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A FORENSIC ACCOUNTING RECONSTRUCTION OF THE DATA

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ABSTRACT

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I reconstruct the data on Virginia's paper money regime using forensic accounting techniques. I correct the existing data on the amounts authorized and outstanding. In addition, I reconstruct yearly data on previously unknown aspects of Virginia's paper money regime, including printings, net new emissions, redemptions and removals, denominational structures, expected tax revenues, and specie accumulating in the treasury for paper money redemption. These new data form the foundation for narratives written on the social, economic, and political history of Virginia, as well as for testing models of colonial paper money performance.

In 1755, Virginia and Georgia became the last of the 13 colonies to emit paper money.

The performance of Virginia's paper money regime is central to the history of the period. It was at the center of the conflict with the Crown over colonial monetary powers and provided justification for Parliament passing the Currency Act of 1764 (4 Geo III c. 34). This conflict contributed to revolutionary sentiments. Virginia's paper money regime was also a point of contention in Virginia politics. Irregular activities by Virginia's treasurer occupied a substantial amount of political attention. Virginia's administrative structure was altered as a result.²

Virginia had the second largest free population of the 13 colonies (Carter, *et al.* 2006, v. 5, p. 652). Why Virginia took so long to initiate its own paper money regime is curious. Part of Virginia's delay may be due to the relative efficiency of its commodity "tobacco" money which was commonly used in domestic transactions and to pay local taxes. Prior to emitting paper money, Virginia's media of exchange consisted of barter, typically involving book-credit and tobacco—often in the form of claims to tobacco or tobacco notes; personal bills of exchange and

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² Brock (1975, pp. 465-527); Ernst (1973); Greene and Jellison (1961); *Journal of the Commissioners for Trade and Plantations from January 1759 to December 1763* (1970, pp. 330-5); Labaree (1966, v. 9, pp. 131-53); Mays (1952, v. 1, pp. 174-208, 358-85).

promissory notes; and specie coins. The composition of this media is unknown, though specie coins were considered relatively scarce.

Budgetary crises caused by wars typically pushed colonies into paper money systems (Grubb 2016). Virginia did not face such a crisis until the Seven Year's War. The immediate and large spending demands of Virginia's participation in the Seven Year's War swamped Virginia's ability to raise enough taxes immediately to meet these expenses (Brock 1975, pp. 466-9, 476). As a result, the Virginia legislature authorized 614,797 "Virginia pounds" (£_{VA}) worth of paper money to be printed between 1755 and 1774.

Paper money was created by colonial legislatures and directly spent by those legislatures through their respective treasuries. Legislature-issued, colony-specific paper monies were the only paper monies in circulation in colonial America. No public or private incorporated banks issuing paper banknotes backed by fractional specie reserves, with said banknotes redeemable at face value in specie at the issuing bank, existed in colonial America (Hammond 1991, pp. 3-67).

The amount of paper money the Virginia legislature maintained in public circulation is foundational data. The political, social, and economic narratives of Virginia's late colonial history, and the history of colonial America over its last quarter century, are erected upon, and must be consistent with, that data. Yet, no one alive today knows where the quantitative data currently in use on Virginia's paper money regime originates (Carter, et al. 2006, v. 5, pp. 692-6). It is mysterious data that could be, for all anyone knows, totally made up.

This is a methodological essay. Scholars need to know how quantitative data are created. They need to know where these data are reasonably solid and trustworthy—closely linked to primary source observations, and where they are highly constructed and fragile—being based on supposition, assumption, and conjecture. In particular, scholars need to know where the data

suffer error variance in their construction, what the source of that error variance is, the magnitude of that error variance, and what alternative data constructions are possible. Scholars who craft the political, social, and economic narratives of Virginia's late colonial history, as well as economists who test models of colonial paper money, depend on that knowledge.

I will show how the quantitative data on Virginia's colonial paper money are constructed, and in the process produce better data than currently exists. I will also construct yearly data on previously uncharted aspects of Virginia's paper money regime, including on paper money printings, net new emissions, redemptions and removals, denominational structures, expected tax revenues, and the specie accumulating in the treasury for paper money redemption. Throughout, the goal is to show scholars the nitty-gritty of how it is done—to lay bare the assumptions made so that the reasonableness of the data constructions may be compared with possible alternatives.

The essay proceeds as follows: First, I assess the current quantitative data on colonial Virginia's paper money regime and compare it with my final reconstructed data. Second, I proceed step-by-step through how these data are constructed. I start with emissions, proceed through redemptions and removals, and end with a final data series of paper money in public circulation. Third, I present data on the denominational structure of Virginia's paper money and estimate the medium in which the taxes imposed by paper money acts were paid. I also estimate the amounts of specie and tobacco monies accumulating in the treasury to be used to redeem paper money. Lastly, I use these data to reassess the John Robinson treasury scandal that rocked Virginia politics in the mid-1760s.

Virginia referred to its paper money as *treasury notes*. Other colonies referred to their paper monies as *bills of credit*. While treasury notes were the same as bills of credit, I will refer to Virginia's paper money throughout as *notes* rather than *bills* in keeping with Virginia's

terminology (Hening 1969, v. 7, p. 353).

Mysterious Data

Historical Statistics (Carter, et al. 2006, v. 5, pp. 692-6) is the current go-to place for data on the amount of colonial Virginia paper money in circulation each year. If one tracks back through the citations and sources listed, the hypothesis that these numbers are made up cannot be rejected. They are not observations, even though they are seemingly presented as such. They are not estimates or interpolations, as that would indicate that some methodology or calculating construction was used, and none is offered. Where these numbers come from is a mystery.

In the *Historical Statistics*, the numbers for Virginia are taken from Brock (1992, p. 116). John J. McCusker compiled the numbers in the *Historical Statistics*, and while he cites several sources, the numbers are identical to those in Brock (1992, p. 116) and not to those in any other source.³ Of the sources cited, only Brock (1992, p. 116) and Ernst (1972, p. 370) report numbers on the amount of Virginia notes in circulation. Brock (1992, p. 116) cites Ernst (1973, pp. 7 and 356). However, no such numbers exist in Ernst on those pages. Ernst (1973, p. 370) does report some numbers for the amounts of Virginia paper money in circulation, but only for 9 of the 20 years covered by Brock. These numbers are also not the same as those in Brock (1992, p. 116) or in the *Historical Statistics*. McCusker concluded that “Brock (1992), p. 115, seems to have interpolated some of his data but this is not made explicit,” —a generous assessment (Carter et al. 2006, v. 5, p. 695).

Brock (1992, p. 116) was not published by Brock, but by Ron Michener well after Brock’s death using Brock’s surviving notes. A close look at Brock (1975, pp. 476-7 [original 1941]) shows that Brock had created these numbers on Virginia’s notes in circulation prior to 1941, as he graphed these numbers on those pages. He did not, however, present the actual

³ McCusker mistakenly cites Brock (1992, p. 115) whereas the numbers are actually on p. 116.

numerical values. Brock (1975, p. 475) describes the graph as “Some idea” of the sums outstanding and not as an estimate or as observations of the sums outstanding.

I assume the numbers in Brock (1992, p. 116), as well as in Ernst (1973, p. 370), are not totally fabricated, but came from some investigation of evidence in primary sources. I use three primary sources in my forensic reconstruction of the data, namely the statutory paper money acts (Hening 1969); the treasury accounts as recorded in the *Journals of the House of Burgesses* (Kennedy 1906a, pp. 64-6, 108, 118-20, 124-8, 154-6, 283-5, 303; 1906b, pp. 72, 217-8; 1907, pp. 143, 171, 176-8, 356-7; McIlwaine 1908, pp. 15, 36-7, 115-6, 171-2, 249-50; 1909, pp. 388, 458, 487-90); and the letters published in the *Virginia Gazette* by the post-1765 treasurer Robert Carter Nicholas (*William and Marry College Quarterly Historical Magazine* 1912, pp. 227-62). Brock and Ernst clearly consulted these three primary sources to construct their numbers. The mystery of how they used and interpreted these sources is sorted out here.

While the statutory paper money acts appear to offer rather straightforward data that can be simply picked out and reported, there are subtle issues of interpretation that can lead scholars astray. More significantly, the statutory paper money acts by themselves do not yield the amounts of paper money in circulation. Information from the treasury accounts must be added. Alas, the treasury accounts are incomplete, disorganized, irregularly reported, chaotic and inconsistent in presentation structure, and unclear in the use of common terminology. For example, what is meant in the treasury accounts by the term “issued” and the term “in circulation” are not what we commonly understand by such words today.

An extensive forensic accounting reconstruction of these accounts is required to make sense of them. This reconstruction is provided below. The forensic reconstruction also puts key terminologies used in the treasury accounts into their proper historical context, thereby

deciphering their usage by contemporaries. Forensic accounting uses existent records to reconstruct the accounts of interest to a standard sufficient to meet legal criteria. Given that the records are legislative, that standard is appropriate. This reconstruction relies on tracking internal consistencies and coherences across the existent records, paying close attention to the execution details embedded in the relevant laws, and using reasonable inferences to fill in missing data.⁴

While we may never know how Brock and Ernst created their numbers, my forensic reconstruction of Virginia's paper money regime shows what Brock and Ernst likely did, along with what they likely missed. In the process, additional information beyond the amount of paper money authorized by statute and the amount in circulation are recovered. The forensic reconstruction process also shows where the data are solid and where the data are fragile—giving scholars a feel for the error variance in the paper money data in the historical record.

