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Farley Grubb's Noisy Evasions on Colonial Money: A Rejoinder

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CONTINUATION OF THE EXCHANGE BETWEEN RONALD W. MICHENER
AND ROBERT E. WRIGHT AND FARLEY GRUBB FROM THE JANUARY 2006
ISSUE OF *EJW*.

[Michener and Wright Comment on Grubb \(January 2006\)](#)

[Grubb Reply \(January 2006\)](#)

GRUBB'S RECENT PAPERS (2003, 2004, 2006B) ARE AIMED AT nothing less than rewriting important chapters of early American history. Our goal in both our *AER* and *EJW* comments was a negative one, to dissuade readers from accepting Grubb's views and data. We are humbled by the complexity of the early American monetary system and the meagerness of the available evidence. We nowhere make the blanket claims that Grubb attributes to us, namely, that specie was plentiful, that exchange rates were immutable, or that cross-colony circulation of bills of credit was ubiquitous. Instead, we offer evidence that at some times and places specie was more abundant than Grubb claims, that most colonial exchange rates oscillated within broad specie points, and that bills of credit often circulated in adjacent colonies. And again, we make such claims with one point only in mind, to alert scholars that Grubb's interpretation is highly suspect.

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Our central disagreement is very simple. We believe that when colonists promised “six shillings Pennsylvania money” they usually meant “I will give you bills of credit (not necessarily Pennsylvania’s), gold, silver, tobacco, hogs, credit in my account book, etc. to the value of six shillings.” Grubb believes that in certain transactions “six shillings Pennsylvania money” invariably meant “I will give you six shillings in Pennsylvania bills of credit.” Grubb’s supposition that pounds, shillings and pence in runaway ads must refer to Pennsylvania’s bills of credit, has, in our view, been thoroughly undermined. Grubb never explains why there were profuse references to Pennsylvania pounds and shillings in runaway ads before there were Pennsylvania bills of credit; his argument that ads promising specie were legally binding commitments to pay in specie is convincingly refuted by Pennsylvania’s legal tender laws; he never explains why his technique, when applied to the early Federal period, produces results that contradict his own work in Grubb (2003, 2006b). A host of other evidence could be presented—advertisements and contemporary documents that simply make no sense if pounds and shillings meant only paper money. The following call for a subscription to a book is one such example:

II. The Price to Subscribers will be twenty Shillings each Book, stitched in Marble Paper. III. One Dollar Advance, being the first Part of the Subscription Money, to be paid at the Time of subscribing; the other twelve Shillings and Sixpence to be paid at the Delivery of the Book.
(*Pennsylvania Evening Post*, 11 May 1775)

Such evidence he labels “anecdotal” and ignores. (Or, he contrives unlikely scenarios to explain them, like the bookseller sought to engage in currency speculation.) Our view effortlessly explains such seeming anomalies, which are more common than Grubb concedes.¹ “Dollar” and 7 shillings 6 pence were synonymous in late colonial Pennsylvania because they referred to the same amount of economic value, not to specific physical exchange media. We did not concoct this “doomsday weapon,” but merely applied McCusker’s dictum (1978, 3-6) that one should not conflate units of account with media of exchange.

In the lengthy appendix here, we address the remainder of Grubb’s reply. We relegate the details to an appendix because we believe that, for a

¹ For additional examples, see Michener and Wright (2006b, 25).

general audience, the tone of Grubb's reply is the best evidence of the underlying weakness of his propositions.

Appendix:

REMARKS PERTAINING TO OUR REASONS FOR DISBELIEVING GRUBB'S TIME SERIES

Our legal tender evidence

In our comment, we note that Grubb (2004, 333) describes runaway ads as legally binding commitments to pay in the media advertised. That, he argues, is what guarantees that the ads reflect the medium of exchange tendered. We (2006a, 9-10) reply that all Pennsylvania bills of credit issued before 1764 were a full legal tender even in contracts that specified payment in specie. Ads, therefore, could not have been legally binding commitments to pay in the advertised media. Grubb makes no comment on the statutes or the Privy Council deliberations they provoked, although we (2006a, 9-10 fn. 3, 23-24 fn. 15) discuss both. However, in direct contradiction to our evidence, he (2006a, 57) reiterates that "most quit rents . . . were required to be paid in sterling (specie)."

