that any paid-in loan principal no longer be re-loaned

out (*CR*, v. 4, pp. 514, 558, 569-71; v. 25, pp. 234-5). In 1744 and 1745, numerous additional

redemption tax schemes were proposed and debated, but nothing was enacted before 1748 (*CR*,

v. 4, pp. 738-9, 746-9, 773-81).

The amount of bills redeemed between 1740 and 1748, and thus the amount left in public

circulation, is estimated using the amount reported as redeemed and burned in June of 1746. The

treasury account recorded in the minutes of the Lower House of the assembly reported that in

late June of 1746 an accumulated total from 1740 to 1746 of 3,543£$_{NC}$ had been paid in as taxes

that had been collected and delivered to the treasury by the local sheriffs, and a total of 689£$_{NC}$ of

loan principal had been paid into the treasury. The assembly ordered these bills burned (*CR*, v. 4,

pp. 832-3). Prorating these sums back to 1740 yields an average of 506£$_{NC}$ bills redeemed per

year via tax payments, and 98£$_{NC}$ or 99£$_{NC}$ bills redeemed on average per year as paid-in loan

principal from 1740 through 1746. The same amounts are assumed to have been redeemed in

1747 and 1748. As such, for 1740 through 1748 yearly redemptions were 604£$_{NC}$ or 605£$_{NC}$.

Thus, by mid-1748, 44,560£$_{NC}$ bills were left in circulation. It is this sum that would be

restructured and partially defaulted on by emission #7, i.e. the paper money act of 1748.

b. The 1748 Restructuring of North Carolina's Paper Money: Emission #7

On April 4, 1748 the assembly passed the paper money act authorizing emission #7. This

act would restructure North Carolina's paper money system. From emission #7 through the rest

of the colonial period, all bills authorized and emitted by North Carolina would have a face value

at redemption of 1.33£$_{NC}$ = 1£$_S$ rather than 1.5£$_{NC}$ = 1£$_S$ that was in effect pre-1748. The

assembly had finally switched to Queen Anne's 1704 Proclamation value, referred to in the

colonies as proclamation money. From 1748 on, the assembly would also require more regularly

recorded summaries of treasury accounts on paper money, including announcements of the day,

time, and location for annual or semi-annual public burnings of specified amounts of redeemed bills. Finally, the act also formally, for the first time, partially defaulted on prior bills that were currently outstanding. It required that these bills be swapped for new emission #7 bills at a discount of 7.5£$_{NC}$ in pre-1748 bills = 1£$_{NC}$ in 1748 bills, or 10£$_{NC}$ in pre-1748 bills = 1£$_S$ (*CR*, v. 23, pp. 292-6; Newman, 2008, p. 316). As such, the 44,560£$_{NC}$ outstanding in early 1748 would be swapped for 5,941£$_{NC}$ emission #7 bills beginning in mid-1748.

The old pre-1748 bills were swapped for new emission #7 bills slowly through 1756. The treasury reports recorded in the minutes of the Lower House of the assembly are not easy to follow. While some old bills were recorded as swapped outright for new bills, many old bills were recorded as used to pay current tax obligations with the treasurer swapping the old bills paid in at that point for new bills and then recording the new bills as redeemed. Whether the sums recorded were expressed in new or old bill value is not easily discerned. Both the old bills swapped and the new bills recorded as satisfying the tax obligation were removed from circulation and burned. As best as we could reconstruct, the total sum of old bills swapped for new emission #7 bills from 1748 through 1756, when the last swap was recorded, was 44,129£$_{NC}$. This evidence is consistent with, and so corroborates, the estimated 44,560£$_{NC}$ bills in circulation in mid-1748 as reported in Table 1. A bill loss rate of 1 percent can easily account for the 431£$_{NC}$ difference between the 44,560£$_{NC}$ estimated as eligible to be swapped and the estimated 44,129£$_{NC}$ actually recorded as swapped.

The 1748 paper money act authorized printing 21,350£$_{NC}$ in proclamation value. With 5,941£$_{NC}$ slated to be swapped for old bills, that left 15,409£$_{NC}$ as a net new emission that the assembly could directly spend. The act dedicated 6,000£$_{NC}$ toward building forts. Another 500£$_{NC}$ was to be paid to the commissioners who executed the act. Whether this was to be paid to

each of four commissioners or divided among the four is unclear. The remainder, between 7,409£$_{NC}$ and 8,909£$_{NC}$, was to be used to discharge the debts and defray the contingent charges of the government. Of the 15,409£$_{NC}$ net new emission in 1748, 4,000£$_{NC}$ sat idle in the treasury until March 30, 1753 when the assembly ordered it spent on fort construction. Thus, the amount in circulation at the end of 1748 was 17,350£$_{NC}$ in new-bill face value, 15,409£$_{NC}$ − 4,000£$_{NC}$ + 5,941£$_{NC}$ in old bills expressed in new-bill value. In 1753, the 4,000£$_{NC}$ is added back in to the amount in circulation. The 1748 act also ordered foreclosure on delinquent loans from emission #6, and repealed all prior taxes slated to redeem bills from circulation. The act then instituted a one shilling annual poll tax to be paid in bills, or in gold and silver at proclamation value equivalence, for as long as it took to redeem all the bills of emission #7 (*CR*, v. 5, p. 58; v. 23, pp. 292-9).

c. 1748 through 1774

From 1748 through 1774, North Carolina authorized 12 emissions of paper money, emissions #7 through #18 in Table 1, totaling 208,056£$_{NC}$. This total is the amount authorized to be printed, of which some were designated for one-for-one swaps with existing bills already in circulation or were bills never released out of the treasury before being destroyed. The resulting net new emissions put into public circulation were 197,734£$_{NC}$. All 12 emissions had a face value at redemption of 1.33£$_{NC}$ = 1£$_{S}$, namely proclamation value.

Emissions #7, #8, #11, #12, #13, #14, #15, and #16 were made a legal tender. Emissions #9, #10, #17, and #18 were not made a legal tender. Emissions #17 and #18 came after the British Parliament passed the 1764 Currency Act (4 Geo III, c. 34) banning legal tender paper money in the colonies. Emissions #9 and #10 were one-year notes that paid 6 percent interest, and so giving them legal tender status may not have been considered necessary to support their

function and value. Emissions #9, #10, #11, #12, and #13 paid 6 percent annual interest. These five emissions were to circulate for only 1 to 1.5 years each before being redeemed—emission #13 for 2.5 years. The other emissions did not pay interest and had longer circulation lives before being redeemed. All 12 emissions were printed and not handwritten (Table 1; Newman, 2008, pp. 316-20). The flow of spending emissions into public circulation and the amounts of bills redeemed and removed from circulation each year can be reconstructed from the minutes of the Lower House of the assembly, which included summaries of the treasurers' reports. Unless otherwise documented, emissions are assumed to go into circulation in the year authorized, or in the following year if the authorization was late in the year.

Emission #7 was discussed above, with 11,409£$_{NC}$ net new bills put into circulation in 1748, and 4,000£$_{NC}$ in 1753. The assembly passed the act authorizing emission #8 on March 9, 1754. It authorized 40,000£$_{NC}$, though the denomination structure only sums to 39,650£$_{NC}$. This was the first of several paper money acts to fund North Carolina's participation in the Seven Years War. The 1754 act also continued the one shilling poll tax until all bills outstanding were redeemed and added four pence per gallon liquor duty to this ongoing redemption tax. The commissioners who executed the act received 800£$_{NC}$, and the treasurers receive 1 percent of the bills handled as payment. The assembly reported that 1,000£$_{NC}$ was not spent out of the treasury until so ordered in 1756. The rest is assumed to have gone into circulation in 1754 (*CR*, v. 8, p. 213; v. 23, pp. 392-8, 331-3; Ekirch, 1981, p. 154).

Emissions #9 was enacted on September 13, 1756. It authorized 3,400£$_{NC}$ to be printed and spent on western fort construction. The bills were to be redeemed in one year and paid 6 percent annual interest. A two shilling poll tax and a two pence per gallon liquor duty were imposed for 1757 to redeem these bills. Any excess taxes collected would go to the support of

government. On November 29, 1757, the treasury reported that 61£$_{NC}$ of this emission were never emitted and so were then burned (*CR*, v. 5, pp. 898-900; v. 25, pp. 331-3). Thus, only 3,339£$_{NC}$ from emission #9 went into circulation.

Emissions #10 and #11 were enacted on May 28, 1757 and November 21, 1757, respectively. Emission #10 authorized 5,306£$_{NC}$ to be printed and spent on military assistance to South Carolina. These bills were to be redeemed by September 29, 1758 and paid 6 percent annual interest. A 4.5 shilling poll tax for 1758 and a 7.5 shilling tax on all law suits for 1758 and 1759 were enacted to redeem these bills. Any excess taxes collected would go to the support of government.

Emission #11 authorized 9,500£$_{NC}$ to be printed with 7,000£$_{NC}$ going to cover military expenses and 2,500£$_{NC}$ to pay off government debts. These bills were to be redeemed by December 10, 1758 and paid 6 percent annual interest. A 6.5 shilling poll tax for 1758 was enacted to redeem these bills. Any excess taxes collected would go to the support of government. On December 22, 1758, the treasury reported that 3,815£$_{NC}$ of emission #10 and #11 bills had never been emitted and so were then burned (*CR*, v. 5, p. 1,088; v. 25, pp. 345-8, 350-2). Thus, only 10,991£$_{NC}$ from emissions #10 and #11 went into circulation.

Emission #12 was enacted on May 4, 1758. It authorized 7,000£$_{NC}$ to be printed to cover military expenses. These bills were to be redeemed by December 12, 1759 and paid 6 percent annual interest. A 4.5 shilling poll tax for 1759 and a 2 pence per gallon liquor duty for four years were enacted to redeem these bills. Any excess taxes collected would go to the support of government. The treasurers received 2 percent of all bills handled as payment. Given no evidence to the contrary, all 7,000£$_{NC}$ are assumed to have gone into circulation in 1758 (*CR*, v. 25, pp. 361-4).

Emissions #13 and #14 were enacted on December 22, 1758—going into operation in 1759—and in November 1759, respectively. Emission #13 authorized 4,000£$_{NC}$ to be printed to cover military expenses. These bills were to be redeemed by June 10, 1761 and paid 6 percent annual interest. A 3.08 shilling poll tax for 1760 was enacted to redeem these bills. Any excess taxes collected would go to the support of government (*CR*, v. 25, pp. 370-2). All 4,000£$_{NC}$ are assumed to have gone into circulation in 1759.

Emission #14 authorized 5,500£$_{NC}$ in bills redeemed from emissions #9, #10, and #11 that had not yet been burned to be re-spent to cover military expenses. The bills were to be written on by the treasurers to indicate that they were so recycled, and these bills so indicated as recycled were now due to be redeemed by December 10, 1763. They also no longer paid interest. A 1.67 shilling poll tax for three years, namely for 1761, 1762, and 1763, was enacted to re-redeem these bills. On January 9, 1760, the treasurer's report indicated that 4,995£$_{NC}$ bills redeemed but not yet burned from emissions #9, #10, and #11 had been used for this purpose (*CR*, v. 6, pp. 197-9, 1,310; v. 25, pp. 394-5). Thus, for 1759, 8,995£$_{NC}$ bills from emissions #13 and #14 are assumed to have gone into circulation (4,000£$_{NC}$ + 4,995£$_{NC}$).

Emission #15 was enacted on July 14, 1760. It authorized 12,000£$_{NC}$ to be printed, with 3,000£$_{NC}$ to be used to pay off government debts and 9,000£$_{NC}$ to be spent on prosecuting Indian wars. A one shilling yearly poll tax was enacted to start on January 1763 and continue until all the bills were redeemed (*CR*, v. 25, pp. 516-8). With no evidence to the contrary, all 12,000£$_{NC}$ are assumed to have gone into circulation in 1760.

Emission #16 was enacted on April 23, 1761. It authorized 20,000£$_{NC}$ to be printed to pay for military assistance to South Carolina and Virginia. A two shilling yearly poll tax was enacted to start on January 1764 and continue until all the bills were redeemed (*CR*, v. 23, pp. 539-41; v.

25, pp. 457-8). With no evidence to the contrary, all 20,000£$_{NC}$ are assumed to have gone into circulation in 1761.

Emission #17 was enacted on December 5, 1768. It likely did not go into operation until 1769. It authorized 20,000£$_{NC}$ to be printed to cover military expenses against the regulator insurgents, expenses to survey border lines with the Indians, and to pay off government debts. A two shilling yearly poll tax starting in 1771 was to continue until all the bills were redeemed. This tax could also be paid in specie or rated commodities (*CR*, v. 23, pp. 781-3). With no evidence to the contrary, all 20,000£$_{NC}$ are assumed to have gone into circulation in 1769.

Emission #18 was enacted in December of 1771 and is assumed to have gone into operation in 1772. It authorized 60,000£$_{NC}$ to be printed to cover military expenses against the regulator insurgents. A two shilling yearly poll tax starting in 1772 and running for 10 years was enacted to redeem the bills. The tax would be discontinued once all the bills had been redeemed. The treasurers received 1,500£$_{NC}$ for handling this emission (*CR*, v. 23, pp. 850-1). With no evidence to the contrary, all 60,000£$_{NC}$ are assumed to have gone into circulation in 1772.