Preview

Figure 1 presents my preliminary and final forensic reconstruction of the amounts of Virginia's notes in public circulation along with those numbers presented by Brock and Ernst. My preliminary and final reconstructions are reasonably close to the numbers provided by Brock and Ernst. If my forensically reconstructed data are rejected, including their component parts, then the data presented by Ernst and Brock, a.k.a. the *Historical Statistics* data, must also be rejected, leaving no usable data on this topic.

While my reconstructed data are reasonably close to that of Brock and Ernst, Table 1 shows that in some years the percentage deviations of Brock's numbers and Ernst's numbers from my final reconstructed numbers are substantial. As such, my final reconstruction makes important corrections to the Brock and Ernst data. The substantial deviations of Brock and Ernst

⁴ For general information on forensic accounting, see Crumbley, Heitger, and Smith (2013); <http://www.forensicaccounting.com>.

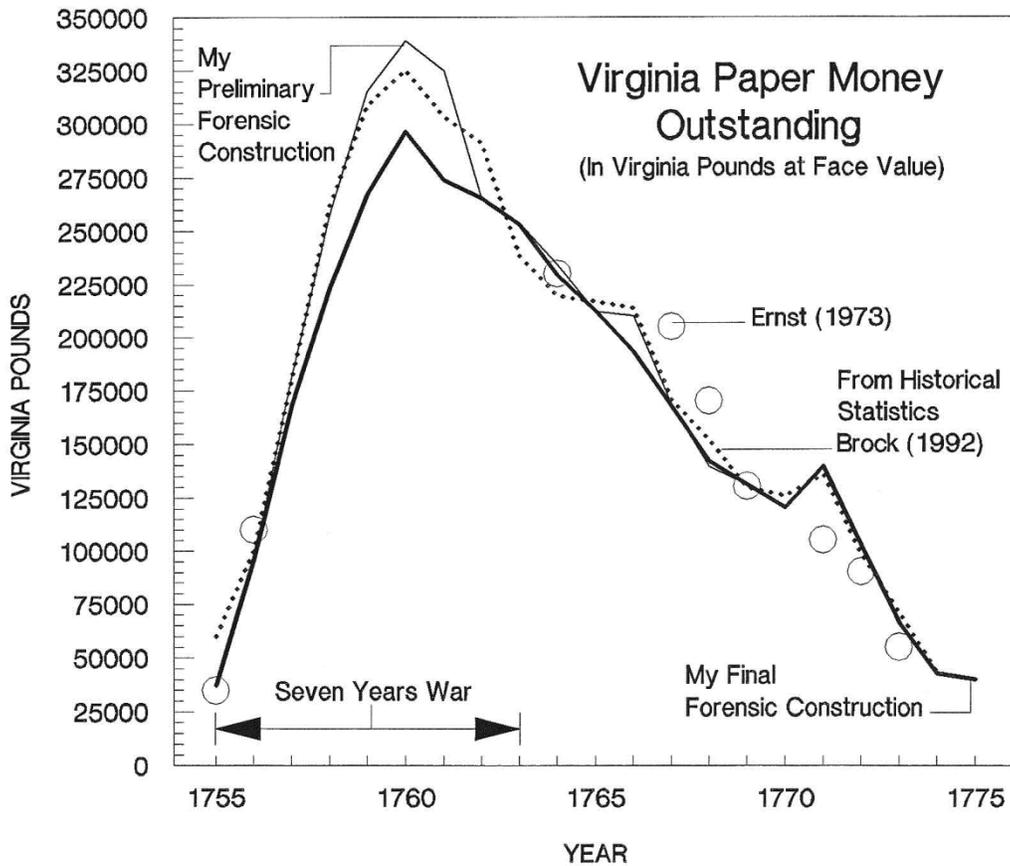


Figure 1. The Quantity of Virginia Paper Money Outstanding

Sources: Table 1; Carter, *et al* (2006, v. 5, p. 693); Ernst (1973, p. 370). My preliminary forensic construction uses column (3) instead of column (4) in Table 4 to estimate notes outstanding.

from my reconstructed data in Table 1 are due to oversights by these scholars when looking at the primary sources and to the fact that they did not reconstruct tax revenues.

Brock substantially overstates the amount in circulation in 1755. He missed the fact that 3,960£_{VA} authorized to be emitted in 1755 was recorded in the treasury accounts as never emitted, and missed the fact that 18,861£_{VA} authorized to be emitted in 1755 was recorded in the treasury accounts as not emitted in 1755, but in a subsequent year. By contrast, Ernst must have incorporated these facts as he gets the amount for 1755 correct—within the rounding exercise he employs. The other deviations of Brock from my reconstructed data are the result of timing placements regarding when amounts reported as emitted and redeemed were actually put into

Table 1 Amount of Virginia Notes in Circulation, 1755-1774: Various Sources

Year	(1)	(2)	(3)	(4)	Percentage Deviation of—	
	<i>Historical Statistics</i> ^a	Brock (1992) ^c	Ernst (1973) ^e	My Final Reconstruction	Column (2) from (4)	Column (3) from (4)
	£ _{VA}	£ _{VA}	£ _{VA}	£ _{VA}	%	%
1755	60,000	60,000	35,000	37,179	61.38	-5.86
1756	100,000	99,963	110,000	95,582	4.58	15.08
1757	180,000	179,962		167,605	7.37	
1758	261,500	261,523		223,318	17.11	
1759	308,800	308,789		266,949	15.67	
1760	325,000	325,044		296,266	9.71	
1761	303,400	303,360		273,507	10.91	
1762	291,100	291,107		265,286	9.73	
1763	238,400 ^b	238,439 ^d		253,120	-5.80	
1764	219,500 ^b	219,508 ^d	230,000	229,322	-4.28	0.30
1765	216,600 ^b	216,640 ^d		212,373	2.01	
1766	213,800	213,771		193,225	10.63	
1767	170,400	170,420	205,000	167,474	1.76	22.41
1768	151,400	151,408	170,000	141,723	6.83	19.95
1769	129,900	129,875	130,000	130,677	-0.61	-0.52
1770	125,400	125,426		120,136	4.40	
1771	135,300 ^b	135,305 ^d	105,000	139,192	-2.79	-24.56
1772	98,300	98,336	90,000	102,630	-4.18	-12.31
1773	70,700	70,695	55,000	66,068	7.00	-16.75
1774	43,400	43,377		42,713	1.55	

Sources: Carter, et al. (2006, v. 5, p. 693); Ernst (1973, p. 370); Table 6 below.

Notes: £_{VA} = Virginia paper pounds at face value.

^a Rounded to the nearest 100.

^b Identified as interpolated values.

^c End of year values are reported.

^d Placed in brackets with no explanation as to why.

^e Rounded to the nearest 5,000.

and taken out of circulation, which is partly due to how tax revenues are reconstructed and used.

The substantial deviations of Ernst from my reconstructed data in Table 1 are the result of several oversights by Ernst. While Ernst must have consulted the treasury accounts, he simply reports the numbers found rather than interpreting their meaning. For example, he reports a number for 1756 that assumes that no redemptions took place in 1756. The redemption and removal of the first emission was scheduled for mid-1756. Its redemption was not reported in the treasury accounts until early in 1757. Ernst must have assumed, given the reporting year, that

none was redeemed in 1756. Most taxes to redeem notes, as Ernst himself points out (Ernst 1973, p. 186), were collected in the fall, with total collections not reported until the next spring.

Therefore, it is unlikely that this emission was not primarily redeemed in 1756.

Ernst's numbers in Table 1 for 1767-1769 and 1772-1773 come directly from statements in the treasury accounts about the amount of notes in circulation.⁵ Again, Ernst simply reports the numbers he ran across. Such reporting results in three errors of interpretation. First, these statements were typically made early in the year and thus refer to notes removed in the latter part of the prior year. Thus, these statements are off by one year and the amounts reported should be placed in the prior year. Second, the treasury accounts explicitly refer to these amounts in circulation as being only for "old" notes, meaning notes issued before 1769. They do not include the 40,000£_{VA} "new" notes emitted in 1769 and 1771. Thus, the amounts Ernst lists after 1769 are biased low. Finally, the treasury accounts construct these numbers by taking all notes printed and then subtracting all notes burned. To the extent that this construction fails to subtract notes sitting idle in the treasury, unburned and un-emitted, it overstates the amounts actually in public circulation, especially pre-1769. Thus, pre-1769, Ernst's numbers are biased high.

What follows is my forensic reconstruction of the data using the primary sources. It will show in detail what Brock, and to a lesser extent Ernst, must have done to create their data, and what they failed to consider. It also gives scholars a sense of what aspects of this estimation are more exact to observation and what are highly constructed. I proceed from the most solid and trustworthy evidence in the primary sources through the forensically reconstructed data that relies directly on that solid and trustworthy evidence to the most fragile or "constructed" data that relies on reasonable inference, back-projection, interpolation, and data cloning. This is done so scholars can get a sense of the size and location of the error variance in measurement and so

⁵ I have no idea where his numbers for 1764 and 1771 come from.

what data they can trust as exact and what data they should take only with a margin of error, as well as what that margin might be.