On the similarity of ads before and after 1723

We (2006a, 7) present runaway ads from the *American Weekly Mercury*, printed in 1720, three years before Pennsylvania issued its first paper money. Those ads, like the overwhelming majority printed in the *Weekly Mercury* that year, offer rewards in undesignated pounds and shillings. What reason is there to believe, we ask, that pounds and shillings in similar ads printed after 1723 must invariably mean Pennsylvania's paper money? Grubb did not respond.

On the robustness of Grubb's procedure

We (2006a, 10-11) note that Grubb has used two kinds of arm's-length transactions to determine the ratio of specie to paper money transactions: redemptioners' contracts (used in Grubb (2003, 2006b) to infer the composition of Pennsylvania's money supply in the confederation and early federal eras) and runaway ads (used in Grubb (2004) to infer the composition of Pennsylvania's colonial money supply). We point out that if you reverse the procedure and use redemptioners' contracts to infer the composition of the colonial money supply, or runaway ads to infer the composition of the confederation and early federal money supply you obtain wholly inconsistent estimates.

Grubb (2006a, 68) responds to this point. The colonial records for redemptioners, he writes, were "recorded by the [Philadelphia] mayor's office as a contract registration exercise," while the confederation records were "recorded under the auspices of the German Society of Pennsylvania as an honesty-in-contracting monitoring device." Therefore, he continues, he "would not expect them to reflect monetary usage in the same way" He does not, however, explain why not.

Grubb's supposition, we thought, was that *in arm's-length transactions between strangers the unit of account accurately records the medium of exchange*. Grubb notes correctly that we ourselves do not have a model of the unit of account.² The unit of account, in our opinion, arises as some complex admixture of convenience and tradition; even today anomalies exist that would be difficult for any model to fully explain, such as the role guineas play as a unit of account in modern British horse racing. Solving this complex problem, however, is not a prerequisite to pointing out the shortcomings of the data series arising from Grubb's supposition. We believe we decisively refuted Grubb's supposition with our comparison of colonial redemptioners' records and runaway ads. Grubb replies that we have misconstrued his supposition—who records the transaction and why is also important. We believe this renders his supposition too vague and ill-defined to be of much use. Why should data derived from newspaper ads placed by thousands of anonymous Pennsylvanians reflect the medium of exchange if contract registrations at the Mayor's office do not? Nor is this

² Grubb (2006a, 52-53) writes: "What is missing in Michener and Wright's analysis is any model for determining what money the unit of account will be in, when and why this unit will shift to being a different unit of account, when and why multiple units of account will exist in society at large or within the same individual transaction, and so on."

the only conundrum. Runaway ads in the *Pennsylvania Gazette* during the early Federal period were overwhelmingly denominated in dollars at a time when the redemptioners' contracts were overwhelmingly recorded in pounds and shillings, as demonstrated in Table 1 below.

Table 1: Units of account in the early federal era³

Year	Redemptioners' A Contracts Percent pounds	<i>Pennsylvania Gazette</i> Runaway ads Percent pounds	Z-statistic testing Equality of proportions.
1790	93 (n=39)	12 (n=17)	5.9
1791	100 (n=151)	23 (n=13)	11.1
1792	99 (n=270)	33 (n=24)	12.5
1793	100 (n=153)	14 (n=21)	12.1
1794	100 (n=200)	13 (n=32)	14.1
1795	96 (n=367)	6 (n=17)	13.3

Source: Michener and Wright, 2006a, 11; 2005, online appendix

Yet in analyzing the confederation and early federal era, Grubb (2003, 2006b) bases his estimates on these redemptioners' contracts. If *Pennsylvania Gazette* runaway ads in the colonial period reliably reflect the medium of exchange, why aren't the ads placed during 1790-1795 equally reliable? Grubb did not respond to this point. What exactly is Grubb's supposition?

Parenthetically, a glimpse of the composition of the colonial money supply can be obtained by examining rewards for lost or stolen money because such ads often explicitly listed the precise exchange media for which a reward was offered. The emphasis is on the lost/stolen monetary items, not on the reward, and unlike runaway rewards, these ads often suggest the medium of exchange was remarkably diverse. Consider, for example, the following advertisement from the *Pennsylvania Packet* (6 September 1773):

³ We used the online edition of the *Pennsylvania Gazette* and obtained our sample by searching for the string "ran away." Only advertisements placed by Pennsylvania residents were used. Duplication was avoided as far as possible. Advertisements mentioning multiple runaways were counted only once. Small rewards less than \$1 (7 s. 6 d.) were not counted. Such advertisements (commonly 6 d.) were placed to insult the servant, not to induce his or her capture and return. Decimalized insults (commonly, \$0.06) did not come into use until late in the period.