For the years 1748 through 1774, the amount of bills annually redeemed and removed from public circulation, and subsequently burned, can be taken directly from summaries of the treasury reports recorded in the minutes of the Lower House of the assembly (*CR*, v. 4, pp. 997-9, 1,022, 1,073, 1,293-5, 1,341-2; v. 5, pp. 73-5, 210-11, 307-9, 556-7, 726-7, 898-900, 1,088; v. 6, pp. 197-9, 378, 435, 504-5, 693-4, 825-6, 829, 949-50, 1,205-8, 1,282-5; v. 7, pp. 393, 649; v. 8, pp. 453-4; v. 9, pp. 510-3, 549-50, 576-7). If the accounts were recorded early in the year, then it is assumed the bills were removed from circulation in the prior year. If the accounts were recorded later in the year, it is assumed the bills were removed from circulation in that year. Forensic accounting techniques are used to sort out these records with close attention paid to

coherence and consistency across the records, along with attention to value interpretation and referenced sources for the numbers stated.

The reports sometimes indicate which emission's bills had been redeemed and were slated to be burned, but more often they combined emissions together into one allotment redeemed and slated to be burned (*CR*, v. 7, p. 393; v. 9, p. 231). We determine whether values were expressed in old pre-1748 bills or in new post-1747 bills. We determine whether old bills were simply swapped for new bills with the old bills burned, or swapped for new bills with the new bills then paid in as taxes (redeemed) and so with both the old and new bills burned. We determine how to include the interest paid on emissions #9, #10, #11, #12, and #13 in redemptions. Lastly, either no treasurer's reports, or no minutes at all, were records for the Lower House of the assembly in 1763, 1765, 1768, 1769, 1773, and 1774. In these years, we assumed no bills were redeemed, or if they were redeemed they were held and reported in future years. No effort was made to determine the latter possibility and so in years with no reports, it is assumed no redemptions took place. The lack of records in some of these years is due to the disruptions caused by Indian wars, tax revolt (regulator) insurrections, and assembly disputes with the governor. These disruptions may have delayed tax collection. For example, the assembly ordered a temporary stop to tax collection in 1773 and 1774 (*CR*, v. 9, pp. 744-5, 874-953, 1,204; Ekirch, 1981, pp. 161-211). On taxes, their collection and arrears, in colonial North Carolina, see William Boyd (1926, 1927); D. L. Corbitt (1928); Marvin Kay (1965, 1969); Coralie Parker (1928); and Alvin Rabushka (2008, pp. 542-5, 688-97, 831-3).

How the government paid and accounted for the interest due on the bills from emissions #9 through #13 is not clear. Our best guess from reading the totality of the treasury accounts in the minutes of the Lower House of the assembly is that money was not actually paid as interest

to bill holders when the interest was due. Instead, the interest was rolled into part of the tax obligation due. It functioned like a discount off the bill holder's tax obligation. For illustration, suppose I have a 1.06£$_{NC}$ tax obligation due. I give the sheriff a 1£$_{NC}$ bill that has 6 percent interest due on it. My tax obligation is counted as being paid in full. The treasurer credits the 1.06£$_{NC}$ amount to the public account by taking the 1£$_{NC}$ bill paid in and then adds 0.06£$_{NC}$ in bills to it from the treasury. The 1.06£$_{NC}$ in bills is then burned.

A 1770 document reports the paper money emitted from 1748 through 1761 and redeemed from April 1749 to January 1769 (*CR*, v. 8, pp. 211-5). This is the source for the numbers reported in Brock (1975, pp, 436-7) and the *Historical Statistics* (Carter, *et al*, 2006, v. 5, pp. 692-5), which were, until now, the only continuous annual estimates of the amount of bills in circulation in North Carolina (see Appendix Table 1). This document has numerous errors. The emission numbers are the raw authorized amounts unadjusted for bills that were never emitted into public circulation. The redemption numbers suffer from errors of omission, error of placement, and error of correct value interpretation. While close to the estimates here in Table 1, they are not coherent or consistent with the entire body of treasury reports in the minutes of the Lower House of the assembly. Table 1 corrects and updates the data in the 1770 report.

For example, the 1770 report lists only 189.66£$_{NC}$ redeemed on April 14, 1749, whereas the treasury statements (there are two treasurers) in the minutes of the Lower House of the assembly report that 189.66£$_{NC}$ were merely part of several larger sums redeemed. While difficult to sort out, it appears that Treasurer Moseley reported 712.63£$_{NC}$ new (1748) bills paid in and burned. This sum was comprised of 1,422.15£$_{NC}$ old (pre-1748) bills paid in on the sinking fund that were swapped for 189.66£$_{NC}$ new bills, and 1,261.75£$_{NC}$ old bills paid in on loan principal that were swapped for 168.23£$_{NC}$ new bills. Thus, 354.74£$_{NC}$ of the 712.63£$_{NC}$

total must have been new bills directly paid in as taxes to Moseley. All the old and new bills mentioned were burned. The 189.66£$_{NC}$ amount is the source of the erroneous number listed in the 1770 report as the only amount redeemed in 1749.

This does not complete the 1749 accounting. The treasury statements in the minutes of the Lower House of the assembly for 1749 also included Treasurer Barker's report. He had received 2,290.64£$_{NC}$ in old bills paid in on loan principal. This sum converts to 305.42£$_{NC}$ in new bills when divided by the 7.5 partial default rate. The old bills would have been swapped for these new bills at the point of redemption with both old and new bills then burned. The treasury statements also indicate that 1,252.28£$_{NC}$ old bills were brought in and simply swapped for new bills—not as part of any tax or loan payment obligation. These old bills we burned as well.

To get the number reported in Table 1 as redeemed in 1749, namely 1,532£$_{NC}$, we moved the sum reported in early 1750 as redeemed, namely 513.60£$_{NC}$ in new bills, to 1749 to capture when they were likely taken out of public circulation given the tenor of the 1750 treasury statement (*CR*, v. 4, pp. 997-9, 1,022, 1,073). Thus, 712.63£$_{NC}$ + 305.42£$_{NC}$ + 513.60£$_{NC}$ = 1,532£$_{NC}$ redeemed and removed from public circulation in 1749 as reported in Table 1. This example for 1749 illustrates the forensic accounting reconstruction used to correct the rest of the numbers in the 1770 report.

The treasurers and assemblymen sometimes distinguished the emissions by different names, differences followed by subsequent scholars (Brock, 1975, pp. 436-7; *CR*, v. 8, pp. 213-5; Ernst, 1973, p. 371). Emissions #7, #8, #15, and #16 were often referred to as bills of credit or proclamation bills. Emissions #9, #10, #11, #12, #13, and #14 were often referred to as treasury notes or interest notes, and emissions #17 and #18 were often referred to as debentures. These distinctions are largely artificial (*CR*, v. 7, p. 393; v. 8, pp. 211-5; v. 9, p. 231). All bills

outstanding were fungible with regards to paying obligations to the government. The distinctions appear to simply identify post-1764 Currency Act bills, emissions #17 and #18, as debentures, even though they functioned just like bills of credit from pre-1764. This was apparently done to disguise the fact that the post-1764 bills were the same as the pre-1764 bills that were out of favor with Parliament. The term 'treasury note' appears to be used simply to identify bills of credit that had short maturity dates and that paid annual interest, as opposed to bills of credit that had longer maturity dates and paid no annual interest. In functionality, they were all bearer bonds with some type of maturity structure, either zero-coupon bonds or interest-bearing bonds, but bonds nonetheless.

d. Comparison to Prior Estimates in the Literature

Table 1 provides a substantial addition to and improvement on the data characterizing North Carolina's paper money regime compared with what is currently available in literature. The prior literature did not distinguish between authorized emissions to be printed and net new emissions put into public circulation, nor fully identify yearly redemptions and removals from public circulation, nor calculate interest earnings due to the government from loaning out paper money, nor provide a continuous annual series of the amount of paper money outstanding and in circulation covering the entire 63 years from 1712 through 1774. The prior literature only tabulated a continuous annual series of North Carolina paper money in circulation for the years 1748 through 1768. Amounts in circulation in other years can be extracted from the text of several authors, but these authors did not present their numbers in tabular form.

Appendix Table 1 presents the amounts in public circulation as presented, or derived from the text, in the prior literature, along with the numbers from Table 1 here for easy comparison. The prior estimates are incomplete. The most complete are by Leslie Brock (1975)

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who presents data for 67 percent of the years. The *Historical Statistics* (Carter, *et al*, 2006) presents data for only 35 percent of the years.

Considering only positive numbers reported, the prior literature systematically overstates the annual amounts in circulation by an average of 15 to 23 percent. The difference between the data in Table 1 and that presented in the prior literature is due to prior scholars reporting numbers they happened to run across in the records without analysis, interpretation, or being thorough in their accounting. As such, they often missed redemptions and removal, missed that some authorized amounts were not emitted, missed that some new bills were merely being swapped for old bills, and did not systematically identify the year of placement. The next section provides the denominational structure of North Carolina's paper money emissions, which is also not in the prior literature.

e. Denominational Structure

Denominational structure comprises the monetary sizes of the units to be emitted, the spacing between these units, and the number of each unit so designated to be printed. The denominational structure of colonial paper monies has been used to infer that colonial legislatures intentionally created small denominational units of paper monies to facilitate trade, aid in making change, and ease the paying of taxes (Grubb, 2015, 2017; Hanson, 1979, 1980a, 1980b). The denominational structure of colonial North Carolina's paper money has not been studied before. That is corrected here.

The denominational structure of 8 of the 18 emissions, namely emissions #3, #4, #7, #8, #12, #15, #16, and #18, are presented in Appendix Table 3 and 4. These are the emissions where the emission acts passed by the assembly have survived, and where the assembly explicitly directed in the act what the denominational structure would be. These 8 emission represent 56

percent of the total face-value amount of all paper money authorized between 1712 and 1774—

77 percent for the years 1748 to 1774.

The acts for emissions #1, #2, #5, and #6 have not survived. The act for emission #9 only

gives a denomination range, namely no bills larger than 50£$_{NC}$ and no bills smaller than 5£$_{NC}$.

The act for emission #10 only gives a denominational listing, namely bills to be denominated in

0.5£$_{NC}$, 1£$_{NC}$, 2£$_{NC}$, and 5£$_{NC}$ units, without indicating how many units should be printed in each

denomination listed. The act for emission #11 was silent on denominational structure. The act for

emission #13 only gives a denomination range, namely bills from 0.5£$_{NC}$ to 2£$_{NC}$ and no higher.

Emission #14 was recycled bills from previous emissions. The denomination of the bills selected

for reuse is unknown. The act for emission #17 left denominational choices up to the discretion

of the treasurers to be what they thought was most convenient (*CR*, v. 23, p. 781; v. 25, pp. 332,

347, 350-2, 371).

Table 2 summaries the denominational structures presented in Appendix Table 3 and 4 by

focusing on the relative amount of units emitted in face value above and below particular values.

The values are converted to 2012 U.S. dollar equivalence to give readers a sense of their value

size and hence ease of use as a medium of exchange. Table 2 also compares this denominational

structure of North Carolina bills with that of Virginia, Pennsylvania, New Jersey, and New York

bills of credits emitted between 1755 and 1764.

In general, North Carolina bills were issued in relatively small denominations, small

enough to make paying yearly tax assessments easy with said bills, and small enough to make it

an easy domestic circulating medium of exchange in terms of being able to make change with

said bills. This finding is similar to what John Hanson found for other colonies (Hanson, 1979,

1980a, 1980b), except that it was even more the case for North Carolina. North Carolina bills

Table 2　　　*Percentage Distribution of Denominational Sizes by Number of Units Emitted*

| | Measured in 2012 U.S. Dollar Equivalents | | | | | | |
| *Years* | Percentage Below | | | | | Percentage Above | |
Colony	$5	$10	$15	$20		$50	$100
1714-1729							
North Carolina Paper Money	4.56	9.12	16.97	16.97		1.37	0.00
1748-1774							
North Carolina Paper Money	25.19	41.30	57.28	58.56		27.18	17.39
1758 emission only							
North Carolina Paper Money	0.00	0.00	0.00	0.00		100.00	71.43
1755-1764 (Seven Years War)							
Virginia Paper Money	0.00	31.20	48.00	48.00		35.30	22.40
Pennsylvania Paper Money	26.80	38.80	50.20	50.20		36.10	14.20
New Jersey Paper Money	0.00	41.00	41.00	50.30		53.00	27.20
New York Paper Money	0.00	0.00	0.00	0.00		95.70	91.60

Sources: Appendix Table 3; Appendix Table 4; Grubb (2015, 2017).

were smaller than those of other colonies, see Table 2. Between 1748 and 1774 over 25 percent were under 5, and over 66 percent were under 10, U.S. dollar equivalence in 2012. Between 1714 and 1729 over 30 percent were under 15 U.S. dollars equivalence in 2012. The assembly recognized that denomination size mattered to the ease of usage as a medium of exchange. This can be seen in the reduction in denomination size between emissions #3 and #4, see Appendix Table 4. One of the reasons given by the assembly in 1722 for swapping smaller emission #4 bills for emission #3 bills was that "…being for such large Sums [emission #3 bills] are not so Usefull…" (*CR*, v. 25, p. 173).