The Forensic Reconstruction of Colonial Virginia's Paper Money Accounts

Ultimately, the number desired is the amount of paper money in public circulation each year. It is this amount that influences behavior and thus historical processes and outcomes. Such numbers, however, cannot be found in the surviving records of colonial Virginia. One cannot just go to a primary source and copy down such data. The few times that colonial Virginia documents mention amounts of paper money in circulation they did not mean what is commonly understood as being "in circulation." As such, this data has to be constructed out of the information that has survived. To find the amounts of paper money in circulation each year, one needs to establish the amounts of new paper money emitted into public hands each year, then subtract from that the amounts of paper money removed from the public each year, and then chart the total accumulation or de-accumulation of paper money over time as a result of this yearly emission-redemption-removal process.

a. New Emissions Authorized by Statutory Law

The data construction process starts with identifying how much new paper money was emitted each year by the legislature. Such information can be derived from the statutory laws that authorized paper money emissions. While this information comes from the most complete and clear surviving primary source, it still is not free from scholarly misinterpretation. Simply copying down data in this source can lead one astray. The statutory laws on paper emissions report total paper money authorized to be printed and total paper money authorized to be emitted. They are not the same totals. The difference for Virginia comes from one-for-one swaps of new paper money for old. Such one-for-one swaps do not affect the total amount of paper money in

public circulation. To get to the total amount of paper money in public circulation, information on net new emissions of paper money rather than total printings of paper money is needed.

Table 2 lists the 16 paper money acts, their legislative session dates, and the total printed versus net new emissions of paper money authorized by each act. These two numbers are the same for each act except for emissions #6 and #16. Emission #6 included 95,000£_{VA} to be swapped one-for-one with emissions #2, #3, and #4. Emission #16 was all to be swapped one-for-one with what was left outstanding from emissions #14 and #15. These amounts must be removed to get the total net new emissions authorized.

Table 2 shows that Ernst (1973, p. 370) reported total printings not net new emissions. Given that most readers assume that the numbers reported are net new emissions, Ernst's data overstates total net new emissions by 27 percent. A similar judgment can be made of the data reported in the 1912 *William and Mary College Quarterly Historical Magazine*. By contrast, the data reported by Brock (1975, pp. 476-7) is for net new emissions and not total printings. Brock, however, does not report emissions after 1762 and excludes 4,963£_{VA} from emission #6, erroneously counting that amount as part of the one-for-one currency swap rather than as part of the new emission. The 4,963£_{VA} amount were new emission #6 notes used to pay the accrued interest on emissions #2, #3, and #4 when those notes were swapped for emission #6 notes. They are part of the net new emission of emission #6 notes. As such, Brock understates total net new emissions by 9 percent.

One last adjustment has to be done to the net new emissions authorized in Table 2. While statutory law authorized only 10,000£_{VA} for emission #5, 12,000£_{VA} was actually printed and emitted according to the *House of Burgesses* (McIlwaine 1909, p. 490). While statutory law is regarded as superior in authority to legislative statements, treasurer accounts corroborate this

Table 2 Virginia's Paper Money Acts in Statutory Law, 1755-1774

Paper Money Acts	Session Month and Year Enacted	Amounts Authorized by Statutory Law		Legislated Final Redemption Date	Amounts as Reported in:		
		To be Printed	Net New Emissions		Ernst (1973)	Brock (1941)	<i>William and Mary Quarterly</i> (1912)
		£ _{VA}	£ _{VA}		£ _{VA}	£ _{VA}	£ _{VA}
#1	May 1755	20,000	20,000	30 June 1756	20,000	20,000	20,000
#2	Aug. 1755	40,000	40,000	30 June 1760	40,000	40,000	40,000
#3	Mar. 1756	25,000	25,000	30 June 1760	25,000	25,000	25,000
#4	Mar. 1756	30,000	30,000	30 June 1760	30,000	30,000	30,000
#5	Mar. 1756	10,000	10,000	15 Dec. 1757	12,000	12,000	10,000
#6	Apr. 1757	179,963	84,963	1 Mar. 1765	179,963	80,000	179,963
#7	Mar. 1758	32,000	32,000	1 Mar. 1765	32,000	32,000	32,000
#8	Sept. 1758	57,000	57,000	14 Sept. 1766	57,000	57,000	57,000
#9	Feb. 1759	52,000	52,000	20 Apr. 1768	52,000	52,000	57,000 ^a
#10	Nov. 1759	10,000	10,000	20 Oct. 1769	10,000	10,000	10,000
#11	Mar. 1760	20,000	20,000	10 Oct. 1768	20,000	20,000	20,000
#12	May 1760	32,000	32,000	20 Oct. 1769	32,000	32,000	32,000
#13	Mar. 1762	30,000	30,000	20 Oct. 1769	30,000	30,000	30,000
#14	Nov. 1769	10,000	10,000	21 Nov. 1771	10,000		10,000
#15	July 1771	30,000	30,000	10 Dec. 1775	30,000		30,000
#16	Mar. 1773	36,834	0	1 June 1774	36,834		36,834
Total		614,797	482,963		616,797	440,000	619,797 ^a

Sources: Brock (1975, pp. 476-7); Ernst (1973, p. 370); Hening (1969, v. 6, pp. 461-81, 521-30; v. 7, pp. 9-25, 26-33, 46-54, 69-87, 163-9, 171-9, 255-65, 331-7, 347-58, 357-63, 493-502; v. 8, pp. 342-8, 493-503, 647-51); *William and Mary College Quarterly Historical Magazine* (1912, pp. 261-2).

Notes: £_{VA} = Virginia paper pounds at face value. See the text for construction adjustments to #5.

^a This source lists 614,797£_{VA} as the total, which would be consistent with a typo existing in this sources statement about emission #9, with the 7 being a typo for a 2.

alternative total. On three different occasions across two different treasurers, the treasury accounts says that 539,963£_{VA} were emitted from 1755 through 1762 (Kennedy 1906a, pp. 119, 155; *William and Mary College Quarterly Historical Magazine* 1912, p. 234). Summing the authorized numbers in Table 2 indicates that these treasury accounts are reporting total printings as the amounts “issued” and not net new emissions.

The summing of authorized amounts printed in Table 2 is 2,000£_{VA} less than that reported in the treasury accounts for that period. The only mention of this extra 2,000£_{VA} is in regard to emission #5 (McIlwaine 1909, p. 490). Given this corroboration and coherence across the existent records, 12,000£_{VA} will be taken as the correct amount for emission #5 (see also

Table 8 below). Both Ernst and Brock report emission #5 as being for 12,000£_{VA} rather than the 10,000£_{VA} as authorized by statutory law. These two scholars must have been examining the treasury accounts as reported in the *Journals of the House of Burgesses* to construct their data on paper money, as that source is the only place the 12,000£_{VA} figure can be found.

b. Net New Emissions Actually Put Into Public Circulation

In the absence of contrary evidence in the treasury accounts, I assume that notes went into public circulation in the year they were authorized by legislative statute. The dates printed on the notes averaged only one month later than the assembly session authorizing the respective notes (Newman 2008, pp. 437-43). Given this observation, and the fact that new authorizations came yearly and often sub-yearly before 1761, it is a reasonable assumption.

Table 3 uses the information stated in the treasury accounts to make two adjustments to turn the net new amounts authorized into net new emissions actually put into public circulation. First, the treasury accounts state that certain authorized amounts from emissions #1 and #2 were never spent out of the treasury, but sat there, and were eventually burned without ever being emitted. Column (2) of Table 3 lists those sums and the authorized emissions from which they must be subtracted.

The amount identified in column (2) of Table 3 for emission #2 in 1755, however, must be added back in 1757. For emissions #2, #3, and #4, a total of 99,963£_{VA} of emission #6 notes were authorized to be swapped for emission #2, #3, and #4 notes in public circulation and to pay off the accrued interest on those notes to that point. Only 93,604£_{VA} of emissions #2, #3, and #4 were emitted into public circulation, thus the interest portion of the amount authorized was 6,359£_{VA}. In effect, the “missing” un-emitted notes from emission #2 are added back in to the total emitted via interest payments above the 93,604£_{VA} currency swap.