Philadelphia, August 30, 1773. LOST, . . . on the road leading from Philadelphia to Bristol, and across the river Delaware to Burlington . . . A BUNDLE of paper currency and gold coin . . . the money is four Jersey bills of 3l. six ditto of 1l. 10s. five ditto of 15s. one York bill of 2l. and a Maryland two-thirds of a dollar; a heavy half Johannes, and two quarter ditto, one of them plugged, and one moidore . . .

Transactions velocities

We (2006a, 11-12) point out that Grubb assumes that specie and paper money had the same transactions velocity in colonial times. Yet, in an earlier exchange, we pointed out (Michener and Wright, 2005, 686) that only \$0.06 per capita in Pennsylvania's state-issued paper money survived into 1794—a year in which several dollars of specie and banknotes per capita circulated—yet Grubb asserts virtually all transactions were in state paper money. For paper money to have been a small fraction of the money supply, but to have executed nearly all transactions, it would have had to circulate much faster than specie and banknotes; we estimate, about 10,000 times faster. Why, we wondered, is it plausible for Grubb to argue that specie and paper money circulated with the same transactions velocity in colonial times, when he elsewhere contends that the transactions velocities were very dissimilar in the confederation era?

Grubb (2006a, 67) rebukes us for putting words into his mouth: “I did not claim that the velocity of circulation of Pennsylvania paper money in the late 1780s was higher than that of specie (Grubb [2005], 1343). I only said that people at the time seemed to think the velocity of circulation of Pennsylvania paper currency in the late 1780s was quite high.”⁴

⁴ True, but not germane. In 1786 Robert Morris remarked that while the quantity of state-issued paper money outstanding was small,

what security have we that the next house of assembly will not issue another emission? The doubts and fears of this, and of tender laws, destroy the confidence of the public. While these doubts remain in the minds of the people, the circulation of paper must necessarily be quick, as no one will risque the keeping it long by him. (Carey, 1786, 42-43)

There are two difficulties with Grubb's argument, however. First is that this testimony to the public's lack of faith in state-issued bills is anathema to Grubb (2003), and that those who noted paper money's high velocity in the late 1780s were commonly (like Morris) its foes,

Grubb is correct that he never explicitly compares transactions velocities in the confederation era. However, in Grubb (2005, 1343, fn. 6) he cites Hepburn: “Between 1790 and 1795, the total volume of dollar money per capita in the United States increased 159 percent—from \$3.00 to \$7.77.” Grubb goes on to attribute the rise in Pennsylvania prices between 1790 and 1795 to this increase; in short, Grubb is willing to accept Hepburn’s estimate. Once one accepts Hepburn’s estimate of the total money supply, or any estimate of this order of magnitude, the difference in transactions velocity we allude to is an inescapable implication.

We also noted that Pennsylvania’s colonial bills of credit were disproportionately in small denominations compared to the gold and silver coins in circulation, and that in the modern era, small denomination currency circulates more rapidly than large denomination currency. It is plausible to think the same was true in colonial times. Grubb did not respond to this point.

Pennsylvania’s Money Supply in the late 1740s and early 1750s

The issue here is very straightforward. Grubb’s method suggests there was very little specie in circulation in Pennsylvania during this era—on the order of 4,317 Pennsylvania pounds. A number of contemporary documents suggest a much larger figure—on the order of 300,000 - 400,000 Pennsylvania pounds. We present our sources in Appendix 1 of our original comment, and Grubb (2006a, 57-60) berates their reliability. Grubb’s lengthiest objections pertain to the fourth and final document, a 1753 letter (Hockley 1753) from Penn’s quit rent collector reporting money was not so scarce as pretended, and citing as proof the fact that “full four fifths” of the money received in payment of quit rents was “Gold and Silver.” We largely anticipated Grubb’s objections and preemptively responded to them (2006a, 23, fn. 15). Since we feel that response is largely adequate, we shall

the very people that Grubb (2005, 1342) dismisses as “passionate, polemical and propagandistic.” Second, by 1794 (the year in question) circumstances had changed. Ratification of the Constitution dispelled anxiety that more bills might be issued or that existing issues would be declared a tender. Pennsylvania’s 1785 emission reached its nadir in 1788, having lost by that time one third of its value. However, beginning in 1788, the bills began to appreciate. By 1794, Pennsylvania had redeemed practically all of them at par, and no one seems to have doubted that the remainder would also be redeemed. See Michener and Wright (2005, 688-690).