The importance of denominational size can also be seen relative to the size of the taxes

imposed. Table 3 reports the annual taxes imposed by paper money acts from 1748 through 1774. All households faced the poll tax—the main tax imposed. Typically households faced between a 0.05£$_{NC}$ and 0.20£$_{NC}$ yearly poll tax per poll. Over 40 percent of the bills were in denominations at or less than the 0.05£$_{NC}$ poll tax, with over 60 percent in denominations at or less than the 0.20£$_{NC}$ poll tax. Paying taxes were easy using North Carolina bills. Making change using some other money or goods was unnecessary, see Appendix Table 3. For discussions of colonial North Carolina taxes, their collection and arrears, see Boyd (1926, 1927); Corbitt (1928); Kay (1965, 1969); Parker (1928); and Rabushka (2008, pp. 542-5, 688-97, 831-3).

North Carolina also had few very large bills compared with other colonies. There were almost no bill over 50 U.S. dollars in 2012 equivalence in 1714 through 1729, and relatively fewer such bills in 1748 through 1774 than in other colonies. The exception appears to be some of the one-year maturity bills paying 6 percent interest emitted between 1756 and 1759. Only the denominational structure for emission #12 was set down, see Appendix Table 3. These were large bills, with all being above 50, and over 71 percent above 100, U.S. dollar equivalence in 2012, see Table 3. The denominational range restrictions imposed on emission #9, but not those imposed on emissions #10 and #13, yield the same conclusion.

The emission of only 'big' money would be consistent with the assembly trying to restrict some of the short-term interest-bearing bills issued at the start of the Seven Years War from having an effect, in a quantity theoretic sense, on prices. If these bills lacked usefulness as a medium of exchange because they were too big, then receivers of the bills would likely just hold them for redemption the following year. This behavior would dampen the velocity of circulation and so, in a quantity theoretic sense, reduce the emission's impact on prices.

Despite the relatively small denominational size of North Carolina paper pounds, North

Table 3   *Taxes Imposed by Paper Money Act to Redeem Paper Money, 1748-1774*

Tax Year	Poll Tax in NC Shillings	Liquor Duty in NC Pence per Gallon	Tax Year	Poll Tax in NC Shillings	Liquor Duty in NC Pence per Gallon
1748	1.00	0	1762	2.67	4
1749	1.00	0	1763	3.67	4
1750	1.00	0	1764	4.00	4
1751	1.00	0	1765	4.00	4
1752	1.00	0	1766	4.00	4
1753	1.00	0	1767	4.00	4
1754	1.00	4	1768	4.00	4
1755	1.00	4	1769	1.00	4
1756	1.00	4	1770	1.00	4
1757	3.00	6	1771	3.00	4
1758	12.00	6	1772	4.00	0
1759	5.50	6	1773	4.00	0
1760	4.08	6	1774	4.00	0
1761	2.67	6			

Sources: See the source notes to Table 1.
Notes: All taxes are in North Carolina pounds unit of account at face value. A 7.5 shilling tax on all law suits filed was also imposed in 1758 and 1759. Cumulative poll taxes across emission acts are based on estimates of how long each act's poll tax was designated to last, with some lasting for as long as was needed to redeem all the bills. The 1774 poll tax was to continue annually through 1781 or until all bills were redeemed.

Carolina remained an under monetized economy. Complaints by North Carolinians that there was not enough paper money or other monies to execute domestic transactions and pay local taxes were ubiquitous throughout the period. To make up for the scarcity of money, the assembly made rated commodities a legal tender and acceptable for paying taxes from 1712 to 1748 and again in 1754, 1764, and 1770 (Bullock, 1900, pp. 153, 157, 182; Brock, 1975, pp. 429-31; *CR*, v. 4, pp. 569-71; v. 25, p. 234). In periods, when rated commodities were not a legal tender, North Carolinians agitated to reinstate them as legal tender.

As examples, in 1731, the scarcity of specie was commented on in the assembly, with a claim that not 1/20th was available for what was needed to pay the King's quit rents (*CR*, v. 3, p.

294). In 1754, the Governor expressed that there was a "want of bullion and coin" in the province (*CR*, v. 5, pp. 234-5). He then advocated for a permanent fund of credit based on a land-bank loan emission of paper money. In 1757, the assembly received a petition for relief due to the "great want of currency" which included a request that more paper money be emitted (*CR*, v. 5, p. 851). In 1764, 1765, and 1766, the assembly received motions and considered acts to allow taxes and judgments to be paid in rated commodities because of a want of currency (*CR*, v. 6, pp. 1,274, 1,282; v. 7, pp. 61-88, 394). In 1767, the Governor said the colony was in distress for want of a circulating currency (*CR*, v. 7, p. 572). In 1768, concern over the scarcity of money was mentioned in the assembly (*CR*, v. 7, p. 928). The "great scarcity of money" was mentioned in the act authorizing emission #17 in December of 1768 (*CR*, v. 23, p. 781). In 1771, the assembly noted the lack of enough specie to serve as a circulating medium of exchange (*CR*, v. 9, p. 142). These are only statements gleaned from the minutes of the Lower House of the assembly. Other scholars have commented on this general state of under monetization for executing domestic transactions in colonial North Carolina (Bullock, 1900, pp. 125-8, 143-4, 153, 161, 167-9; Brock, 1975, pp. 106-13, 429-31, 438-9, 443-5; Ernst, 1973, pp. 199-206).

The Value Decomposition of North Carolina's Paper Money

a. A Decomposition Model for Inside Monies

We apply the Grubb (2016a, 2016b, 2016c) decomposition approach to evaluate North Carolina's paper money performance. The observable market exchange value (*MEV*) of this money is decomposed into its component parts, see equation (1). *MEV* equals its expected real-asset present value (*APV - RD*), i.e. its value as just another non-money barter asset, plus its transaction premium (*TP*) that measures its pure "moneyness" value, i.e. its extra value as a transacting medium of exchange. Positive values for *TP* measure the willingness of the public to

pay a premium above the bills' expected real-asset present value, because the bills served as a more convenient transacting medium than the next best barter alternative. The expected real-asset present value is further separated into its pure time-discounting component (*APV*), and its default risk component (*RD*). All components in equation (1) are calculated as a percentage of face value in order to be in a comparable metric.

(1) $MEV_t \equiv (APV - RD)_t + TP_t$

If $MEV \approx APV$, with $(TP - RD) \approx 0$, then North Carolina's paper money is just a low-risk barter asset with no value as 'money' beyond that of the next best barter alternative. If $MEV \approx (APV - RD)$, with $TP \approx 0$, then North Carolina's paper money is just a risky barter asset. If $MEV \approx TP$, with $(APV - RD) \approx 0$, then North Carolina's paper money is a pure fiat currency. Colonial paper monies likely operated somewhere between these extremes. If the long-run development of a society involves the transition from commodity to fiat monies, measuring where that society's money is on this evolutionary spectrum informs us about that society's development and state of its monetary institutions (Redish, 1993). The decomposition in equation (1) can be used to disentangle the extent that North Carolina's paper money functioned as a commodity or real-asset medium of exchange $((APV - RD) / MEV)$ versus as a fiat currency (TP / MEV).

Legislatures controlled *APV* and *RD*. They controlled *APV* by choosing the redemption structure and they influenced *RD* by how they followed through on that redemption structure. *TP* was determined by the public through the structure of the economy in terms of how the public evaluated and used alternative media of exchange to execute domestic transactions.

Empirical measurement is the difficult part of applying this approach. While one can measure *MEV* using data on exchange rates to an outside money, *RD* and *TP* cannot be independently measured. In addition, measuring *APV* entails constructing a counterfactual value

of the bills, namely their value when not used as money and when no risk of default is expected. Given that the bills are being used as money, constructing this counterfactual and disentangling it from *MEV* requires attention.

Fortunately, North Carolina's bills were structured as zero-coupon bonds, except for the emissions in 1712-1713 and 1756-1759 (emissions #1, #2, #9, #10, #11, #12, and #13) which were structured as interest-bearing bonds (Grubb, 2016*a*; Hutchinson and Rachal, 1962, v. 1, pp. 305-06; Labaree, 1967, v. 11, pp. 13-15; Smith, 1937, pp. 310-12). The bills had legally defined maturities, or loan due dates, when they were paid off, or paid in, at face value in specie equivalents to North Carolina's government. They could be redeemed at face value for tax payment obligations any time after initial emission. Given expected redemption time-paths for loans and tax obligations, payoff values, and an appropriate risk-free time-discount rate, the *APV* of these bills as risk-free non-money tradable bonds can be calculated independent of their *MEV*.

Moving the variables that can be independently measured to the left-hand side, and the variables that cannot be independently measured to the right-hand side, yields equation (2). In terms of proportions, the ratio APV_t/MEV_t shows how much of MEV_t is accounted for by APV_t with the residual share being accounted for by $(TP - RD)_t$. The gap between MEV_t and APV_t, measures the magnitude of $(TP - RD)_t$.

(2) $(MEV_t - APV_t) \equiv (TP - RD)_t$

The possibility that TP_t and RD_t are both greater than zero by large magnitudes at the same time is unlikely. While it is mathematically possible for $(TP - RD)$ to equal 1 percent of *MEV* because $TP = 1$ percent and $RD = 0$ percent, or because $TP = 100$ percent and $RD = 99$ percent, the later possibility is absurd in practice. Behaviorally, *TP* is likely a negative function of *RD*. Thus, as *RD* takes on positive values, *TP* is quickly driven to zero. An asset with a high

default risk is unlikely to possess a transaction premium, i.e. be the preferred medium of exchange, relative to an asset with a low default risk. Thus, we assume that when $(TP - RD)_t > 0$, it is primarily due to $TP_t > 0$; and when $(TP - RD)_t < 0$, it is primarily due to $RD_t > 0$.

b. MEV and APV Data Construction

To apply equation (2), two data sets are required. We compile the market exchange value (*MEV*) of North Carolina's bills between 1713 and 1774, and we calculate the counterfactual expected real-asset present value (*APV*) of North Carolina's bills as non-money low-risk bonds. We use the observed market exchange rates between North Carolina's bills and bills of exchange paying pounds sterling in London to construct *MEV*. These exchange rates are derived from merchant account books and statements by provincial government officials. They are expressed as the face value amount of North Carolina bills needed to buy, in North Carolina, a 1 pound sterling bill of exchange drawn on London (McCusker, 1978, pp. 218-9). The *MEV*, *APV*, and exchange rate data are presented in Table 4.

We adjust these exchange rates to account for the cost of getting a bill of exchange to London and getting it liquidated into specie usable in North Carolina. We estimate that cost to be approximately 7 percent (Grubb, 2016*a*, pp. 179, 202; 2016b, p. 1,222). Thus, the realized par exchange rate of a North Carolina bill is $1.395 \pounds_{NC} = 1 \pounds_S$ compared with the legal par exchange rate of $1.5 \pounds_{NC} = 1 \pounds_S$ from 1712 to 1747, and $1.24 \pounds_{NC} = 1 \pounds_S$ compared with the legal par exchange rate of $1.3333 \pounds_{NC} = 1 \pounds_S$ from 1748 to 1774. *MEV* is calculated by dividing these adjusted numbers by the observed exchange rates. Compared with using the legal par exchange rate, using the realized par rate as the numerator makes *MEV* a smaller percentage of face value. *MEV* measures the spot-market conversion in North Carolina of North Carolina paper pounds into a silver commodity outside money expressed as a percentage of the face value of North Carolina

Table 4 *Observed Market Exchange Values and Calculated Asset Present Values, 1713-1774*

Year	Raw Exchange Rate: 1£$_S$ Bill of Exchange drawn on London = X£$_{NC}$	MEV: Observed Market Exchange Value as a Percentage of Face Value Adjusted for Transaction Costs	APV6: Asset Present Value Discounted at 6 Percent as a Percentage of Face Value	APV8: Asset Present Value Discounted at 8 Percent as a Percentage of Face Value
	X	%	%	%
1713	2.10	66.43	83.82	77.05
1714			51.96	46.21
1715	2.27	61.45	50.54	44.77
1716			48.43	42.52
1717			45.35	38.50
1718			40.86	34.15
1719			40.12	33.25
1720			39.05	32.00
1721			37.66	30.35
1722	5.00	27.90	35.85	28.14
1723	5.00	27.90	33.53	25.31
1724	5.00	27.90	35.62	27.43
1725	5.00	27.90	37.82	29.71
1726	5.00	27.90	40.14	32.17
1727	5.00	27.90	42.63	34.85
1728	5.00	27.90	45.26	37.76
1729	5.00	27.90	48.06	40.90
1730			17.50	14.61
1731	6.25	22.32	14.21	11.17
1732			15.10	12.09
1733			16.03	13.10
1734			17.03	14.20
1735	7.10	19.65	14.87	12.46
1736	6.00	23.25	14.93	12.56
1737	8.50	16.41	14.98	12.71
1738	10.00	13.95	15.02	12.98
1739	10.00	13.95	15.08	12.98
1740	9.77	14.28	15.12	13.13
1741			14.89	13.06
1742			14.75	13.01
1743			14.53	12.90
1744			14.27	12.77
1745	10.00	13.95	13.96	12.64
1746	10.00	13.95	13.61	12.42
1747			13.26	12.24
1748			65.24	56.97
1749			69.26	61.18
1750			70.40	62.86
1751			74.75	68.09
1752			78.38	72.48
1753			79.24	73.48
1754	1.67	74.40	66.65	58.78
1755	1.60	77.50	69.83	62.40
1756	1.80	68.97	72.26	65.40
1757			71.15	64.30
1758			70.86	64.01