Table 3 Net New Emissions Actually Put Into Public Circulation, 1755-1774

Year	(1) Net New Amounts Authorized		(2) Minus Amounts Never Emitted to the Public		(3) Plus and Minus When Emitted to the Public		Year	(4) Net New Emissions Actually Put Into Public Circulation £ _{VA}	(5) Accumulation If None Were Removed £ _{VA}
	Em #	£ _{VA}	Em #	£ _{VA}	Em #	£ _{VA}			
1755	1	20,000	1	-3,960					
	2	40,000	2	-1,396	2	-17,465	1755	37,179	37,179
1756	3	25,000			2	+17,465			
	4	30,000			4	-10,129			
	5	12,000					1756	74,336	111,515
1757	6	84,963	2	+1,396	4	+10,129			
					6	-3,480 ^a			
					6	-7,255 ^b	1757	85,753	197,268
1758	7	32,000			6	+3,209 ^a			
	8	57,000			7-8	-10,378 ^b	1758	81,831	279,099
1759	9	52,000			9	-2,378 ^c			
	10	10,000			10	-457 ^c			
					6-8	+10,483 ^b			
					6	+101 ^a	1759	69,749	348,848
1760	11	20,000			11	-914 ^c			
	12	32,000			12	-1,463 ^c			
					7-8	+4,275 ^b			
					6	+101 ^a	1760	53,999	402,847
1761					9-12	+5,212 ^c			
					6	+32 ^a	1761	5,244	408,091
1762	13	30,000			13	-10,250			
					6	+32 ^a	1762	19,782	427,873
1763					13	+10,250			
					8	+375			
					6	+2 ^a	1763	10,627	438,500
1764					7-8	+2,500 ^b			
					6	+2 ^a	1764	2,502	441,002
1765							1765		441,002
1766							1766		441,002
1767							1767		441,002
1768							1768		441,002
1769	14	10,000					1769	10,000	451,002
1770							1770		451,002
1771	15	30,000					1771	30,000	481,002
1772							1772		481,002
1773							1773		481,002
1774							1774		481,002
Total		484,963		-3,960		0		481,002	

Sources: Table 2; Kennedy (1906a, pp. xi-xxv, 64-6, 108, 118-20, 124-8, 154-6, 283-5, 303; 1906b, pp. 72, 217-8; 1907, pp. 143, 171, 176-8, 356-7); McIlwaine (1908, pp. 15, 36-7, 115-6, 171-2, 249-50; 1909, pp. 388, 458, 487-90); *William and Marry College Quarterly Historical Magazine* (1912, pp. 227-62).

Notes: See the text for construction. Em # = paper money acts or emission numbers as listed in Table 2. £_{VA} = Virginia paper pounds at face value. Shillings and pence are rounded to the nearest pound.

^a The 93,604£_{VA} notes from emissions #2, #3, and #4 were not swapped for emission #6 notes all at once, but over the next eight years. The net new emissions from this swap were the extra 6,359£_{VA} emission #6 notes printed to pay the 1.2 years of accrued interest on emission #2, #3, and #4 notes. I assumed that this interest was only paid when the notes were brought in to be swapped. $6,359£_{VA} / 93,604£_{VA} = 0.0679$. This percentage was used to convert notes listed as still held in the treasury to execute this swap into the net new emission #6 notes that were emitted as the interest payment portion of this swap. I assume the 93,604£_{VA} total actually emitted for emissions #2, #3, and #4 was known by the crafting of emission #6, and it was known how many extra emission #6 notes were needed to pay the accrued interest.

^b 7,255£_{VA} of emission #6 notes that were part of the new 80,000£_{VA} emission of emission #6 notes were unspent in the treasury in 1758. This sum gets incorporated into discussions of emissions #7 and #8 that were still unspent in the treasury and when those unspent sums were no longer in the treasury and so must have been spent. 6,775£_{VA} of emissions #7 and #8 were designated to fund the Rangers (a military unit) and the Commissioner on Indian Affairs. This amount was reported as still held in the treasury for this purpose into 1760, when 4,275£_{VA} was no longer mentioned as being so held. I assume that 3,275£_{VA} was released that year to fund the Rangers and 1,000£_{VA} to fund the Commissioner on Indian Affairs, as 2,500£_{VA} was still reported as held in the treasury to fund the Commissioner on Indian Affairs in the years after 1761. This 2,500£_{VA} shows up again in 1766 as part of the monies the treasurer, John Robinson, diverted out of the treasury as loans to his friends. Exactly what year this 2,500£_{VA} was put into circulation by Robinson is unknown. It is arbitrarily placed in 1764 as a best guess.

^c The +5,212£_{VA} in 1761 from emissions #9, #10, #11, and #12 are pro-rated in subtraction across those emissions because which emission this added amount should be subtracted from was not indicated.

In other words, emission #6 authorized 179,963£_{VA} notes which consisted of 80,000£_{VA} of new emissions plus 93,604£_{VA} in one-for-one currency swaps for notes outstanding from emissions #2, #3, and #4 plus 6,359£_{VA} in interest payments. The 1,396£_{VA} notes never emitted added to the 93,604£_{VA} notes actually emitted equals the 95,000£_{VA} originally authorized, which in turn when subtracted from the emission #6 total authorization of 179,963£_{VA} equals 84,963£_{VA} net new emissions going into public hands.

The treasury accounts also list sums that were sitting in the treasury unspent from given emissions for some time after their initial authorization. Given that the treasury accounts never refer to these sums as being destroyed without being emitted, I assume that they were spent into public circulation at some later date. Column (3) in Table 3 lists these amounts as stated in the treasury accounts, subtracts these amounts from the amounts authorized in their respective emission year, and then adds these amounts back in the year where it seems reasonable to assume they were spent into public circulation.

For the most part, the numbers, along with the year when each is subtracted, are direct

observations taken from the treasury accounts. The year when they are added back in, however, must be inferred as it is not directly stated in the treasury accounts. The method for placement assumes that following the last mention of a sum still sitting idle in the treasury, if that mention was early in the year, I assume that sum went into circulation in the last year it was mentioned. If the sum was last mentioned late in the year, then I assume it went into circulation in the following year.⁶ At this stage, the data construction process has moved from direct observations to controlled conjectures. Some potential error variance in the path of net new notes put into public circulation is introduced here.

Column (4) of Table 3 incorporates the two adjustments to the net new emissions authorized to produce the time-path of the net new emissions actually put into public circulation. Column (5) sums the accumulation of these emissions under the assumption that none were ever removed from circulation. It simply provides the maximum ceiling for total notes in circulation. Any analysis that leads to more than that listed in column (5) would not be credible.

c. Removal of Notes from Public Circulation: Preliminary Evidence and Adjustments

To derive the amount of notes in public circulation, notes removed from public circulation must be subtracted from the net new notes put into public circulation. Table 4 provides information on the amount of notes removed, and estimates of when they were removed, from public circulation. For the most part, the amounts of notes removed from public circulation are direct observations taken from the treasury accounts. When these notes were removed from public circulation prior to their reporting in the treasury accounts, however, must be estimated. Some back-projection, interpolation, data cloning, and other placement estimation methods are required. The methods used depend on the type of information provided in the

⁶ Trying to prorate the introduction of these notes by month, say for some months at the end of a year and then some in the months after the New Year, was not attempted here. The spending by the treasury each month is unknown, and to guess at its prorated flow would be pure speculation.

Table 4 Net New Emissions Redeemed and Removed from Public Circulation, 1755-1775

Year	(1) When Net New Notes Redeemed from the Public were Reported as Burned		(2) When these Notes were Likely being held for Burning		(3) Preliminary Total: Net New Notes Removed from Public Circulation Each Year		(4) Adjusted Total: When these Notes were Likely Removed from Public Circulation	
	Em #	£ _{VA}	Em #	£ _{VA}	Year	£ _{VA}	Year	£ _{VA}
1755		0		0	1755	0		0
1756		0	1	15,932 ^a	1756	15,932 ^a		15,932 ^a
1757	1	15,932 ^a		0	1757	0		13,731
1758	5	5,518	5	5,518	1758	5,518		26,118
1759	5	1,891	5	1,891				
			6&7	10,052	1759	11,943		26,118
1760	6&7	30,731	6&7	30,313	1760	30,313		24,682
1761	6&7	20,426	6&7	17,614				
	5	1,648	5	1,648	1761	19,262		28,003
1762	6&7	23,244	6&7	16,422				
	5	2,066	5	2,066				
	8-13	11,256	8-13	11,256				
			---	49,875	1762	79,619		28,003
1763	---	49,875	---	22,014	1763	22,014		22,793
1764		?	---	22,014	1764	22,014		26,300
1765		?	---	22,014	1765	22,014		16,949
1766		?	---	2,225	1766	2,225		19,148
1767	---	2,225	---	41,765	1767	41,765		25,751
1768	---	41,765	---	29,264	1768	29,264		25,751
1769	---	39,906	---	18,442	1769	18,442		21,046
1770	---	7,800			1770	10,541		10,541
1771					1771	10,944		10,944
1772					1772	36,562		36,562
1773					1773	36,562		36,562
1774					1774	23,355		23,355
1775					1775	2,763		2,763
Total						441,052		441,052

Sources: See the sources listed for Table 3.

Notes: See the notes to Table 3 and the text for construction. After 1762, redemption accounts do not report which emissions were being burned.

^a Emission #1 had 3,961£_{VA} never emitted. Out of the 16,039£_{VA} emitted, 15,932£_{VA} were redeemed in 1756 and subsequently burned in 1757. What happened to the difference, 107£_{VA}, is unknown. I assume it was lost by the public—a one-year loss rate of 0.67 percent is not unthinkable. At redemption, 606£_{VA} was paid in interest for the one year period that the emission was outstanding. I assume the interest payment was in specie or tobacco claims and not notes as no statement to the contrary was recorded.

treasury accounts. In addition, the treasury accounts do not use consist language when indicating that notes were removed and burned. Some liberties of interpretation are required. At this point, we have moved the farthest away from direct observation and thereby introduced the most

potential error variance into the time path of notes in public circulation.