focus on his other objections and relegate the details to a footnote.⁵ Our

⁵ Any reader hardy enough to attempt to get to the bottom of this exchange is going to find it difficult, because the give and take have not been reproduced in chronological order. The dispute over this passage began when we drew it to Grubb's attention in private correspondence. Grubb wrote a rebuttal which appeared in Grubb (2001), but not the published version. Grubb has seen fit, however, to reproduce that rebuttal without any significant alterations. It begins in the middle of page 57 in Grubb (2006a) and continues to the middle of page 58. The central point of that rebuttal is (Grubb 2006a, 57) that "most quit rents . . . were required to be paid in sterling (specie)." We responded in Michener and Wright (2006a, fn. 15). We noted that the Pennsylvania bills of credit were a legal tender even in contracts that specified payment in specie, and quoted from the statute book. We also noted that, much to the annoyance of the proprietor, the Pennsylvania courts were forcing him to accept bills of credit at their face value (i.e. as proclamation money) in the payment of sterling quit rents. This practice denied him about 20% of the value of his quit rents. The proprietor responded, in 1732, by forcing new tenants to sign contracts requiring them to pay either in specie or in paper money at its actual value. In short, the proprietor did not object to accepting paper money, only to accepting paper money at an artificially enhanced value. That contract, however, was unenforceable under the terms of the legal tender act. In 1739, the assembly responded by making a compensatory payment to the proprietor. In exchange, the proprietor agreed to accept paper money at its artificially enhanced value on grants made pre-1732, whereas those with post-1732 grants were to pay their quit rents "according to the tenor of the grants." Post-1732 tenants, like pre-1732 tenants, were unambiguously permitted to pay quit rents in bills of credit. All this is unmistakably clear from the primary sources quoted in Michener and Wright (2006a, fn. 15). What is not so clear is whether the Pennsylvania courts (after 1739) treated the 1739 agreement as an amendment to the legal tender act. That is, when a post-1739 tenant paid in provincial bills of credit, was he forced to pay the full sterling value of the quit rent, or did the legal tender act still permit the tenant to pay a lesser value? In 1760, the proprietor, dissatisfied that he had not received adequate compensation for his losses, appealed to the Privy Council and the Privy Council ordered that quit rents be excluded from future legal tender clauses. We were unable to determine to our satisfaction, however, whether the proprietor was complaining about all grants or only pre-1732 grants. We pointed out that one historian, Hutson (1970, 431), believes the answer is all grants. The controversial portion of Hutson's remarks (which describe Pennsylvania assembly deliberations in 1764) are reproduced below:

For decades the Penns had made their tenants sign contracts pledging to pay their quit rents in either sterling or provincial paper money at the rate of exchange between Philadelphia and London and for just as long the Assembly had thwarted them by issuing legal tender paper currency with which the inhabitants discharged their obligations. By authorizing Penn to refuse to accept legal tender paper, the Privy Council had resolved [in 1760] the long conflict in his favor.

This leads to Grubb's final round of objections (Grubb 2006a, 58). Hutson's statement, Grubb asserts, could refer only to pre-1732 contracts. We disagree. Hutson says that tenants paid their quit rents in paper under the sanction of the legal tender act for decades *even though the proprietor had insisted they sign contracts to pay in either sterling or provincial*

first document was an anonymous Massachusetts pamphlet, written in 1749, that very explicitly states that the medium of exchange in New York and Philadelphia was silver and that the proportion of paper bills was small compared with silver. Grubb objects that the pamphlet was written as a polemic against paper money and that the author may have had no first hand knowledge of conditions in New York and Pennsylvania, and that it therefore “lacks credibility.” We disagree, but there is little to say except that the pamphlet gives the impression of being temperate and well-written.

As for our other sources, Grubb (2006a, 59) writes: “Finally, Michener and Wright (2006a, Appendix 1) present evidence that the governor of Pennsylvania in the early 1750s resisted approval of new paper money emissions by the Pennsylvania Assembly because he thought there was lots of specie in the colony and so paper money was not needed. Michener and Wright take this evidence at face value.” Grubb then relates, accurately, how the proprietor actually wanted more control over spending the paper money authorized, but that since the governor viewed it as impolitic to reveal the proprietor’s true motives, he objected to the bill only on the grounds that specie was sufficiently abundant so as to make more

paper money at its actual value. The proprietor only began writing such contracts in 1732, so the only payments that could have violated such contracts were those written post-1732.