1759	1.87	66.37	69.46	62.35
1760	1.92	64.51	67.36	59.83
1761	1.85	67.03	63.33	55.26
1762	2.00	62.00	66.99	59.51
1763	2.00	62.00	66.84	59.10
1764	1.93	64.35	70.98	64.03
1765	1.74	71.30	70.11	62.73
1766			74.43	67.95
1767	1.75	70.82	76.73	70.63
1768	1.80	68.89	78.09	72.17
1769			77.30	71.39
1770			82.07	77.35
1771			82.54	77.83
1772	1.60	77.50	69.99	62.72
1773	1.75	70.86	70.22	62.72
1774	1.75	70.86	74.57	67.95

Notes: £$_S$ = pounds sterling. £$_{NC}$ = North Carolina paper pounds. The raw exchange rates reported here differ from those reported in McCusker (1978, pp. 217-9) in that exchange rates that were not observed market rates were not included. These included rates McCusker reported that were statements of what the legislated par at redemption was rather than what the current market exchange rate was, statements that were lobbying efforts to increase a particular person's salary, hearsay statements by a person in Boston, and statements that could not be found in the sources McCusker cited. See the text for how *APV6* and *APV8* are constructed. For calculation purposes, the bills redeemed post-1774 are estimated to be what would be forecast based on the poll tax enforced in 1774 continuing until all bills were redeemed. For each year from 1775 through 1781, the estimate takes the North Carolina population * 0.20986 = compliant taxables * shillings poll tax / 20 = £$_{NC}$ redemption taxes used to redeem bills each year. See Table 3 for poll taxes and Carter, *et al* (2006, v. 5, p. 651) for population numbers with interpolated values used between decadal benchmarks. The 0.20986 factor comes from actual pre-1774 poll tax revenue yields per capita.

paper pounds. Given uncertainty over the exact transaction cost underlying the adjustment to the legal par rate, an *MEV* within a percentage point of that calculated is possible.

North Carolina's paper money had a bearer-bond quality that required an explicit redemption exercise to extinguish the principal expressed on the bill's face. North Carolina's citizens are assumed to act as if they understood their paper money to be interest-bearing bonds in 1712-1713 and 1756-1759, and zero-coupon bonds in other years, that required time-discounting to ascertain their present values (their *APVs*), and to know how to calculate these values (Labaree, 1967, v. 11, pp. 13-15; Smith, 1937, pp. 310-12). The public is also assumed to know the quantity of bills in circulation (M_t) and the amounts redeemed (RED_t) each year as

shown in Tables 1 and 4.

At a given point in time, bills with different redemption dates would have different *APV*s. The evidence does not fully record what bills from which emissions were redeemed when. Given legal tender laws, bills from any emission currently outstanding could be used to pay any current taxes. For these reasons, we assume that the public responded only to the *expected* redemption of the *average* bill currently outstanding. Because the *MEV* data measure the current market value of the average bill in circulation, and does not distinguish between bills of different emissions, *APV* is calculated to measure the pure time-discounted present value of the average or representative bill currently outstanding. Thus, *MEV* and *APV* are comparable measures.

Equation (3) shows how the expected *APV* of the average bill in circulation is calculated. The amount of North Carolina paper money outstanding in a given year is assumed to be redeemed by all bills actually redeemed in the immediately following years, until the year when that original amount is fully redeemed. These yearly redemption amounts are divided by the initial amount outstanding from the chosen year to assign a yearly weight to its contribution in the redemption process. The time discounts between the initial year and the redemption year are multiplied by the contribution-weights for their respective years. The time-discount-weight values for each year are summed to get the expected present value of a representative bill outstanding for that chosen year. The *APV* calculation is adjusted to account for the interest actually paid on emissions that were designated to pay an interest.

(3) $APV_j = \sum_{t=j}^{N} (RED_t/M_j)e^{-rt}$

Where $r =$ the risk-free time-discount rate or opportunity cost of capital, $M_j =$ the face value amount of North Carolina paper money outstanding in year j, $RED_t =$ the face value

amount of North Carolina bills redeemed and retired from circulation each year, with

RED_N being the amount in the last year N that satisfies:

(4) $\quad \sum_{t=j}^{N} (RED_t/M_j) = 1.$

No time-series of market-generated interest (discount) rates for any class of assets

currently exists for colonial America. Therefore, we use the r considered normal by colonial

contemporaries for assets with relatively low default expectations. This rate is used as a proxy

for what in modern analysis is designated as the risk-free rate. The rate at which North Carolina

loaned bills in 1729 was 6.25 percent. In 1764, Benjamin Franklin stated that the rate for

discounting well-funded legislature-issued zero-coupon bonds was 5 or 6 percent (Labaree,

1967, v. 11, pp. 13-15). The interest rate mentioned most often for the middle colonies in the

second half of the eighteenth century was 6 percent (Grubb, 2016*a*, pp. 163-4). Earlier in the

century, and perhaps during wars, the rate may have been slightly higher. Given uncertainty over

the exact rate, an r of 6 and 8 percent is used, with 6 percent being our best guess. APV_j is not

mechanically linked to M_j. For any given M_j, APV_j can take on any value between 0 and 100

percent of face value because the legislature has unrestricted choice over N and RED_t.

The Compositional Analysis of *MEV*: *MEV* and *APV* through Time

Figure 3 compares the levels of *MEV* and *APV* over time, when *APV* is discounted at 6

and 8 percent. *MEV* could be within a percentage point of that drawn due to measurement error

in the transacting cost of liquidating sterling bills of exchange drawn on London and turning

them into specie usable in North Carolina. While 6 percent is our best-guess discount rate,

uncertainty over that rate means that up to 8 percent could also be used. Considering the range of

possible measurement error in *MEV* and uncertainty over which discount rate to use for *APV*, the
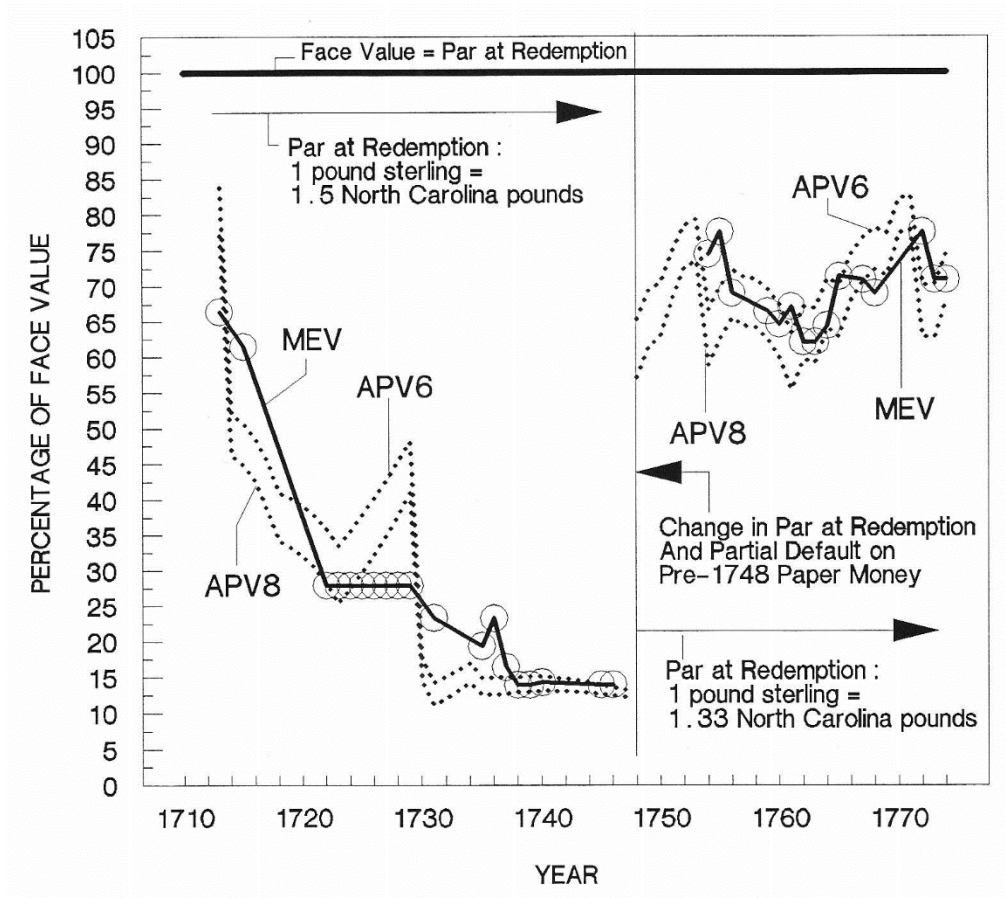
Figure 3.   *North Carolina's MEV versus APV, 1712-1774*

Sources: Table 4.
Notes: Circles indicate exchange rate data for *MEV* with linear interpolated values connecting them.

hypothesis that *MEV* is primarily and predominantly comprised of *APV* cannot be rejected given

the data in Figure 3. Little (*TP - RD*) figures in to *MEV*. North Carolina's bill were not a fiat

currency. They were predominantly barter assets. North Carolina's paper money traded below

face value due to time-discounting, not depreciation. Most writers on colonial paper money have

simply confused time-discounting for depreciation.

Using only the years with *MEV* data over the entire period covered by colonial North

Carolina's paper money regime and the 6 percent discount rate, *APV* > *MEV*, leaving *RD* = 2.9

percent such that *APV - RD = MEV*. When using the 8 percent discount rate, *APV* accounts for 97

percent of *MEV*, leaving $TP = 3$ percent such that $APV + TP = MEV$. Discount rates between 6 and 8 percent lead to $APV \approx MEV$. On average, North Carolina's bills possessed little "moneyness" value. They were just barter assets, and sometimes risky barter assets.

Separating the period into pre- versus post-1748, namely pre- versus post-default and restructuring of par, alters the outcome slightly. Again, using only the years with *MEV* data over the period 1713-1747, and when discounting at 6 percent, $APV > MEV$, leaving $RD = 4.3$ percent, such that $APV - RD = MEV$. When discounted at 8 percent, *APV* accounts for 99.4 percent of *MEV*, leaving $TP = 0.4$ percent, such that $APV + TP = MEV$. However, over the period 1748-1774 when discounting at 6 percent, *APV* account for 99.8 of *MEV*, leaving $TP = 0.2$ percent, such that $APV + TP = MEV$. When discounting at 8 percent, *APV* accounts for 93.9 percent of *MEV*, leaving $TP = 6.1$ percent, such that $APV + TP = MEV$. Improvements in performance, namely reductions in *RD* and increases in *TP*, are modest. Almost all the gains in *MEV* performance between 1713-1747 and 1748-1774, namely getting the bills to circulate relatively closer to their face value, comes from improved design and execution of redemption.

One sub-period, namely 1722-1729, is notably different. In this period, $APV > MEV$ and by a relatively larger magnitude. On average, when discounted at 6 percent, $RD = 12$, and when discounted at 8 percent, $RD = 4.1$, such that $APV - RD = MEV$. These years of positive risk discounts, such that North Carolina bills were just risky barter assets, correspond to the years when poll taxes went from 15 shillings to 5 shilling and no redemptions and removals of paper money from circulation were executed, see Table 1 (Parker, 1928, p. 108). A forecasted lack of redemption mattered.

Statistical Properties

a. MEV versus APV

Table 5 reports the time series statistical properties of *MEV* and *APV*, using a 6 and an 8 percent discount rate for *APV*—designated *APV6* and *APV8*, respectively. *MEV* and *APV* are co-integrated. Thus, estimating *APV*'s effect on *MEV* is a valid exercise. APV_t has a statistically significant positive effect on MEV_t with a relatively large coefficient magnitude. Statistically, *APV* and *MEV* are closely associated. Δ*MEV* tracks Δ*APV* through time.

The unbiased coefficient on $APV6_t$, namely uncorrected for serial correlation with no lags of the dependent variable, is 0.83, which is close to 1. This indicates a tight relationship between *MEV* and *APV6*, namely *APV6* accounts for 83 percent of *MEV*. The unbiased coefficient on $APV8_t$, is 0.89, namely *APV8* accounts for 89 percent of *MEV*. The constant terms in the regressions are (*TP − RD*), see equation (1). When *APV* is discounted at 6 percent, the unbiased coefficient on the constant term is a positive 4.6; when discounted at 8 percent it is 6.6. This indicates that over the entire sample TP > 0, and it accounts for 5 to 7 percent of *MEV*.

When corrected for serial correlation, the coefficients on *APV* remain statistically significant. However, when corrected for serial correlation, the constant term, (*TP − RD*), is no longer statistically significant. This raises doubts about just how much confidence should be placed in the 5 to 7 percent of *MEV* the regressions ascribe to *TP*.