Column (1) of Table 4 reports the direct evidence from the treasury accounts at the time it was reported in the *House of Burgesses* of the amount of notes burned. Several subtle interpretations, however, must be used to make sense of this evidence. First, statements about total notes burned to date, such as on 7 April 1768, cannot be directly used because they refer to total notes printed and not notes in public circulation (Kennedy 1906a, p. 155). Burning notes taken in as one-for-one swaps for new notes has no effect on total notes in public circulation. These burnt notes are removed from column (1) totals.

Second, notes removed and burned from emission #5 must be indirectly inferred. After 1757, i.e. after emission #5 was to be fully redeemed, the treasury accounts state the amount of funds remaining in a dedicated account to fully redeem emission #5 notes as they were brought in for redemption. I assume that the difference between the amount of emission #5 notes emitted, 12,000£_{VA}, and the sum remaining in the treasury account for its redemption measures the amount of emission #5 notes redeemed and burned to that date (see Table 8 below).

Column (2) of Table 4 makes several adjustments to the data in column (1). First, column (2) makes a placement adjustment. Again, the treasury accounts as reported in the *Journals of the House of Burgesses* were typically made early in the year and so refer to redemptions made in the prior year. Most redemption taxes were collected in the fall, and so notes reported in the *Journals of the House of Burgesses* as burned were likely removed via tax payments in the prior year. As such, the amounts stated in the treasury accounts of notes burned in the early part of the year are moved to the immediately prior year in terms of when they were removed from public circulation. The amounts stated in the treasury accounts of notes burned in the latter part of the year are assumed to have been removed from public circulation in that same year.

Second, missing accounts for the years 1764 through 1766 are filled in via back-projection and interpolation. I assume that any time the treasury accounts mention a sum of notes burned in a given year, that that sum is the complete amount removed and burned that year. So only years when nothing is mentioned must have their amounts estimated. In the last three years of John Robinson's tenure as treasurer (he had been treasurer since 1738 and died in 1766), little information was recorded from the treasury accounts.

The redemption amounts for these three years are back-projected and interpolated values based on the difference between redemptions up through 1762 estimated in column (2) of Table 4, and the 1768 treasury account of the total accumulated notes burned between 1755 and 1 April 1767. The treasury accounts report an accumulated total of 326,192£_{VA} notes burned before 1 April 1767. This number is out of all notes printed, not all notes emitted into public circulation. Thus, it must be reduced by notes burned that were not net new emissions to the public. This reduction includes 3,960£_{VA} never spent out of treasury and the 93,604£_{VA} that were emission #6 one-for-one currency swaps for emission #2, #3, and #4 notes (the swapped notes being presumably burned, though no direct statements of such were made in the treasury accounts). The amount of notes redeemed from the public and burned up through 1762 is estimated in column (2) of Table 4 to be 162,587£_{VA}. A statement of notes burned in 1767 that were from removals in 1766 exists, so only three years, 1763, 1764, and 1765, need to be filled by this estimate. The calculation is: $326,192 - 3,960 - 93,604 - 162,587 = 66,041$; $66,041 / 3 = 22,014$ for each of these years.

Two additional back-projected, prorated interpolation exercises are needed to finish constructing the data on note removals for the period after 1769. Column (3) of Table 4 reports the outcome of these exercises, along with the resulting preliminary reconstructed time path of

net new notes removed from the public each year for 1755 into 1775. The amounts of net new emissions removed in the years 1770 and 1771 are estimated as follows: The difference between the *House of Burgesses* treasury account of notes in circulation between 1768 and 1771 is $(127,714 - 88,190) = 39,524\text{£}_{VA}$. The amount redeemed in 1769 is subtracted to yield $(39,524 - 18,442) = 21,082\text{£}_{VA}$ for redemptions in 1770 and 1771. This number is prorated and because these are for “old” notes only, the amounts of “new” notes directly mentioned as redeemed in the treasury accounts for these years are added to those sums, i.e. 403£_{VA} for 1771.

The amounts of net new emissions removed in the years 1772 into 1775 are estimated as follows: The difference between the *House of Burgesses* treasury account of “old” notes in circulation between 1771 and 1772 is $(88,190 - 54,391) = 33,799\text{£}_{VA}$. The implied redemption of “new” notes in 1772 in paper money act #16 is $2,763\text{£}_{VA}$ ($3,166 - 403$ redeemed in 1771). These two numbers are added to get the total redeemed in 1772. I assume that the same amounts were redeemed in 1773. The same amounts of “new” notes are assumed to be redeemed in 1774 and in 1775. The amount of “old” notes redeemed in 1774 is taken as the remainder of “old” notes after subtracting out their 1773 redemption, i.e. $54,391 - 33,799 = 20,592\text{£}_{VA}$. As such, no “old” notes remain in circulation after 1774, and only “new” notes remained in circulation after 1774.

Column (3) of Table 4 yields my preliminary estimate of note removals. Subtracting these numbers from net new emissions actually put into public circulation in column (4) of Table 3 yields my preliminary estimate of the amount of notes actually in public circulation as displayed in Figure 1. This preliminary estimate is close to what Brock reports. Thus, Brock must have done some redemption analysis adjustments along the lines done here in columns (1), (2), and (3) of Table 4, though perhaps not as thoroughly as done here.

d. Removal of Notes from Public Circulation: The Final Adjustment

The estimate of notes removed from public circulation each year in column (3) of Table 4 assumes that notes removed via tax payments did not sit long in the treasury before being burned. Given that tax payment obligations were relatively constant, a relatively constant amount of notes should have been removed from public circulation each year. Yet, the numbers in column (3) of Table 4 show considerable yearly variation. In some years, the amount listed appears well in excess of that year's tax obligation. As such, notes redeemed from the public via tax payments must have sat idle in the treasury for some time before being burned. The language in the statutory paper money act for emission #11 implies as much (Hening 1969, v. 7, p. 353). Thus, an additional placement adjustment is needed to account for when notes were likely removed from public circulation via tax payments.

The amount of revenue collected each year from taxes imposed by the paper money acts is not recorded in the primary sources. The paper money acts only state the type of taxes imposed, the tax rate per tax type, and the years over which each tax was in force. From 1755 through 1769, the taxes imposed by the paper money acts included a poll tax, a land tax, a slave import duty, and a tobacco export duty. Table 5 reports the tax rate per each of these tax types per year imposed when consolidated across all paper money acts.

In 1763, the treasury accounts report the revenue expected that year for each of these taxes (Kennedy 1907, p. 178). Using the expected revenues per tax type for 1763, given the tax rates listed in Table 5, the expected tax revenue per tax type for each year from 1755 through 1769 can be cloned. Table 5 provides these cloned expected tax revenues per tax type imposed by the paper money acts. The raw total across all tax types is reduced by a 7 percent yearly collection fee. This fee was imposed for the year 1763, and I assume it was the same for other

Table 5 Consolidated Yearly Tax Rates and Expected Tax Revenues Imposed by the Paper Money Acts, 1755-1769

Year	Poll Tax: per Tithable		Land Tax: per 100 acres		Slave Import Duty	Tobacco Export Duty per Hogshead		Raw Total	Net Total (Minus Collection Fees)	
	Shilling Rate	£ _{VA} Revenue	Shilling Rate	£ _{VA} Revenue	% Rate	£ _{VA} Revenue	Shilling Rate	£ _{VA} Revenue	£ _{VA} Revenue	£ _{VA} Revenue
1755	0	0	0	0	10	2,000	0	0	2,000	1,860
1756	2	12,000	1.15	2,875	10	2,000	3.3	8,250	25,125	23,366
1757	1	6,000	1.15	2,875	10	2,000	3.3	8,250	19,125	17,786
1758	4	24,000	2.15	5,375	10	2,000	2	5,000	36,375	33,829
1759	4	24,000	2.15	5,375	10	2,000	2	5,000	36,375	33,829
1760	4	24,000	2.15	5,375	0	0	2	5,000	34,375	31,969
1761	4	24,000	4	10,000	0	0	2	5,000	39,000	36,270
1762	4	24,000	4	10,000	0	0	2	5,000	39,000	36,270
1763	4	24,000	4	10,000	0	0	2	5,000	39,000	36,270
1764	5	30,000	4	10,000	0	0	2	5,000	45,000	41,850
1765	4	24,000	0	0	0	0	2	5,000	29,000	26,970
1766	4	24,000	0	0	0	0	2	5,000	29,000	26,970
1767	5	30,000	1.6	4,000	0	0	2	5,000	39,000	36,270
1768	5	30,000	1.6	4,000	0	0	2	5,000	39,000	36,270
1769	4	24,000	1.15	2,875	0	0	2	5,000	31,875	29,644

Source: Hening (1969, v. 6, pp. 461-81, 521-30; v. 7, pp. 9-25, 26-33, 46-54, 69-87, 163-9, 171-9, 255-65, 331-7, 347-58, 357-63, 465-6, 493-502; v. 8, pp. 342-8, 493-503, 647-51); Kennedy (1907, p. 178).

Notes: See text for construction.

years.⁷ After 1769, poll and land taxes were removed and taxes on carriages and licenses were added in the paper money acts. The expected revenues generated per tax rate cannot be cloned in post-1769 years, as was done for the pre-1770 years, because of a lack of similar information in the treasury accounts after 1769.