Grubb notes that if the inhabitants discharged their post-1732 quit rents with paper money, as Hutson maintains, Hockley is incorrect to say that four-fifths of all payments were received in specie. Moreover, Grubb points out, only an irrational fool would overpay his or her quit rents by tendering specie if it was financially disadvantageous to do so. We recognized the problematic nature of Hutson’s analysis when we cited it, which is why we wrote: “*If Hutson (1970) is correct . . . [about post-1732 contracts]*” One need not impugn Hockley or declare the residents of Pennsylvania fools to reconcile these matters; there are at least two sensible explanations that preserve Hockley’s integrity and the rationality of Pennsylvanians. Hutson may be wrong about post-1732 contracts, and the specie paid to Hockley could have arisen from payments on post-1732 contracts. Even if Hutson is correct about post-1732 contracts, Hockley might well have been a sensible individual. Knowing that the legal tender provisions forced him to accept roughly \$0.80 on each dollar of quit rents owed, it would be sensible for him to accept an equivalent value in specie in lieu of paper. Our hunch is that this is precisely what Hockley did. Grubb doesn’t explain what motive Hockley would have to lie about this matter in a private letter to the Proprietor, and Hockley clearly used this observation to illustrate how much more plentiful specie was than paper money.

Finally, accepting our position on the legal tender laws does not imply that property sellers detailing sterling obligations in newspaper advertisements were “knowingly writing nonsense.” Even the tender laws required one to pay four Pennsylvania pounds for every 3 pounds sterling owed, which is ample reason for sellers and buyers to care whether an obligation was for sterling or not.

paper money unnecessary. The evidence we present, Grubb implies, is nothing more than the political posturing of the governor and does not accurately reflect the true state of affairs. That would have been an impressive rebuttal had we cited any statement by the governor, the proprietor, or anyone else directly engaged in these political machinations. We did not. Instead, we quoted a private letter from Pennsylvania's proprietary secretary to the proprietor, setting forth his opinion of the current state of affairs in Pennsylvania. We also quoted the Pennsylvania assembly and one of its committees. Those documents, the second and third sources in Appendix 1, make an impressive case and lend credibility to the other two.

In his rebuttal, Grubb (2006a, 59-60) makes one argument we find so curious as to be noteworthy:

Penn knew that the temporary inflow of specie during the war would soon be gone and specie scarcity would return (which is consistent with Grubb's (2004, 340) new evidence series). In London on October 9, 1749 Penn wrote to his governor in Pennsylvania, '[E]very one is sensible that in two or three years almost the whole of the Gold and Silver that during the war was brought into the Colonys will be shipped hither, and wee shall have little but paper left' (Brock 1975, 356)

We find it difficult to reconcile Grubb's new data series with Penn's letter. According to Grubb's series, Pennsylvania possessed only 2,881 pounds of specie in 1749 when this letter was written—less than 3½ d. sterling per capita and barely 3.3 percent of the money supply. This was the great quantity of specie whose departure would return the colony to a condition of specie scarcity? So how does Penn's letter confirm Grubb's series?

Cross-colony circulation of bills of credit

Grubb (2004) concluded based on runaway ads that bills of credit of other colonies did not circulate in Pennsylvania, and Pennsylvania bills of credit did not circulate in neighboring colonies. This conclusion, as we pointed out (2006a, 12, fn. 6) is inconsistent with practically all the existing literature on the subject. Moreover, if Grubb is incorrect in his assertion, it invalidates his technique. In Michener and Wright (2006a, Appendix 2 and

fn. 8), we quote a large number of primary sources that explicitly describe the cross-colony circulation of bills. This is one instance that led Grubb to protest our “piling on” of “anecdotal quotes.” Grubb questions the usefulness (2006a, 52) of such “anecdotal evidence . . . since there is tons of such on both sides of the debate.” Therefore, it is fair to ask why Grubb did not select a more convincing “anecdotal quote” than Mazzei’s to establish that bills of credit did not circulate in adjacent colonies. Grubb’s use of Mazzei is discussed in Michener and Wright (2006a, 13) and defended by Grubb (2006a, 61). It is clear that Mazzei is referring to conditions post-1776 and (if one reads the complete passage) that Mazzei implies paper money sometimes circulated across state/colony boundaries. If this is the best Grubb can muster in support of his position, it belies his claim that “tons” of such evidence exist “on both sides of the debate.”