These contributions are close to those derived from the raw data in Figure 3. The regressions report that overall *MEV > APV* by a small *TP* and to a relatively greater degree than that found in the raw data in Figure 3. The difference between the regression estimates and the analysis of the raw data in Figure 3 may be partly due to using interpolated values for missing *MEV* data in the regressions compared with only using observed *MEV* data in Figure 3.

Table 5   *MEV's Statistical Relationship to APV, 1713-1774*

			Durbin's Chi^2	N	Adjusted R^2	F
$MEV_t =$	4.5509^{*} (2.5901)	$+ \ 0.8306(APV6_t)^{***}$ (0.0480)	$+ \ z_t$	44.66^{***}	62	0.83	299.58^{***}
	Co-integration test: $[z_t - z_{t-1}] =$	0.1740 (0.9059) $- \ 0.3429(z_{t-1})^{**}$ (0.0975)			61	0.16	12.38^{***}
$MEV_t =$	-0.6314 (0.8790)	$+ \ 0.2181(APV6_t)^{***}$ (0.0320) $+ \ 0.7810(MEV_{t-1})^{***}$ (0.0350) $+ \ z_t$		2.02	61	0.83	299.58^{***}
	Co-integration test: $[z_t - z_{t-1}] =$	-0.0230 (0.3884) $- \ 0.8168(z_{t-1})^{***}$ (0.1289)			60	0.40	40.18^{***}
$MEV_t =$	6.5586^{***} (2.4400)	$+ \ 0.8927(APV8_t)^{***}$ (0.0505)	$+ \ z_t$	42.28^{***}	62	0.84	311.88^{***}
	Co-integration test: $[z_t - z_{t-1}] =$	0.1847 (0.8979) $- \ 0.3533(z_{t-1})^{***}$ (0.0982)			61	0.17	12.95^{***}
$MEV_t =$	-0.1029 (0.8328)	$+ \ 0.2454(APV8_t)^{***}$ (0.0332) $+ \ 0.7706(MEV_{t-1})^{***}$ (0.0338) $+ \ z_t$		0.64	61	0.98	1764.08^{***}
	Co-integration test: $[z_t - z_{t-1}] =$	-0.0257 (0.3779) $- \ 0.8956(z_{t-1})^{***}$ (0.1303)			60	0.44	47.24^{***}

Sources: Table 4. See text for variable definitions and construction.
Notes: Data are annual. Interpolated values are used for missing *MEV* data. Standard errors are in parentheses under their respective coefficients. *APV6 =APV* when discounted at 6 percent. *APV8 =APV* when discounted at 8 percent. Dickey-Fuller critical values are used for the (t-1) independent variables, see Enders (1995, p. 419). Durbin's Chi^2 is Durbin's Alternative Tests for autocorrelation testing whether the null hypothesis of no serial correlation can be rejected.
*** Statistically significance above the 0.01 level.
** Statistically significance above the 0.05 level.
* Statistically significance above the 0.1 level.

b. The Quantity Theory of Money Applied to North Carolina's Paper Money

The quantity theory of money, at least a prominent version, takes the equation-of-exchange identity, $MV \equiv PY$, as expressed in growth rates, $\ln M + \ln V \equiv \ln P + \ln Y$, and by assuming that $\ln V$ and $\ln Y$ are long-run constants, transforms it into the quantity "theory" of money [$\ln P$ = some constant + $\ln M$]; where M = the money supply, V = the velocity of that money's circulation, P = prices in that money, and Y = traded real output (Bordo 1987; Fisher 1912). In words, the equation-of-exchange identity says that over a given time period the total

amount of spending (MV) has to be identical to the total value purchased (PY). Growth rates in Y and V are thought to be severely constrained by real forces. Technological and resource constraints, i.e. the production possibility frontier, limit how much Y can grow. Transaction costs limit how much V can grow. Thus, large movements in M should show up as large movement in P in the same direction. When applying the quantity theory of money, M is measured in its nominal face value. M's real value is measured by its relation to P, namely as $M/P \equiv Y/V$. A critical assumption of the theory is that all trades are monetized. If enough domestic transactions are executed using barter structures, then the equation-of-exchange identity is broken along with the quantity theory of money's positive and tight relationship between money and prices.

To have results that are easily compared with applications to other colonies, we use the econometric specifications in West (1978, p. 4), namely $\ln P_t = a + b \ln M_t$, including regressions with one- and two-year lags of M to capture any delayed transmission effects, where M = the paper money supply and P = prices. See similar specifications in Farley Grubb (2004, p. 349; 2016d) and Peter Rousseau (2007, p. 267). We also report regressions where P is replaced with *MEV* for easy comparison with the results here in Tables 5 and 7. *MEV* is the local price of sterling bills of exchange drawn on London, i.e. not that different conceptually from using local wheat or tobacco prices to create a commodity price index. Because *MEV* is constructed at the inverse of that exchange rate, in quantity-theoretic terms it should be negatively related to ΔM. An increase in M should cause the paper money to depreciate, namely suffer a reduction in value relative to its face value (a reduced *MEV*).

Currently, not enough local commodity price data exists to construct a colonial North Carolina price index. Therefore, we use the price, in North Carolina pounds, of sterling bills of exchange drawn on London to create purchasing power parity (PPP) consistent price measures.

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PPP implies that $EX_{(£NC\ to\ £S)} = P_{NC}/P_{UK}$, namely the exchange rate (EX) of North Carolina's paper money to pounds sterling must equal the ratio of prices in North Carolina expressed in North Carolina's paper money (P_{NC}) to prices in England expressed in pounds sterling (P_{UK}). Taking the natural log of both sides and rearranging terms yields $lnP_{NC} = lnEX_{(£NC\ to\ £S)} + lnP_{UK}$. Data on $EX_{(£NC\ to\ £S)}$ are taken from Table 1, and data on P_{UK} are taken from Elizabeth Schumpeter (1938, p. 35). PPP has been shown to hold for all colonies where colony-specific commodity price indices exist between that colony and England and between that colony and all other colonies with commodity price indices, namely for Massachusetts, New York, Pennsylvania, Maryland, Virginia, South Carolina, Montreal, and Quebec (Grubb, 2003, p. 1,786; 2005, p. 1,346; 2010, pp. 132-5). If PPP holds for these colonies, then it is reasonable to assume that it holds for North Carolina when using the same data sources.

The quantity theory of money is a theory about magnitudes. When estimating relationships between paper money and prices, focusing solely on statistical significance is misplaced. At best, statistical significance is a necessary, but not a sufficient condition, for the theory to be a useful explanatory tool. When estimating $lnP_t = a + blnM_t$, the quantity theory of money holds perfectly if $b = 1$ and doesn't hold at all is $b = 0$. No one expects the theory to hold perfectly. Systematic short-run, business cycle-like movements in V and Y, namely deviations from their assumed constant growth rates, are expected (Fisher, 1912; Lucas, 1980). Such movements, however, are limited, especially in the face of large changes in M. Resource, technological, and production constraints limit how much Y can move, and transactions costs limit how much V can move. Y or V doubling or tripling over a short span of years stretches credulity. Given sizable movements in M, b should be relatively large, much closer to 1 than to 0 for the quantity theory of money to be a useful theory for explaining the value and performance

of M. Therefore, the magnitude of *b*, and whether it is unbiased and consistently estimated, is the key concern.

Table 6 reports the results from estimating $\ln P_{NCt} = a + b\ln M_t$ and from estimating $MEV_t = a + b\ln M_t$ using the data on M from Table 1, on *MEV* from Table 4, and on P_{NC} as constructed above. The unbiased and consistently estimated coefficients on M, those uncorrected for serial correlation with no lags of the dependent variable, show perverse results. As the growth rate of M increases, the growth rate of P_{NC} decreases and the paper money appreciates. This outcome is the opposite of what the quantity theory predicts. Reducing serial correlation renders some coefficients statistically insignificant. At best, no relationship between M and P_{NC} or between M and *MEV* exists. The quantity theory of money does not tell us much about the value and performance of colonial North Carolina's paper money.

The classical quantity of money assumes that lnV and lnY are long-run constants. The coefficient for the constant terms in the P_{NC} regressions, those uncorrected for serial correlation with no lags of the dependent variable, provide unbiased and consistent estimates of the difference in these long-run constants, namely [lnV − lnY]. In all three P_{NC} regressions uncorrected for serial correlation the constant term is positive and relatively large. Reducing serial correlation, however, renders these constant terms statistically insignificant. Setting aside statistical insignificance, the large positive constant terms in the P_{NC} regressions indicates that lnV > lnY in terms of their long-run growth rates. For V to grow at a faster rate on average than Y indicates that domestic transactions were becoming increasingly monetized with paper money.

The relative magnitude of these constant terms, however, creates an accounting problem for the quantity theory of money, but one that is nevertheless informative. The long-run growth of colonial Y per capita per year for the relevant period is thought to be between 0 and 0.6

Table 6   *Testing the Quantity Theory of "Paper" Money*

Dependent Variable	Constant	$\ln M_t$	$\ln M_{t-1}$	$\ln M_{t-2}$	$\ln P_{NCt-1}$	MEV_{t-1}	Durbin's χ^2	N	Adjusted R^2	F
$\ln P_{NCt}$ =	8.586*** (1.110)	-0.256** (0.106)					742.61***	62	0.07	5.83**
$\ln P_{NCt}$ =	-0.001 (0.357)	0.009 (0.025)			0.984*** (0.029)		19.70***	61	0.96	662.31***
$\ln P_{NCt}$ =	8.651*** (1.143)	-0.558** (0.268)	0.298 (0.268)				629.12***	61	0.10	4.16**
$\ln P_{NCt}$ =	-0.050 (0.349)	-0.099* (0.059)	0.115** (0.058)		0.979*** (0.028)		20.10***	61	0.96	465.84***
$\ln P_{NCt}$ =	8.555*** (1.187)	-0.494* (0.277)	-0.015 (0.383)	0.259 (0.270)			884.50***	60	0.09	3.03**
$\ln P_{NCt}$ =	-0.112 (0.360)	-0.110* (0.060)	0.154* (0.082)	-0.024 (0.058)	0.985*** (0.029)		18.47***	60	0.96	340.12***
MEV_t =	-57.616 (41.030)	9.763** (3.920)					668.82***	62	0.08	6.20**
MEV_t =	0.745 (8.066)	-0.013 (0.799)				0.988*** (0.025)	26.22***	61	0.97	893.76***
MEV_t =	-65.013 (42.414)	16.626* (9.954)	-6.226 (9.949)				782.52***	61	0.09	3.98**
MEV_t =	0.991 (8.259)	0.290 (1.943)	-0.326 (1.903)			0.987*** (0.025)	26.27***	61	0.97	585.88***
MEV_t =	-68.500 (44.176)	14.036 (10.313)	0.160 (14.250)	-3.502 (10.052)			1078.50***	60	0.08	2.72**
MEV_t =	-0.044 (8.544)	0.632 (1.982)	-2.992 (2.698)	2.413 (1.908)		0.993*** (0.026)	20.88***	60	0.97	434.08***

Sources: Tables 1 and 4.

Notes: See text for P construction. Standard errors are in parentheses. Durbin's Chi^2 is Durbin's Alternative Tests for autocorrelation testing whether the null hypothesis of no serial correlation can be rejected.

*** Statistically significance above the 0.01 level.

** Statistically significance above the 0.05 level.

* Statistically significance above the 0.1 level.

percent (Egnal, 1998, p. 43; Mancall and Weiss, 1999, pp. 18, 36; McCusker and Menard, 1985, pp. 53-58). Thus, the long-run yearly growth rate in Y is approximately the same as the long-run yearly growth rate of the population. The yearly white population growth rate for colonial North

Carolina in the relevant period was 13 percent (derived from Carter, *et al*, 2006, v. 5, p. 652).

Using this number for lnY and setting [lnV – lnY] equal to the constant terms in the P_{NC}

regressions in Table 6 yields impossibly high values for lnV. This observation is consistent with

the equation-of-exchange identity not holding in colonial North Carolina because substantial

domestic transactions were executed using barter structures in an under monetized economy.

The results in Table 6, namely the perverse relationship between M and P_{NC} and M and

MEV, that lnV is greater than lnY, and the impossibly high implied values for lnV, all point to an

under monetized local economy where increases in M primarily displace barter transactions and

barter transactions typically fill the gap left from decreases in M. If P_{NC} is being determined

primarily in trades taking place without the use of M in an economy with little technological or

productivity changes, then P_{NC} this year should be strongly determined by P_{NC} last year. This

outcome can be seen by comparing the uncorrected with the corrected P_{NC} regressions for serial

correlation reported in Table 6. Adding lagged values of P_{NC} as independent variables, thus

reducing serial correlation, substantially improves the regression fit in terms of R^2 and F-statistic

measures. Adding lagged values of P_{NC} biases the coefficients on the other independent

regressors (Achen, 2000; Maddala, 1977, p. 147; Pindyck and Rubinfeld, 1998, p. 235). Lagged

P_{NC} absorbs some of influence M had on prices. Prices this year are primarily determined by

prices last year. This finding is consist with prices being determined by the constancy in the

barter portion of the economy.