The expected revenues listed in Table 5 are used to adjust the yearly placement of note removals listed in column (3) of Table 4. Note removals are spread or smoothed over time by weighting them by expected tax revenues in each year.⁸ This adjustment method is applied

⁷ I made no effort to adjust expected tax revenues to changes in population, land ownership, and tobacco exports over time. The treasury accounts when estimating tax revenues made no such adjustments. In addition, the data on such changes are at best speculative, so no adjustments were attempted.

⁸ I made no adjustment for tax arrears. Tax arrears mentioned in the treasury accounts were either minuscule or not mentioned at all before 1766. Substantial tax arrears were mentioned in the treasury accounts for the years 1766, 1768, 1769, and 1772, but not in the intervening years. As such, tax arrears do not appear to accumulate from year to year. The tax arrears mentioned in 1768, 1769, and 1772 are not larger than that year's expected tax revenues. Thus, I assume that tax arrears are mostly delayed transfers of taxes collected by sheriffs to the central treasury for the current year. These taxes are assumed to show up shortly after that year's treasury accounts were recorded in the *Journals of the House of Burgesses*. See the sources cited in Table 3.

separately to three periods, 1757 through 1762, 1763 through 1765, and 1766 through 1769. The three periods are chosen based on the structure of the surviving treasury accounts. In 1763, the treasury provided the most thorough accounting of any year, including some accumulative accounting from 1757 to present (Kennedy 1907, pp. 177-8). Between 1763 and 1766, little information about what was in the treasury accounts was recorded. In 1766, the treasury accounts revealed the extent of the John Robinson scandal in the immediately prior years at the treasury, and a new treasurer took over from 1766 through 1769 (Kennedy 1906a).

The placement adjustments are made as follows: Total notes burned from 1757 through 1762 in column (3) of Table 4 are divided by the total expected tax revenues from 1757 through 1762 in Table 5, namely $146,655\text{£}_{VA} / 189,953\text{£}_{VA} = 0.77206$. Notes redeemed per year over these years are estimated by multiplying 0.77206 by the expected tax revenue in that year as listed in Table 5. Total notes burned from 1763 through 1765 in column (3) of Table 4 are divided by the total expected tax revenues from 1763 through 1765 in Table 5, namely $66,042\text{£}_{VA} / 105,090\text{£}_{VA} = 0.62843$. Notes redeemed per year over these years are estimated by multiplying 0.62843 by the expected tax revenue in that year as listed in Table 5. Total notes burned from 1766 through 1769 in column (3) of Table 4 are divided by the total expected tax revenues from 1766 through 1769 in Table 5, namely $91,696\text{£}_{VA} / 129,154\text{£}_{VA} = 0.70997$. Notes redeemed per year over these years are estimated by multiplying 0.70997 by the expected tax revenue in that year as listed in Table 5. The end result is reported in column (4) of Table 4.

The exercise above yields an implied division of tax payments into 77 percent being in notes in 1757 through 1762, 63 percent being in notes in 1763 through 1765, and 71 percent being in notes in 1766 through 1769, with the balance in each period being in specie or tobacco monies. This percentage division in what media was used to pay yearly taxes is consistent with,

and so corroborated by, the treasury account statements in 1769 and 1770 about the note-to-specie division in tax payments (see below).

e. The Resulting Time Path of Notes in Public Circulation

Table 6 subtracts the estimated net new notes removed from the public from the estimated net new notes actually put into public circulation to get the time path of notes remaining in public circulation each year. These amounts are slightly different from the treasury account statements of the amounts in circulation, because the treasury account statements specifically refer only to “old” notes in circulation, and because the treasury account statements calculate notes in circulation by taking total notes ever printed and subtracting total notes ever burned. To the extent that notes sitting idle in the treasury, never emitted or not yet burned, are included in this construction, the treasury accounts misstate the amounts in public circulation.

Alternative assumptions, back-projects, and interpolations are certainly possible, and so alternative estimates of the amount of notes in public circulation could be plausible. However, any deviation from that done here would either cause the coherent fabric of the forensically consistent and interlocking patterns to unravel or require less plausible assumptions. While error variance exists in these estimates, it is relatively small given the limited range of plausible alternative assumption and estimation methods that maintain an overall forensic coherence.

Denominational Structure

Were Virginia’s notes used as a circulating medium of exchange? The denominational structure is consistent with such usage. Virginia’s notes were issued in relatively small denominations, small enough to make paying yearly tax assessments easy with said notes, and small enough to make it an easy domestic circulating medium of exchange in terms of being able to make change with said notes. For emissions #6, #8, #9, #11, #12, and #13 the denominational

Table 6 Virginia Notes in Public Circulation, 1755-1775

Year	(1) Net New Emissions Actually Put into Public Circulation £ _{VA}	(2) Net New Notes Removed from the Public £ _{VA}	(3) Resulting Notes in Public Circulation £ _{VA}	(4) From <i>House of Burgesses</i> and Treasurer Statements of Notes in Circulation ^a £ _{VA}
1755	37,179	0	37,179	
1756	74,336	15,932	95,582	
1757	85,753	13,731	167,605	
1758	81,831	26,118	223,318	
1759	69,749	26,118	266,949	
1760	53,999	24,682	296,266	
1761	5,244	28,003	273,507	
1762	19,782	28,003	265,286	
1763	10,627	22,793	253,120	
1764	2,502	26,300	229,322	
1765	0	16,949	212,373	
1766	0	19,148	193,225	206,727
1767	0	25,751	167,474	170,420
1768	0	25,751	141,723	127,714
1769	10,000	21,046	130,677	
1770	0	10,541	120,136	
1771	30,000	10,944	139,192	88,190
1772	0	36,562	102,630	54,391
1773	0	36,562	66,068	
1774	0	23,355	42,713	
1775	0	2,763	39,950	
Totals	481,002	441,052		

Sources: Tables 3 and 4; for primary sources see the source notes to Tables 2 and 3.

Notes: See the notes to Table 3. Column (1) is from Table 3 column (4). Column (2) is from Table 4 column (4).

Resulting Notes in Public Circulation takes the number in column (3) in year t and adds the number in column (1) in year $t+1$ and then subtracts the number in column (2) in year $t+1$ to get the number in column (3) for year $t+1$. 1775 does not include new emissions made later in that year (Newman 2008, pp. 444-6).

^a These are statements about the amount of notes in circulation in the treasury accounts as reported in the *Journal of the House of Burgesses* or by the treasurer Robert Carter Nicholas in letters. These statements explicitly refer only to “old” note, i.e. those emitted before 1769, and not to “new” notes, i.e. those emitted after 1768. These statements were also made early in the year and relied on information on notes burned that were received in taxes from late in the previous year. Thus, the year for these numbers is moved one forward from when reported to reflect when notes were actually taxed out of circulation, rather than when they were subsequently burned.

structure was fixed by the assembly in each emission’s respective paper money act. These

emissions represent 77 percent of the total net new notes emitted. Table 7 shows the

denominational structure in terms of the percentage of units and the percentage of value

authorized for each denomination per emission and for the total for all emissions reported. In

addition, Table 7 reports the face value of each denomination of Virginia’s paper money in

Table 7 Denominational Structure of Virginia’s Paper Money: Number and Value of Units Issued per Emission

Virginia Notes Issued	Face Value in \pounds_S	Face Value in Spanish Silver Dollars	Approximate Value in 2012 U.S. Dollars ^a	Emission #6: 1757		Emission #8: 1758		Emission #9: 1759		Emission #11: 1760		Emission #12: 1760		Emission #13: 1762		Totals ^c 1757-1762	
				Units	Value %	Units	Value %	Units	Value %	Units	Value %	Units	Value %	Units	Value %	Units	Value %
0.0500	0.04	0.1739	5.39	15.7	0.9	15.8	1.8	15.9	1.7	....	....	25.1	2.6	....	....	15.6	1.2
0.0625	0.05	0.2174	6.74	15.7	1.1	15.8	2.2	15.9	2.1	....	....	25.1	3.3	....	....	15.6	1.5
0.1250	0.10	0.4348	13.48	14.3	2.1	19.7	5.5	17.9	4.8	33.2	3.3	10.5	2.7	22.5	2.8	16.8	3.2
0.2500	0.20	0.8696	26.96	14.3	4.2	19.7	11.0	17.9	9.6	33.2	6.7	10.5	5.5	22.9	5.6	16.8	6.3
0.5000	0.40	1.7391	53.91	14.3	8.3	11.8	13.2	13.4	14.4	....	....	10.5	10.9	17.1	8.3	12.9	9.7
1.0000	0.80	3.4783	107.83	14.3	16.7	11.8	26.5	13.4	28.8	....	....	10.5	21.9	17.1	16.7	12.9	19.4
2.0000	1.60	6.9565	215.65	2.9	6.7	1.8	7.9	1.8	7.7	11.2	18.0	2.6	10.6	6.8	13.3	2.8	8.5
3.0000	2.40	10.4348	323.48	2.9	10.0	1.8	11.9	1.8	11.5	11.2	27.0	2.6	15.9	6.8	20.0	2.8	12.8
5.0000	4.00	17.3913	539.13	2.9	16.7	1.8	19.9	1.8	19.2	11.2	45.0	2.6	26.6	6.8	33.3	2.8	21.3
10.0000	8.00	34.7876	1,078.42	2.9	33.3	....	....	....	....	....	....	....	....	....	....	1.1	16.2
				100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Sources: Table 2; Hening (1969, v. 7, pp. 82-3, 175, 259-60, 350, 360-1, 498); McCusker (1978, p. 10).