Grubb objects to two bits of evidence we present pertaining to the circulation of Pennsylvania currency in Maryland circa 1760. One is a quote from Henry Callister, a Maryland merchant, who wrote in a private letter: “I said currency, which does not imply Maryland [paper] money, of which there is hardly any current—I think I was yet more particular, for I spoke of money and exchange as current in Pennsylvania which is our current money at present” (Michener and Wright 2006a, 25). Grubb accepts the authenticity of the quotation, but notes that Callister had unusually extensive dealings with Philadelphia merchants and was badly in need of cash. Those special circumstances, Grubb (2006a, 63-64) contends, account for Callister’s willingness to accept Pennsylvania money. In our opinion, Grubb’s counterargument is unsound. We quoted Callister describing what was and what was not circulating as money in his locale, not proclaiming his willingness to accept Pennsylvania currency. Grubb (2006a, 64) also writes that “In the rest of Callister’s rather extensive correspondence with Wright, there is no indication that Pennsylvania currency was ever in frequent use in Maryland.” Grubb takes no note of Callister’s letter to a Mr. White, dated July 22, 1760 and cited in Michener and Wright (2006a, 25 fn. 16), reporting that “Pennsylvania and Jersey money . . . are current here.”

The other bit of evidence is the Fitzhugh account books, also circa 1761-1764. Fitzhugh was a Maryland merchant, and the pivotal issue here is whether Fitzhugh kept his accounts in Maryland bills of credit during those years as Grubb (2004) maintains. If he did, then Grubb is correct that we would expect to see Pennsylvania currency being reduced to Maryland currency more often, if Pennsylvania currency had any substantial circulation within Maryland. We (2006a, 27) point out that during this period two parallel accounting systems were in use in Maryland and argue

that Fitzhugh was using the “hard currency” system described by McCusker (1978, 191), not Maryland bills of credit. Since the “hard currency” system used most of the same conventions as used in Pennsylvania, conversions to reduce sums of Pennsylvania money would rarely have been necessary and their absence would not be surprising. We (2006a, 26-27) noted that the value of £100 sterling differed substantially in the two systems, particularly in 1764, and that bills of exchange recorded in Fitzhugh’s ledgers are priced at “hard currency” prices. Grubb (2006a, 63-64) reiterates his belief that Fitzhugh’s ledgers are denominated in Maryland bills of credit, but does not address the exchange rate evidence we presented.

The implausible explosion of silver dollars

Our last objection (2006a, 16 and appendix 3) was to the large increase in the use of silver dollars that Grubb ostensibly finds between the end of the French and Indian War and 1775. We noted that in Pennsylvania silver dollars were substantially undervalued relative to gold Johannes and were, in fact, being exported during this period, consistent with Gresham’s law. The overvaluation of Johannes, and the incentive it created to export all coins other than Johannes, was even remarked upon in contemporary newspapers. The reason for the increased use of “dollars” as a unit of account in runaway ads must lie elsewhere, we argued. Although our argument was based primarily on Gresham’s law, Grubb did not address it. We recently unearthed evidence that supports our view that Spanish dollars were relatively scarce in Pennsylvania during this period. In November 1768 Sir William Johnson enlisted James Tilghman of Philadelphia to gather some for him. Tilghman sought to accommodate him, but cautioned “its very probable we may be obliged to make up some deficiency with half Jo[hanne]s, as the dollars are extremely scarce” (Tilghman, 1768). Tilghman’s comment is perfectly sensible under our interpretation, but problematic for Grubb, since Grubb (2004, 340, Fig. 1) indicates that dollars, instead of being “extremely scarce” in Pennsylvania in 1768, were more plentiful than they had been at any time in the previous four decades.