This implication is consistent with the small *TP* found in Table 5. As M increased, it

gained familiarity and so more ubiquitous usage, thus displacing barter structures with a slightly

more efficient media of exchange. Citizens were then willing to pay a small premium to use M as

M gained this familiarity and more ubiquitous usage.

c. Real Asset Value versus the Quantity of Paper Money: A Horse Race to Determine MEV

Table 7 runs a horse-race between asset-pricing and the quantity theory of money to see which contributes the most to determining the market exchange value of North Carolina's paper money. The same regressions as in Table 5 are run with the exception that the bills in circulation (M_t) from Table 1 are added as independent variables. The unbiased coefficients on *APV6* and *APV8*, namely uncorrected for serial correlation with no lags of the dependent variable, accounts for 81 and 87 percent of *MEV*, respectively. These are almost identical to the results in Table 5. Adding the quantity of paper money to the specification does not dilute the fact that *MEV* is primarily and overwhelming determined by *APV*. The coefficients on *APV6* and *APV8* remain statistically significant even after correcting for serial correlation. This result can be considered a manifestation of Ricardian equivalence (Barro, 1974; Abel, 1987).

The coefficients on M are positive and statistically significant, remaining so even after correcting for serial correlation. This is a perverse result for the quantity theory of money. Remember that *MEV* is the percentage of face value. Thus, in quantity theoretic terms, an increase in the growth rate of M should cause paper money to depreciate, thus causing *MEV* to fall. For the quantity theory of money to hold in its typical way, M should be negatively related to *MEV*. But the regressions show that M is positively related to *MEV*. As the rate of growth in paper money increases, the value of paper money appreciates (is driven closer to face value).

Controlling for *APV*, namely controlling for rational bond pricing, a positive growth rate in M adds value to the bills beyond their *APV*. This outcome is the same as finding a positive *TP* in Table 5. Except here that positive *TP* is related to more M being put in circulation. As M becomes more familiar and ubiquitous, it takes on more "moneyness" value, i.e. an increased *TP*. Citizens gain faith that the next trader they bargain with will expect M to be similarly convenient

Table 7   *A Horse-Race between Real Asset Value and the Quantity of Paper Money, 1713-1774*

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		Durbin's		Adjusted	
		Chi^2	N	R^2	F

MEV_t = -66.5201*** + 6.8965(lnM_t)*** + 0.8107(APV6_t)*** + z_t 61.14*** 62 0.88 215.15***
        (15.0992)   (1.4492)   (0.04135)

MEV_t = -16.0887** + 1.5314(lnM_t)** + 0.2459(APV6_t)*** + 0.7382(MEV_{t-1})*** + z_t 1.24 61 0.98 1190.61***
        (6.1686)   (0.6054)   (0.0326)   (0.0375)

MEV_t = -53.1691*** + 5.8193(lnM_t)*** + 0.8680(APV8_t)*** + z_t 63.04*** 62 0.87 199.73***
        (15.5934)   (1.5041)   (0.0460)

MEV_t = -11.4000* + 1.1260(lnM_t)* + 0.2618(APV8_t)*** + 0.7440(MEV_{t-1})*** + z_t 0.51 61 0.98 1233.83***
        (5.8614)   (0.5786)   (0.0335)   (0.0357)

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Sources: Tables 1 and 4. See text for variable definitions and construction.
Notes: See the notes to Table 4.
*** Statistical significance above the 0.01 level.
** Statistical significance above the 0.05 level.
* Statistical significance above the 0.1 level.

for transacting future local trades, and so will continue to pay a convenience or transaction premium above M's expected *APV*. In an under-monetized economy where M is simply displacing barter for executing domestic transactions, this enhanced faith in continued superior convenience caused by increasing familiarity overcame any quantity-of-money pressures to increase prices or depreciate the bills.

Counterfactual Redemption Executions and Resulting Performance Paths

The analysis in Figure 3 and Tables 5 and 7 shows that the value of North Carolina paper money (*MEV*) is predominantly determined by its time-discounted real asset present value (*APV*). *APV* is determined by how the assembly designed and executed the redemption of its various emissions of paper money. The collapse in value of North Carolina's paper money from 1715 to 1747, therefore, is primarily due to a failure to implement reasonable redemption structures in that period. Emission #4 was a pure currency swap and so is not relevant to redemption issues. After emission #6, a constant, though relatively low, redemption of bills was maintained. Thus, it was the failure to execute an adequate redemption structure for the net new

portions of emissions #3 and #5 that was the source of value collapse from 1715 to 1747.

From 1718 through 1722, North Carolina was redeeming and removing from public circulation an average of 800£$_{NC}$ emission #3 bills a year. After 1722, the assembly reduced taxes and stopped redeeming and removing paper money from public circulation. Paper money received as taxes was spent back into circulation by the assembly. In 1731, the new governor declared emission #5 invalid and stopped the collection of emission # 5 loan principal payments that were to be removed from circulation. These two actions undermined the entire North Carolina paper money system pre-1748, led to its collapse in value from 1715 to 1747, and eventually to a partial default on all pre-1748 bills in 1748, see Table 1 and Figure 3.

Counterfactual redemption execution structures are imposed on emissions #3 and #5 to illustrate the above outcome and show how North Carolina's paper money would have performed between 1715 and 1747 with the execution of a more typical redemption architecture. We impose the least counterfactual redemption intrusion possible to illustrate this outcome. For emission #3, we assume that the assembly simply maintained the same level of yearly bill redemption it had executed pre-1724 into the post-1723 years until all emission #3 bills were redeemed. That amounts to maintaining the pre-1723 redemption taxes that removed 800£$_{NC}$ emission #3 bills a year on average into the period from 1723 through 1737.

For emission #5, we assume the new governor did not declare that emission invalid in 1731 and that the loan principal repayment and removal from circulation continued to be executed as designed from 1731 through 1744, see Appendix Table 2. For calculation purposes, we also assume that the redemption of emission #6 bills estimated to be approximately 500£$_{NC}$ a year on average from 1735 through 1748 continued at that yearly level until all emission #6 bills were redeemed and removed from public circulation. These counterfactual redemption structures

and the resulting amount of bills remaining in public circulation are presented in Table 8. Only the net new emissions from Table 1 matter. The currency swap portions of emissions are irrelevant to this analysis and so are excluded.

Table 8 also calculates the counterfactual asset present value of the bills, their *APV*s when discounted at 6 and at 8 percent. They are calculated in the same manner as the actual *APV*s in Table 4 using equations (3) and (4). These counterfactual *APV*s are presented in Figure 4 where they are superimposed onto the actual data from Figure 3. Figure 4 shows that with these redemption corrections to emissions #3 and #5 the performance of colonial North Carolina's paper money system would have been reasonably stable throughout its entire history. Because $MEV \approx APV$, the counterfactual *APV* series implies a similar counterfactual *MEV* series. The counterfactual outcome in Figure 4 indicates that North Carolina's $MEV \approx APV$ series would have fluctuated around an approximate constant 70 percent of face value throughout its history.

The single largest cause of the collapsing value of North Carolina's paper money between 1715 and 1747, and partial default on pre-1748 bills in 1748, was Governor Burrington's invalidation of emission #5 in 1731 (*CR*, v. 3, pp. 145-6, 151, 154, 175, 266-9, 271, 308-9, 486-7, 571; v. 4, p. 179). Emission #5 was relatively large—more than double the combined net new emissions of #3 and #6—and had a relatively large yearly amount redeemed, along with a much shorter redemption time span, than those for emissions #3 and #6. As such, emission #5 had an outsized effect on the path of *APV* in this period.

Therefore, the finger can be pointed squarely at the British—the King and his advisors as channeled through their instructions to their chosen governors—for North Carolina's collapsing paper money regime in this era (*CR*, v. 3, pp. 90-118; *Journal of the Commissioners*, 1969, v. 6, p. 55; Labaree, 1967, v. 1, pp. 218-9, 229-31). The British government disliked colonial paper

Table 8   *Counterfactual Paper Money Redemption Regimes, 1712-1757*

Year	EM #	Face Value of Net New Emissions £$_{NC}$	Face Value Amounts of #3 Redeemed £$_{NC}$	Face Value Amounts of #5 Redeemed £$_{NC}$	Face Value Amounts of #6 Redeemed £$_{NC}$	Face Value Amounts Remaining in Circulation £$_{NC}$	Counterfactual (as a Percentage of Face Value) 1713-1747 APV6	APV8
1712	#1	4,000	0			4,000		
1713	#2	8,000	0			12,000	85.91	79.19
1714	#3	12,000	2,000			22,000	63.45	56.15
1715			2,000			20,000	63.85	56.46
1716			2,000			18,000	63.96	56.49
1717			2,000			16,000	63.63	55.94
1718			800			15,200	62.75	54.65
1719			800			14,400	6458	56.60
1720			800			13,600	66.48	58.72
1721			800			12,800	68.48	60.99
1722			800			12,000	70.63	63.43
1723			*800*			*11,200*	72.92	66.07
1724			*800*			*10,400*	75.36	68.92
1725			*800*			*9,600*	78.01	72.09
1726			*800*			*8,800*	80.90	75.56
1727			*800*			*8,000*	84.05	79.46
1728			*800*			*7,200*	87.56	83.85
1729			*800*			*6,400*	91.51	88.89
1730	#5	30,000	*800*	*2,000*		*33,600*	72.15	65.38
1731			*800*	*2,000*		*30,800*	74.13	67.69
1732			*800*	*2,000*		*28,000*	76.23	70.15
1733			*800*	*2,000*		*25,200*	78.43	72.74
1734			*800*	*2,000*		*22,400*	80.73	75.55
1735	#6	12,500	*800*	*2,000*	500	*31,600*	70.00	63.53
1736			*800*	*2,000*	500	*28,300*	71.01	64.70
1737			*800*	*2,000*	500	25,000	71.79	65.58
1738				*2,000*	500	22,500	72.29	66.14
1739				*2,000*	500	20,000	73.47	67.62
1740				*2,000*	500	*17,500*	74.51	68.85
1741				*2,000*	500	*15,000*	75.25	69.74
1742				*2,000*	500	*12,500*	75.53	70.11
1743				*2,000*	500	*10,000*	74.95	69.44
1744				*2,000*	500	*7,500*	72.96	66.95
1745					500	*7,000*	67.95	60.59
1746					500	*6,500*	69.70	62.57
1747					500	*6,000*	71.84	64.67
1748					500	*5,500*		
1749					*500*	*5,000*		
1750					*500*	*4,500*		
1751					*500*	*4,000*		
1752					*500*	*3,500*		
1753					*500*	*3,000*		
1754					*500*	*2,500*		
1755					*500*	*2,000*		
1756					*500*	*1,500*		
1757					*500*	*1,000*		

1758				*500*	*500*
1759				*500*	*0*
Totals	66,500	24,000	30,000	12,500	

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money because they expected it to perform poorly. Their actions, however, were the prime reason behind its poor performance in North Carolina. As such, they directly caused the fulfilment of their own expectations.

George Burrington was the first Royal Governor of North Carolina. He received his commission on April 29, 1730. He arrived in North Carolina and was shortly thereafter sworn in as governor in Edenton on February 25, 1731. He had earlier attended a meeting of the Lord Commissioners for Trade and Plantations (the Board of Trade) in London on July 23, 1729 where colonial bills of credit were discussed. In that meeting, the topic of whether bills were necessary at all, and then, if yes, what sums and what foundations would best preserve their credit, was brought up (*Journal of the Commissioners*, 1969, v. 6, p. 55).