^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 56,625 \pounds_{VA} and not the 57,000 \pounds_{VA} authorized for this emission. Whether and how this discrepancy was accommodated is currently unknown.

^c Total units are 560,107 and the total value is 370,588 \pounds_{VA} in the data covered.

pounds sterling, Spanish silver dollars, and 2012 U.S. dollars equivalents.

Comparing Table 7 with the yearly tax burdens imposed in Table 5 indicates that well over 50 percent of the units emitted were in a denomination small enough to pay an individual's yearly taxes without the necessity of resorting to tobacco or specie monies to make change to complete that year's tax payment. Table 7 also is consistent with John Hanson II's (1979, 1980a, 1980b) argument that the colonies intentionally issued paper money in small denominations to facilitate the making of change in local transactions. Hanson (1979, p. 284), however, only reports the denominational structure of Virginia's paper money using data from 1759. He also lists no source for this data. Hanson (1980a, p. 414; 1980b, p. 171) dropped Virginia data from his analysis. Why is unknown. Table 7 is certainly consistent with the denominational structure Hanson reports for the other colonies.

How the Redemption Process Worked

Every paper money act included additional new taxes, typically a land tax and a poll tax, that were operative for a number of years. The number of years over which these new additional taxes were operative was chosen so as to generate enough funds to fully redeem the notes authorized by each respective paper money act. The date in each paper money act set for the final redemption of the notes authorized by that act closely matched the end to the taxing period set by that act. The final legislated redemption date for each emission is listed in Table 2.

The Virginia legislature took note redemption and its effect on controlling the value of its paper money seriously. Such is illustrated in the March 1760 paper money act which stated,

And whereas it is of the greatest importance to preserve the credit of the paper currency of this colony, and nothing can contribute more to that end than a due care to satisfy the publick that the paper bills of credit, or treasury-notes, are properly sunk, according to the true intent and meaning of the several acts of assembly passed for emitting the same; and the establishing a regular method for this purpose may prevent difficulties and confusion in settling the publick accounts,... *Be it therefore enacted, by*

the authority aforesaid, That Peyton Randolph, esquire, Robert Carter Nicholas, Benjamin Waller, Lewis Burwell and George Wythe, gentleman, or any three of them, be, and they are hereby appointed a committee, to examine at least twice in every year (and oftener, if thereto desired by the treasurer for the time being) all such bills of credit, or treasury-notes, redeemable on the first day of March, one thousand seven hundred and sixty five, as have been or shall be paid into the treasury, in discharge of the duties and taxes imposed by any former act of assembly; and upon receipt of the said bills or notes, the said committee shall give to the treasurer for the time being a certificate of the amount thereof, which shall avail the said treasurer in the settlements of his accounts as effectually, at all intents and purposes, as if he produced the said bills or notes themselves: And the said committee are hereby required and directed, so soon as they have given such certificate, to cause all such bills or notes to be burnt and destroyed. (Hening 1969, v. 7, p. 353, italics in the original)

If the taxes accompanying a paper money act were paid in that act's notes then the amount of the notes from that emission in circulation would decline at a more or less constant rate from its initial emission year to its final legislated redemption year. If these taxes were paid by other means, such as in tobacco or specie coins, then the notes would continue in circulation until the final legislated redemption year when they could be redeemed at face value and removed from circulation using the accumulated tax receipts in the treasury. The language in the 1756 paper money acts illustrates this redemption structure.

That all such notes, so issued, shall be redeemable on the last day of June one thousand seven hundred and sixty, and shall then be paid by the treasurer... That the several sums of money and tobacco to be collected, by virtue of this act,...shall be,...paid to John Robinson, esquire, treasurer of this colony,... That the money to be raised by the duties imposed by this act, shall stand, be, and remain as a security for the redemption of the said treasurer notes so to be issued, and the said John Robinson, treasurer,...is hereby required to apply all such money, as shall come to his hands, by virtue of this act, for, and toward the redemption of such treasury notes, and to no other use or purpose whatsoever. (Hening 1969, v. 7, pp. 19, 29, 32).

All of Virginia's paper money acts had this language. By "money", colonists typically meant specie monies, sometimes referred to as *real money*. The face value of the notes for redemption purposes was fixed in law to be $1\text{£}_{VA} = 200$ pounds of tobacco = 1.25£_S [£_{VA} = Virginia paper pounds, £_S = pounds sterling] (Hening 1969, v. 6, pp. 468-9, 568-9; v. 7, pp. 9-10, 28-9).

Were redemption taxes paid in notes or in specie? The treasury accounts provide some evidence to answer this question. The clearest statement in the treasury accounts was made on 15 June 1770 (Kennedy 1906b, p. 72, italics in the original).

It appears to your Committee, that the Balance in the Treasurer's Hands of Cash received of the several Collectors for Taxes appropriated to the Redemption of the old Treasury Notes [those issued before 1769], amount to Ten Thousand Three Hundred and Twenty-six Pounds Eleven Shillings, of which they have burnt and destroyed Seven Thousand Eight hundred Pounds, and have left in the Treasury, on that Account, in Specie, a Balance of Two Thousand Five Hundred and Twenty-six Pounds Eleven Shillings to be exchanged for old Treasury Notes.

A redemption tax of 10,327£_{VA} was collected, of which 2,527£_{VA} was in specie that was explicitly set aside in a dedicated account to be used to redeem notes brought to the treasury. The rest of the tax payments were burnt, implying that those tax payments were made in notes. Therefore, 76 percent of this tax was paid in notes, and 24 percent was paid in specie.

The above statement sets an interpretative standard for similar statements in the treasury accounts that are not as direct. In particular, redemption taxes received that were burnt must have been paid in notes, and redemption taxes received but not burnt must have been paid in specie. These tax sums in specie must have been held in a separate account and earmarked to redeem notes brought to the treasury that had reached their final legislated redemption date.

Applying this interpretative standard indicates that of the 12,642£_{VA} redemption taxes received on 30 November 1769, 10,642£_{VA} were paid in notes that were burned, leaving 2,000£_{VA} paid in specie (Kennedy 1906a, p. 303). Therefore, 84 percent of this tax was paid in notes, and 16 percent was paid in specie. The treasury account of 23 November 1769, regarding the prior year, indicates that of the 42,067£_{VA} redemption taxes collected, 29,264£_{VA} were paid in notes that were burned, leaving 12,800£_{VA} paid in specie (Kennedy 1906a, p. 284). Therefore, 70 percent of this tax was paid in notes, and 30 percent was paid in specie.

The above analysis establishes that redemption taxes generated specie sums that were to be held in the treasury until the final redemption date legislated for each paper money act, at which time holders of those notes could cash them in at face value for the specie held in the treasury for that purpose. However, at the final redemption date holders of the respective notes did not rush to the treasury to exchange them for specie. The notes continued in circulation and note holders could cash them in at the treasury at their leisure. Robert Nicholas Carter, Virginia treasurer after 1766, noted this behavior, “Most of the Merchants as well as others, ... preferred them [Virginia’s treasury notes] either to Gold or Silver, as being more convenient for transacting the internal Business of the Country.” (*William and Mary College Quarterly Historical Magazine* 1912, p. 235)

Table 8 illustrates this behavior for emission #5, the only emission that is uniquely specified throughout the treasury accounts. While the taxes to redeem all of emission #5 appear to have been fully paid at the end of 1757 as legislatively required, 54 percent of that payment was in specie or tobacco monies. That sum sat in the treasury in a dedicated account and was used to redeem emission #5 notes brought into the treasury slowly over the next nine years. What happened to the last remaining 305£_{VA} in specie or tobacco monies in this account after 1766 is unknown. The treasury accounts speculate that the public likely lost some notes, thus accounting for the lack of full redemption. A note loss rate of 2.5 percent would not be unthinkable. The total amount of notes of emission #5 redeemed by 1766 was 11,695£_{VA} which corroborates that emission #5 was for 12,000£_{VA} rather than for 10,000£_{VA} as stated by statutory law, see Table 2.

Table 8, last column, provides an estimate of the amounts of specie (or tobacco monies) accumulated in the treasury over time. These were sums to be used to redeem notes at their final legislated redemption date. The estimated notes paid in as taxes each year in column (4) of Table

Table 8 Non-Note Redemption Funds in the Treasury

Year	Tax Funds Reported in the Treasury for Redeeming Emission #5 Notes Still Out	Implied Emission #5 Notes Redeemed and Burnt Each Year	Estimated Accumulation of Non-Note Tax Redemption Revenues in the Treasury Earmarked to Redeem Notes at their Final Respective Legislated Redemption Dates
	£ _{VA}	£ _{VA}	£ _{VA}
1755			1,860
1756			8,688
1757			12,742
1758	6,482	5,518	20,453
1759	4,590	1,892	28,164
1760			35,451
1761	2,942	1,648	43,718
1762	876	2,066	51,985
1763			65,462
1764			81,012
1765	412	464	91,033
1766	305	107	98,855
1767			10,519
1768			21,038
1769			29,636
1770			8,561
1771			16,712
1772			7,366
1773			5,554
1774			3,742
1775			1,930
Totals		11,695	

Source: See the sources in Table 2 and 3; Kennedy (1906a, pp. xi-xxv, 64-6, 108, 118-20, 124-8, 154-6, 283-5, 303; 1906b, pp. 72, 217-8; 1907, pp. 143, 171, 176-8, 356-7); McIlwaine (1908, pp. 15, 36-7, 115-6, 171-2, 249-50; 1909, pp. 388, 458, 487-90); *William and Marry College Quarterly Historical Magazine* (1912, pp. 227-62).