The Commissioners issued Burrington's instructions on December 14, 1730. In those instructions, he was told not to give assent to any law emitting bills of credit that did not have a clause "…declaring that the same shall not take effect until the said Act shall have been approved & confirmed by us…" commonly called a suspending clause (*CR*, v. 3, p. 95; Labaree, 1967, v. 1, pp. 218-9). While emission #5 was passed on November 27, 1729 by the assembly, Burrington regarded it as falling under his instructions, even though it pre-dated his commission, his instructions, and his arrival, because North Carolina had been purchased by the Crown in 1729. Given that emission #5's act did not have a suspending clause, and had not yet been approved and confirmed by the Board of Trade, Burrington felt he had cause given his
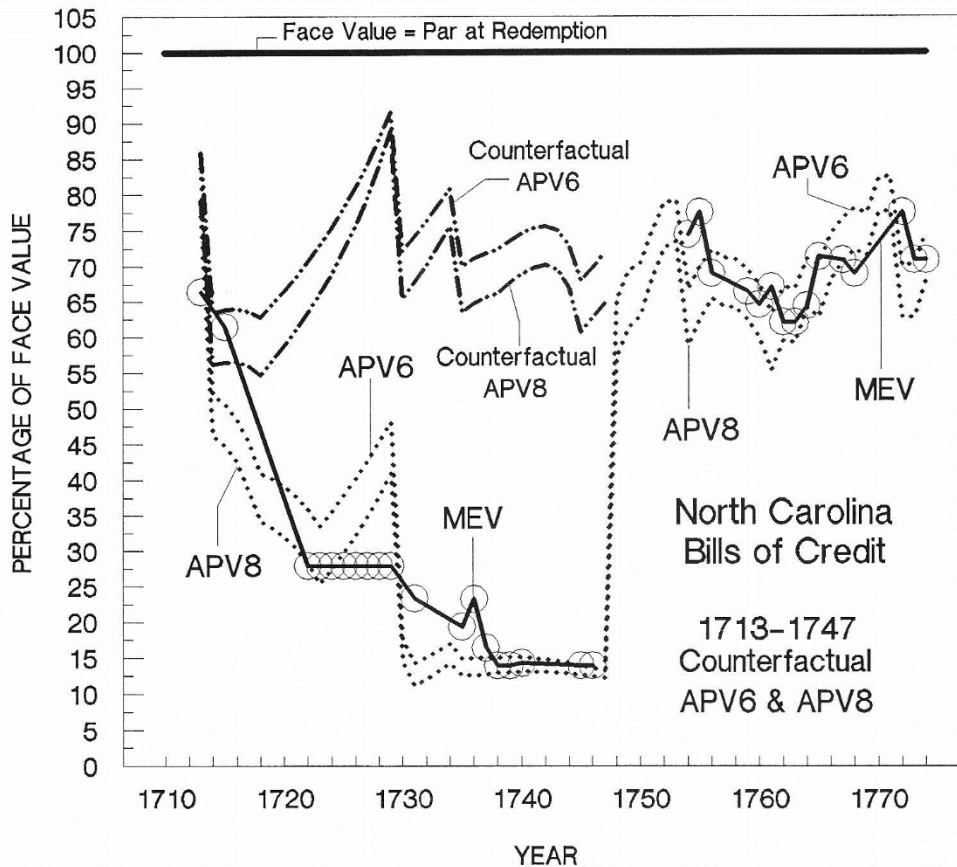
Figure 4.   *Counterfactual APVs for 1713-1747*

Sources: Derived from Tables 4 and 8, and Figure 3.
Notes: See the notes to Tables 4 and 8, and Figure 3, and see the text for construction details.

instructions to declare it invalid and suspend its operation. He did this shortly after his arrival in

North Carolina in late February 1731, even though emission #5 had already been in operation for

over a year.

The contribution of the redemption structure of emission #3 to the poor performance of

North Carolina's paper money was directly the fault of the North Carolina assembly. While that

contribution was less than the contribution made by the redemption structure of emission #5, it is

more conceptually complex and has important behavioral ramifications for the redemption of

emissions after 1747. In 1723, with 12,000£$_{NC}$ emission #3 bills still in circulation, the assembly

stopped removing and destroying bills received as tax payments, approximately 800£$_{NC}$ per year,

and instead re-spent the bills back into circulation as the bills were received. This action kept

12,000£$_{NC}$ in circulation into the foreseeable future, see Table 1.

Why the assembly did this is unclear. It can be seen, however, as an experiment to test

the equivalence of a repetitive bond currency with an on-going fiat currency. Consider scenario

1: In year one, the assembly prints a 1£$_{NC}$ zero-coupon bearer-bond and uses it to buy war

material from me in year one. The bond will be redeemed in year two in exchange for tax

payment obligations due in year two. The bond is destroyed after redemption. In year two, the

assembly prints a new 1£$_{NC}$ zero-coupon bearer-bond and uses it to buy more war material from

me in year two. That bond will be redeemed in year 3 in exchange for tax payment obligations

due in year three. The bond is destroyed after redemption. Repeat this process each year and the

result is that a 1£$_{NC}$ bill stays in circulation, abet a different bill each year but still a 1£$_{NC}$ bill

continues in circulation each year.

Now consider scenario 2: In year one, the assembly printing a 1£$_{NC}$ bill and using it to

buy war material from me in year one with the 1£$_{NC}$ bill being paid back to the government to

cover tax obligations in year two. In year two, the assembly takes the 1£$_{NC}$ bill it just received in

tax payments and uses it to buy more war material from me in year two with that 1£$_{NC}$ bill now

being paid back to the government to cover tax obligations in year three. Repeat this process

each year and the result is that a 1£$_{NC}$ bill stays in circulation, this time it's the same bill each

year rather than a different bill each year but still a 1£$_{NC}$ bill continues in circulation each year.

How are these two scenarios different? On the surface they appear identical or achieve

identical outcomes in terms of the amount of paper money in circulation. In scenario 2 the

government even saves on the cost of destroying old and printing new bills each year by just

reusing the initial bills created in year one. Yet the value of North Carolina paper money

collapsed under scenario 2 as instituted after 1722 but, using the counterfactual reconstruction, would not have collapsed if scenario 1 was used. Why? The key to understanding the different effects the two scenarios have on the value of paper money in circulation is to note that there are more bills in circulation in any given year than there are tax obligations in that year that can be paid in those bills.

Under scenario 1, citizens have clear information regarding the path of government spending decisions, tax impositions, and what tax obligations anchor the value of the bills they possess. An explicit bond currency can only be spent by the government once. If the government wants to purchase more from its citizens, it has to explicitly pass new legislation to create new bond currency. The citizens see some of the bonds redeemed each year through tax obligations and physically destroyed. Thus, citizens know that the particular spending and tax obligations legislated are being completed and know when they will come to an end. All the bonds created, every single one, will be eventually redeemed at face value. As such, the paper money has a predictable value-anchor connected to specifically known tax obligations. Other citizens will trade using these bonds, because they can predict a given bond's expected present value given the value-anchor created by the tax obligations. The government provides citizens with a credible way to predict the future path of government spending and tax extraction, as well as provides clear legislative control over this process through their representatives in the assembly.

Under scenario 2, the government has a seemingly constant yearly claim on a citizen's resources into the indefinite future. More bills are in circulation each year than tax payments. If bills taxed in are just re-spent by the government, then a citizen will not know if a particular bill will ever be needed to satisfy tax obligations. Thus, the value-anchor to the bill is lost. If a particular bill might never be used to pay a tax obligation, who would want it or what would they

be willing to pay to have it? The transition from a bond currency in an explicit emission-redemption structure to a fiat-like revolving and continuously-circulating currency is more difficult than the superficial equivalence portrayed in the two scenarios.

The North Carolina's assembly acted as if they learned this difference. Later emissions would not only follow explicit emission-redemption bond-like structures, but the assembly added two important explicit public demonstrations to their bond currency regimes. The first was regular and explicit public burnings of redeemed bills. The second was with how they treated emission #14 in 1759. Emission #14 was comprised of bills from prior emissions that had already been redeemed but not yet burned. The assembly would re-spend these previously redeemed bills in a way similar to how they had treated emission #3 bills after 1722. For emission #14, however, they explicitly altered the re-issued bills by writing on them so that these bills could be distinguished from the prior redeemed bills and so that the re-issued bills' new redemption date could be determined. The public knew emission #14 bills had all been formally redeemed before and that the bills were now a new spending by the government that had a new formal and explicit redemption date. The assembly maintained a clear emission-redemption bond structure for emission #14 (*CR*, v. 6, pp. 197-9, 1,310; v. 25, pp. 394-5).

After 1748, in the minutes of the Lower House of the assembly, after being informed by the treasurers of the amount of bills redeemed, the assembly would set the day, time, and location for a public burning of the redeemed bills. The following are a few examples. On October 17, 1749, the speaker of the Lower House, having been informed of a new amount of redeemed bills, resolved "…that the same be burnt, at four o'clock this evening in the Public Street, in the presence of the Members of his Majesty's Honourable Council and General Assembly…" (*CR*, v. 4, p. 1,022). On April 10, 1750, the Lower House, having been informed of

a new amount of redeemed bills, resolved that "…the same be burnt this Evening, at the House of Peter Calia, near the Church." (*CR*, v. 4, p. 1,341). On October 21, 1756, the Lower House, having been informed of a new amount of redeemed bills, resolved to have "…the said Sums burnt at 4 o'clock this Afternoon at the House of Richard Magraw." (*CR*, v. 5, p. 727). On December 22, 1758, the Lower House, having been informed of a new amount of redeemed bills, resolved "…to see the several sums burnt at the house of Robert Wallace in Edenton at 5 o'clock this Evening…" (*CR*, v. 5, p. 1,088). On January 9, 1760, the Lower House having been informed of a new amount of redeemed bills resolved to "…see the several sums burnt at the House of John Campbell in Wilmington at one o'clock this day…" (*CR*, v. 6, p. 197). On May 27, 1760, the Lower House having been informed of a new amount of redeemed bills resolved "…to see the said notes burnt at the House of Richard Cogdell in New Bern at 7 o'clock this evening…" (*CR*, v. 6, p. 435). And so on, see (*CR*, v. 5, pp. 74, 210, 556, 898; v. 6, pp. 505, 693, 826, 950, 1,208, 1,283; v. 7, pp. 393, 649; v. 8, p. 453; v. 9, pp. 511, 550). Public demonstrations that the assembly was executing a bond currency with an explicit emission-redemption structure, as opposed to a fiat-like revolving and continuously-circulating currency, mattered.

Brief Conclusion and Summary of Major Findings

Colonial North Carolina's paper money was not a fiat currency. The paper money is best characterized as zero-coupon bonds and interest bearing bonds. If citizens thought of their paper money as bonds and correctly forecast the actual redemption path of said bonds as executed by the government, then the expected real asset present value of the bonds closely tracks the observed market value of the bonds as measured against pounds sterling. The quantity of paper bills in circulation was largely irrelevant to their value. The actual redemption path of the bonds was what mattered to value determination. As such, these bonds (bills) were primarily real barter

assets. At best, they had only a small transactions premium or "moneyness" value added in. Citizens were only willing to pay a small premium above the bills real asset present value to acquire bills, because the bills were a more convenient local medium of exchange compared with the next best barter alternative. This small transaction premium was enough to make the bills the preferred medium of exchange for executing domestic transactions. Finally, the bills traded below face value due to time-discounting and not depreciation. Previous scholars have simply confused depreciation for time-discounting.

The collapse in value of these bills pre-1748 was primarily caused by British interference, channeled through the actions of their governor, with the redemption execution of the assembly's paper money acts. In addition, the assembly learned in this period, through experimentation, that they could not maintain the market value of the bills if they moved to treat the bills less like formal bonds and more like a re-circulating fiat currency. In the absence of British interference and the assembly's brief experimentation with fiat-like currency, the market value of North Carolina's paper money pre-1748 would have been comparable in level and stability with the paper money emitted after 1747.

[Place Appendix Table 1 Here]

[Place Appendix Table 2 Here]

[Place Appendix Table 3 Here]

[Place Appendix Table 4 Here]

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Appendix Table 1   *Amounts of North Carolina Paper Pounds in Circulation at Face Value: A Comparison of Estimates*

Year	From Table 1 Here £NC	Bullock (1900) £NC	Brock (1941) £NC	Greene (1963) £NC	Ernst (1973) £NC	Carter (2006) *Historical Statistics* £NC	Smith (1985) £NC	No Author *CR* (v. 8, pp. 213-5) 1770 £NC	*CR* (v. 3-5) Introductory Material (1886-1907) £NC
1712	4,000	4,000	4,000	4,000	…	…	4,000	…	…
1713	12,000	12,000	12,000	12,000	…	…	12,000	…	…
1714	22,000	24,000	12,000	4,000	…	…	24,000	…	…
1715	20,000	…	24,000	…	…	…	…	…	…
1716	18,000	…	…	…	…	…	…	…	…
1717	16,000	…	…	…	…	…	…	…	16,000
1718	15,200	…	…	…	…	…	…	…	…
1719	14,400	…	…	…	…	…	…	…	…
1720	13,600	…	…	…	…	…	…	…	…
1721	12,800	…	…	…	…	…	…	…	…
1722	12,000	12,000	12,000	12,000	…	…	12,000	…	12,000
1723	12,000	…	12,000	…	…	…	…	…	…
1724	12,000	…	12,000	…	…	…	12,000	…	…
1725	12,000	…	12,000	…	…	…	…	…	…
1726	12,000	…	12,000	…	…	…	…	…	…
1727	12,000	…	12,000	…	…	…	…	…	…
1728	12,000	…	12,000	…	…	…	12,000	…	…
1729	12,000	12,000	42,000	40,000	…	…	52,000	…	…
1730	40,000	40,000	…	…	…	…	…	…	…
1731	40,000	…	…	…	…	…	52,000	…	…
1732	40,000	…	…	…	…	…	…	…	…
1733	40,000	…	…	…	…	…	…	…	…
1734	40,000	…	54,500	…	…	…	54,500	…	…
1735	52,000	52,500	54,500	52,500	…	…	…	…	…
1736	51,500	…	54,500	52,500	…	…	…	…	…
1737	51,000	…	54,500	52,500	…	…	…	…	…
1738	50,500	…	54,500	52,500	…	…	…	…	…
1739	50,000	…	54,500	52,500	…	…	…	…	50,000
1740	49,396	…	54,500	52,500	…	…	…	…	…
1741	48,791	…	54,500	52,500	…	…	…	…	…
1742	48,187	…	54,500	52,500	…	…	…	…	…
1743	47,582	…	54,500	52,500	…	…	…	…	…
1744	46,978	…	54,500	52,500	…	…	…	…	…
1745	46,373	…	…	52,500	…	…	…	…	…
1746	45,769	…	…	52,500	…	…	…	…	…
1747	45,164	…	…	52,500	…	…	…	…	…
1748a	44,560	…	52,500	52,500	…	…	…	…	…
1748b	17,350	21,350	21,350	21,350	21,000	21,400	21,350	21,350	…
1749	15,818	…	21,160	…	21,000	21,200	21,160	21,160	…
1750	15,818	20,646	20,647	…	21,000	20,600	20,647	20,647	20,647
1751	15,260	…	20,119	…	20,000	20,100	20,119	20,119	…
1752	14,169	…	19,028	…	19,000	19,000	19,028	19,028	…
1753	17,408	…	18,289	…	18,000	18,300	18,289	18,289	…
1754	54,840	…	57,951	…	58,000	58,000	57,951	57,951	…
1755	53,812	…	56,054	…	56,000	56,100	56,054	56,054	…
1756	56,270	…	57,951	…	58,000	58,000	57,951	57,645	…