Notes: See the text for construction.

4 are subtracted from the expected net tax revenues collected each year in Table 5 to get the amount of specie and tobacco monies paid into the treasury each year. These amounts accumulated in the treasury from year to year to 1766.

The numbers for 1767 through 1772 are taken from the treasury accounts for these years.

They were stated as the sums remaining on hand. They are assumed to be what is on hand for

potential current note redemption. Therefore, these numbers are not added or accumulated from year to year. When stated early in the year, they are placed in the prior year to reflect when the action was actually executed.

The numbers for 1773 into 1775 are projected estimates based on the last treasury account from 1772. The estimate takes the taxes received for “old” notes in 1772, adjusted for a downward trend from 1769, and adds to that the taxes received for “new” notes. I assume the specie portion of these taxes was 20 percent. Thus, the total tax number is multiplied by 0.2 to get the specie funds available in the treasury for note redemption. These numbers are not added or accumulated over time as I assume that these sums were being used to redeem notes. This assumption is consistent with the fact that more notes were being redeemed and burned in these years than there were notes paid in as taxes. This estimate of the specie (or tobacco) monies accumulating in the treasury, which were to be used for future note redemption, provides an important correction to the history of the John Robinson treasury scandal.

Reassessing the John Robinson Scandal

John Robinson was the speaker of the *House of Burgesses* and treasurer of the colony from 1738 until his death 11 May 1766. The last years of his administration involved a financial scandal that occupied Virginia’s political and legal system for a half decade. It led to the separation of the office of speaker of the *House of Burgesses* from the office of treasurer. The scandal involved the diversion of funds out of the treasury, without direct authorization from the legislature, into loans to Robinson’s friends. The accounting made on 12 December 1766 indicates that Robinson diverted out of the treasury 95,828£_{VA} in accumulated taxes received that were earmarked to redeem notes, 2,500£_{VA} in notes in a fund reserved for the Commissioner on Indian Affairs, and 3,389£_{VA} “on the public account”, for a total of 101,717£_{VA} (Ernst 1973, pp.

174-96; Kennedy 1906a, pp. x-xxvi, 64-6; Mays 1952, pp. 174-208; Mays 1967, pp. 24-74).

Were the funds diverted notes or specie? Scholars have typically assumed these diverted funds were notes put back in circulation (Ernst 1973, pp. 188-96; Kennedy 1906a, p. x; Lee 1825, p. 22; Mays 1952, pp. 185-6). As such, this diversion could affect the amount of notes in circulation, and thus note depreciation. This claim, however, turns out to be presumption based on questionable logic. For example, Mays (1952, pp. 185-6) assumes that the diverted funds were notes because he assumes there was no specie in the colony. Therefore, all taxes must have been paid in notes. As shown above, the treasury accounts indicate that 16 to 30 percent of note-redemption taxes were paid in specie. As such, a considerable accumulation of specie funds in the treasury earmarked for future note redemption must have been occurring before 1766.

Ernst (1973, pp. 188-9) quotes Robert Carter Nicholas, the incoming treasurer after Robinson and an ardent anti-paper proponent, regarding the fund-diversion crisis that money “squeezed from the people for their taxes instead of being sunk at our Treasury as it ought to have been, was thrown back into circulation.” Even in this quote, it is unclear whether Nicholas means notes or specie being thrown back into circulation—though Ernst assumes it meant notes. Ernst points out that Nicholas’s conclusion was a deduction, not an observation. Nicholas reasoned that the only thing that could cause the exchange rate to deteriorate was too much paper money in circulation. Therefore, the diverted funds must have been notes put back in circulation. Ernst (1973, p. 189) concluded that “In Nicholas’s mind at least the theory of money had plainly triumphed over reality,…” The exchange rate could have deteriorated just as easily due to the prospect of the non-redemption of notes due to the division of specie funds earmarked for note redemption out of the treasury. Yet, Ernst (1973, pp. 193-5) seems to accept that the diverted funds were notes even though he cannot square that conclusion with his finding that the notes in

circulation were not expanding, but were instead sharply contracting at that time.

No direct evidence from the period exists stating that these diverted funds were notes, except for the 2,500£_{VA} in notes in a fund reserved for the Commissioner on Indian Affairs. A close reading of the primary sources and the secondary sources indicates that no one ever really says in what money the diverted funds were denominated. Ernst (1973, pp. 174-96) never quite commits to or directly says in what money the diverted funds were denominated, though a less than careful reading could induce a leap to the conclusion that it was notes. In the letters of Edmund Pendleton, the executor of John Robinson's estate, no mention is ever made that the diverted funds were notes (Mays 1967). In the treasury accounts no mention is made in what money the diverted funds were denominated. In the primary evidence offered by Kennedy (1906a, pp. x-xxvi) no mention is made in what money the diverted funds were denominated.

The only direct statement that the diverted funds were notes, that I could find, is in the *Memoir of the Life of Richard Henry Lee* (Lee 1825, p. 22), "...he [John Robinson] had been induced to lend to many members of the House of Burgesses, the government bills which had been redeemed, and ought to have been destroyed." This statement was written in 1825 by Richard Henry Lee's grandson. It is not a memoir penned by Richard Henry Lee himself, nor is the above statement in the memoir ascribed to anyone. Its source is unknown. The hypothesis that it is just a long-after-the-fact supposition by a grandson cannot be rejected.

The last meaningful treasury account in the *Journals of the House of Burgesses* before Robinson's death was in May of 1763. It is fairly comprehensive (Kennedy 1907, pp. 177-8). The treasury account of May 1763 indicates that sizable amounts of notes from emissions #6 through #12 were being paid in taxes and were burned in each year from 1760 into early 1763 (Kennedy 1907, pp. 177-8; Table 4). The treasury account was silent on the specie portion of the

taxes collected—both on how much had accumulated and where it was. Notes received in tax payments before their end maturity were being burned, and in significant amounts. It is information on the specie portion of the tax payments that is missing.

The next treasury report, the last before Robinson's death, was in May of 1765. It is relatively sketchy. That report lists 47,418£_{VA} on hand in the treasury for note redemption (Kennedy 1907, p. 356). Table 8 indicates that at least 81,012£_{VA} should have accumulated in the treasury by the start of 1765 for that purpose. The estimation procedure here, therefore, is consistent with at least 33,594£_{VA} having already been diverted out of the treasury by Robinson by early 1765.

The estimated specie portion of the accumulated taxes in the treasury from taxes imposed by the paper money acts into 1766 were 98,828£_{VA}, see Table 8. By early 1766, Robinson had removed from the treasury 95,828£_{VA} of accumulated taxes held for redemption of notes when said notes' circulation time was at an end, see Table 2. In 1766, it was recorded that only 2,218£_{VA} was left in the treasury to pass on to the new treasurer after Robinson death (a sum to be used to redeem notes, thus this amount is assumed to be specie as notes could not redeem notes). The closeness of the 95,828£_{VA} figure with what would have accumulated in the treasury into 1766, namely $(98,855£_{VA} - 2,218£_{VA}) = 96,637£_{VA}$, provides consistency for this interpretation. This consistency also indicates that the error variances in my data estimation procedures are small across the totality of the forensic data reconstruction project here.

Finally, a fund diversion of 95,828£_{VA} in notes cannot be made consistent with any of the statements in the later treasury accounts, those made after Robinson's death, regarding total notes in circulation. The only way they could be made consistent would be if there existed an unprecedented, massive, un-documented, and un-commented on redemption of notes in the early

to mid-1760s in excess of that already mentioned in the treasury accounts. This inconsistency, in a forensic accounting sense, implies that the funds diverted were unlikely to be notes. Lastly, both Brock (1992, p. 116) and Ernst (1972, p. 370) must have implicitly or unknowingly assumed that the diverted funds were specie and not notes. The forensic accounting reconstruction of how they derived the amount of notes in circulation cannot yield their outcomes unless the assumption is made that the diverted funds were not notes.

Conclusion

I provide major improvements in the quantitative data on colonial Virginia's paper money regime. These improved data will assist scholars in crafting their political, social, and economic narratives of the period, as well as assist economists in testing models of colonial paper money performance. I thoroughly explicate how these quantitative data are created, providing a methodological guide to understanding their soundness and fragility. If my data are rejected, then the data on colonial Virginia paper money currently in use (taken from the *Historical Statistics*) must also be rejected, for their construction is similar, if not as thorough, as that shown here for my data. Scholars of colonial America should know how colonial quantitative data are created. It should not remain a mystery.

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