Year									
1757	62,795	…	68,255	…	68,000	68,300	68,255	67,924	…
1758	63,890	…	70,253	…	70,000	70,300	70,253	69,380	…
1759	66,447	…	69,512	…	70,000	69,500	69,512	69,380	…
1760	72,594	…	75,806	…	76,000	75,800	75,806	74,383	…
1761	91,972	80,000	95,335	95,335	95,000	95,300	95,335	93,765	…
1762	81,961	…	85,322	…	85,000	85,300	85,322	83,752	…
1763	81,961	…	…	…	85,000	85,000	…	83,752	…
1764	70,018	75,032	73,378	…	75,000	75,000	73,378	71,808	75,032
1765	70,018	…	…	…	75,000	75,000	…	71,808	…
1766	64,520	…	67,880	…	68,000	68,000	67,880	66,310	…
1767	56,745	…	…	…	68,000	68,000	…	66,310	…
1768	56,745	60,107	60,106	60,106	98,000	98,000	60,106	65,536	…
1769	76,745	…	…	…	…	…	…	…	…
1770	61,804	78,535	…	…	…	…	…	…	…
1771	49,218	100,000	…	…	…	60,000	…	…	…
1772	96,741	…	…	…	…	…	…	…	…
1773	96,741	…	…	…	…	…	…	…	…
1774	96,741	…	…	…	…	…	…	…	…

Sources: Table 1; Brock (1975, pp. 108-13, 436-7); Bullock (1900, pp. 125-83); Carter, *et al* (2006, v. 5, pp. 692-5); *CR* (v. 2, p. v; v. 4, p. xxii; v. 5, pp. xliv-xlv; v. 6, pp. 1,308-11; v. 8, pp. 213-5); Ernst (1973, p. 371); Greene (1963, pp. 115-8); Smith (1985, p. 1195).

Notes: See the notes to Table 1. The 1748a and 1748b values capture the change over from the old to the new paper money and the legislated change in the par at redemption value. Bullock's and Greene's numbers, and Brock's pre-1748 numbers, are based on their narrative discussion and were not presented in tabular form by these authors. Ernst rounded his numbers to the nearest 1,000. I cannot locate Ernst's estimate for 1768 in the sources he cites. The estimates reported in the *Historical Statistics* (Carter, *et al* 2006, v. 5, pp. 692-5) are a combination of the Brock and Ernst numbers, rounded to the nearest 100, and then counting the amount of newly authorized emissions in December 1771 as the only amount in circulation in 1771—no justification for doing so is provided in that source. Smith's numbers before 1748 appear to be deduced from the fragmentary evidence presented in Brock (1975, pp. 108-12), and his post-1747 numbers are taken directly from Brock (1975, pp. 436-7). The "No Author" 1770 estimate (*CR*, v. 8, pp. 213-5) is derived by subtracting the report on annual redeemed amounts from the report on annual new emissions for the period 1748-1768. While Brock's numbers appear to come from the 1770 report in *CR* (v. 8, pp. 213-5), as he so cites, I cannot reconcile his numbers after 1755 with that derived directly from the 1770 report. The number reported by the legislature in November of 1764 as being currently in circulation (*CR* v. 6, pp. 1,308-11), which Brock also cites as his source, was 75,032. That number appears to include an erroneous extra 2,000 listed in the 1756 emission, which if removed would yield 73,032, which is closer to Brock's number for 1764. The legislature's unadjusted number for 1764, i.e. 75,032, appears to be the source for Ernst's number for 1764. In either case, those numbers for 1764 are at odds with the 1764 number derived from the 1770 report. Redemptions that actually took place but were missed in the legislature's 1764 accounting may have been uncovered and included by the 1770 report.

Appendix Table 2   *Deduced Design of the Lank Bank Loan Portion of Emission #5*

Year	Principal Redeemed	End of Year Balance Outstanding	Annual Interest Paid at 6.25 percent (interest income)
1730	2,000£NC	28,000£NC	1,875£NC
1731	2,000	26,000	1,750
1732	2,000	24,000	1,625
1733	2,000	22,000	1,500
1734	2,000	20,000	1,375
1735	2,000	18,000	1,250
1736	2,000	16,000	1,125
1737	2,000	14,000	1,000
1738	2,000	12,000	875
1739	2,000	10,000	750
1740	2,000	8,000	625
1741	2,000	6,000	500
1742	2,000	4,000	375
1743	2,000	2,000	250
1744	2,000	0	125
Totals	30,000		15,000

Sources: *CR* (v. 3, pp. 294, 323-4; v. 4, pp. 142-3, 145-6, 178-9, 419, 576)

Notes: The act was said to be able to generate 15,000£NC in interest income over 15 years, which takes the loan period to 1744. Using 1/15 of the principal redeemed each year, with any excess principal redeemed re-loaned out to 1744, and an interest rate of 6.25 yields the 15,000£NC so stated.

Appendix Table 3   *Face Value Denominational Structure of Colonial North Carolina Paper Money, 1748-1774*

Denom- inations of £NC	Face Value in £S	Face Value in Spanish Silver Dollars	Value in 2012 U.S. Dollars[a]	Emission #7 (1748)		Emission #8 (1754)		Emission #12 (1758)		Emission #15 (1760)		Emission #16 (1761)		Emission #18 (1772)		Total (1748-1774)	
				34,000 Units %	21,350 Value %	160,500 Units %	39,650 Value[b] %	7,000 Units %	7,000 Value %	31,300 Units %	12,000 Value %	52,226 Units %	20,000 Value %	106,000 Units %	60,000 Value %	391,026 Units %	160,000 Value %
0.0167	0.0125	0.0545	1.69	5.88	0.16	19.31	1.30	....	....	6.39	0.28	9.57	0.42	....	....	10.23	0.42
0.0250	0.0188	0.0817	2.53	....	....	....	....	....	....	6.39	0.42	9.57	0.63	....	....	1.79	0.11
0.0333	0.0282	0.1226	3.80	5.88	0.31	24.92	3.36	....	....	14.38	1.25	9.57	0.83	....	....	13.17	1.07
0.0500	0.0376	0.1635	5.07	5.88	0.47	18.69	3.78	....	....	12.78	1.67	9.57	1.25	18.87	1.67	15.60	1.91
0.0750	0.0564	0.2452	7.60	5.88	0.70	....	....	....	....	....	....	....	....	....	....	0.51	0.09
0.1000	0.0752	0.3269	10.13	5.88	0.94	....	....	....	....	7.99	2.08	9.57	2.50	....	....	2.43	0.59
0.1250	0.0940	0.4086	12.67	5.88	1.17	....	....	....	....	....	....	5.74	1.88	30.19	6.67	9.46	2.89
0.1333	0.1002	0.4358	13.51	....	....	6.85	3.70	....	....	15.97	5.56	....	....	....	....	4.09	1.33
0.1500	0.1128	0.4904	15.20	5.88	1.41	....	....	....	....	....	....	5.74	2.25	....	....	1.28	0.47
0.2000	0.1504	0.6538	20.27	....	....	6.23	5.04	....	....	....	....	5.21	2.72	....	....	3.25	1.59
0.2500	0.1880	0.8173	25.34	5.88	2.34	4.98	5.04	....	....	12.78	8.33	5.74	3.75	18.87	8.33	9.46	5.78
0.3000	0.2256	0.9807	30.40	5.88	2.81	....	....	....	....	....	....	....	....	....	....	0.51	0.38
0.3750	0.2820	1.2259	38.00	5.88	3.51	....	....	....	....	....	....	....	....	....	....	0.51	0.47
0.4500	0.3384	1.4711	45.60	5.88	4.22	....	....	....	....	....	....	....	....	....	....	0.51	0.56
0.5000	0.3759	1.6345	50.67	5.88	4.68	4.98	10.09	28.57	14.29	7.35	9.58	5.74	7.50	9.43	8.33	6.98	8.53
0.7500	0.5639	2.4518	76.01	5.88	7.03	3.74	11.35	....	....	....	....	5.74	11.25	....	....	2.81	5.16
1.0000	0.7519	3.2690	101.34	5.88	9.37	3.74	15.13	57.14	57.14	6.39	16.67	12.46	32.53	9.43	16.67	7.80	19.07
1.3333	1.0025	4.3586	135.12	....	....	2.49	13.45	....	....	....	....	....	....	....	....	1.02	3.33
1.5000	1.1278	4.9036	152.01	5.88	14.05	2.49	15.13	....	....	3.19	12.50	1.91	7.50	3.78	10.00	3.07	11.25
2.0000	1.5038	6.5381	202.68	5.88	18.74	1.56	12.61	14.29	28.57	3.19	16.67	1.91	10.00	4.72	16.67	3.20	15.63
3.0000	2.2556	9.8071	304.02	5.88	28.10	....	....	....	....	3.19	25.00	1.91	15.00	2.83	15.00	1.79	13.13
5.0000	3.7594	16.3452	506.70	....	....	....	....	....	....	....	....	....	....	1.89	16.67	0.51	6.25
				99.96	100.01	99.98	99.98	100.00	100.00	99.99	100.01	99.95	100.01	100.01	100.01	99.98	100.01

Sources: See text and *CR* (v. 23, pp. 294, 392, 516, 539, 850-1; v. 25, pp. 157, 173, 332, 347, 362, 371); McCusker (1978, p. 10).
Notes: See text. Shillings and pence are converted to decimalized pounds. There are 20 shillings in a pound and 12 pence in a shilling. At face value, 1.33£NC = 1£S. Pre-1772, 1£S = 4.34783 Spanish silver dollars. £S = pounds sterling. £NC = North Carolina paper pounds. Failure to sum to 100 is due to rounding.
[a] From http://eh.net "measuring worth—relative value of U.S. Dollars" using the 1775 to 2012 *CPI* conversion algorithm.
[b] The units multiplied by the value only sum to 39,650£NC and not the 40,000£NC authorized for this emission. Whether and how this discrepancy was accommodated is currently unknown.

Appendix Table 4   *Face Value Denominational Structure of Colonial North Carolina Paper Money, 1714-1729*

Denom-ination £_{NC}	Face Value in £_S	Face Value in Spanish Silver Dollars	Value in 2012 U.S. Dollars[a]	Emission #3 (1714) 12,000 Units %	24,000 Value %	Emission #4 (1722) 9,920 Units %	12,000 Value %	Total (1714-1729) 21,920 Units %	36,000 Value %
0.050	0.033	0.145	4.45	….	….	10.08	0.42	4.56	0.14
0.100	0.067	0.290	9.03	….	….	10.08	0.83	4.56	0.28
0.125	0.083	0.362	11.19	6.00	0.38	10.08	1.04	7.85	0.60
0.250	0.167	0.725	22.51	25.00	3.13	10.08	2.08	18.25	2.78
0.375	0.250	1.087	33.70	….	….	10.08	3.13	4.56	1.04
0.400	0.267	1.160	35.99	1.25	0.25	….	….	0.68	0.17
0.500	0.334	1.450	45.02	27.50	6.88	10.08	4.17	19.62	5.97
1.000	0.667	2.899	89.90	25.00	12.50	10.08	8.33	18.25	11.11
2.000	1.334	5.798	179.80	….	….	10.08	16.67	4.56	5.56
3.000	2.001	8.697	269.70	2.50	3.75	10.08	25.00	5.93	10.83
5.000	3.335	14.495	449.50	3.74	9.38	9.27	38.33	6.25	19.03
10.000	6.670	28.990	899.00	4.00	20.00	….	….	2.19	13.33
15.000	10.005	43.485	1,348.50	2.50	18.75	….	….	1.37	12.50
20.000	13.340	57.980	1,798.01	2.50	25.00	….	….	1.37	16.67
				99.99	100.02	99.99	100.00	100.00	100.01

Sources: *CR* (v. 25, p. 157, 173); McCusker (1978, p. 10).
Notes: Shillings and pence are converted to decimalized pounds. There are 20 shillings in a pound and 12 pence in a shilling. At face value, 1.5£_{NC} = 1£_S. Pre-1772, 1£_S = 4.34783 Spanish silver dollars. £_S = pounds sterling. £_{NC} = North Carolina paper pounds. Failure to sum to 100 is due to rounding.

[a] From http://eh.net "measuring worth—relative value of U.S. Dollars" using the 1775 to 2012 *CPI* conversion algorithm.