We went on to point out that there were at least three reasons, other than an increased use of Spanish silver, that might account for the increased use of dollars as a unit of account. In his rebuttal, Grubb heaps scorn on the third, which he characterizes (2006a, 65) as “the Maryland dollar gambit.” “It is possible,” we had written (2006a, 34), “that Pennsylvanians were led to make greater use of dollars as a unit of account by the more

extensive circulation of a dollar-denominated medium of exchange. If so, that medium of exchange was not silver but Maryland paper money.” We noted that Maryland emitted paper money denominated in dollars beginning in 1767 and that there is evidence this paper money had at least a limited circulation in Pennsylvania. Grubb (2006a, 65) pounces on this statement. “If the switch to dollars by Pennsylvanians was caused by a flood of Maryland paper dollars into Pennsylvania so that they could be offered as rewards, as Michener and Wright imply, then Grubb’s 2004 argument that rewards reflect media-of-exchange and unit-of-account money is upheld by Michener and Wright.” We went out of our way to deny the implication. “The discussion above,” we wrote (2006a, 37), “emphatically should not be taken to mean that every mention of a ‘dollar’ in late colonial Pennsylvania referred to Maryland’s dollar denominated bills of credit, but only that, without further information, it *could* have referred to them. References to ‘dollars’ could also signify use of the dollar as a unit of account and hence simply be a means of accounting for a variety of other exchange media, including even *gold* coins.” So we were not trying to have it “both ways” as Grubb charges. Our view is that there is a large component of custom in the unit of account, but that considerations of convenience can alter custom, albeit slowly. When Pennsylvania merchants raised the rated value of Johannes and half Johannes to £6 and £3 respectively, in 1767, they (perhaps inadvertently) made it easier to calculate in dollars, since the two coins now most favored by Gresham’s law were assigned values that translated neatly into \$16 and \$8 respectively. Add to this the concomitant circulation of some of Maryland’s new dollar-denominated paper money, and the convenience of using dollars as a unit of account increased. Over time, this greater convenience could undermine, to some extent, the pre-existing custom of using pounds as the unit of account. This is a plausible explanation for the explosion of ‘dollars’ in Pennsylvania runaway ads - more plausible, at least, than that Pennsylvanians were accumulating undervalued coins in violation of Gresham’s law.

Grubb’s (2006a, 66) comments on the geographic pattern of ‘dollar’ runaway ads—particularly his observation that Marylanders were less likely to place ‘dollar’ runaway ads than Pennsylvanians during the era of Maryland’s dollar denominated currency—is new information to us and is worth pondering. It raises an interesting question: Why, if the circulation of dollar-denominated Maryland paper money in Pennsylvania influenced *Pennsylvanians* to adopt the dollar as a unit of account, did it not have a greater influence on *Marylanders*? The answer may simply be that most transactions in colonial America used neither specie nor paper money. The

overwhelming majority of everyday transactions were bookkeeping barter, where net balances were extinguished with such unconventional exchange media as labor and livestock. Bookkeeping barter was especially prevalent in rural areas; money (both paper and specie) was used infrequently outside major port cities. Where money was seldom used, how it was denominated would have had less influence on the customary unit of account. Marylanders might have been less influenced by their new dollar unit-of-account money because Marylanders encountered cash of all kinds less frequently than their brethren in Pennsylvania. However, suppose Grubb is correct on this point and Maryland's dollar money played no role in the increased use of dollars as a unit of account in Pennsylvania in the late colonial period. Our central point, which is that an increased use of Spanish silver dollars in colonial Pennsylvania violates Gresham's law and is thus implausible, remains untouched, as do the other two explanations we suggest to account for the phenomenon.

We submit, however, that Grubb's evidence (2006a, 66) that Maryland pounds remained the prevailing unit of account in Maryland during the "dollar-money" period—with "Maryland pounds" appearing in runaway ads as well as most merchant and government records—is extremely problematic for his own interpretation. "Maryland pounds" must be interpreted as a unit-of-account money, *because Maryland possessed no paper money denominated in Maryland pounds!* Maryland's pound-denominated paper currency was redeemed in 1764. The new issues, beginning in 1767, bore different denominations. Grubb notes that (2006a, 67) the new bills "reported on their face both a value in dollars and in pounds (Newman 1997, 167-169)," which is true, but misleading. The bills reported on their face both their value in dollars and their value in *pounds sterling*—that is to say, their redemption value, as the inscription on the bill makes unmistakably clear. The bill's value in *Maryland pounds* appears nowhere on the bill—nor were "Maryland pounds" the same as pounds sterling, as a casual glance at McCusker (1978, table 3.8) will quickly confirm. The reader can easily verify the tenor of the bills by examining sample bills from 1770 or 1774 on Notre Dame's web site: [Link](#).

How, one may ask, were those bills assigned values in "Maryland pounds?" The definition of Maryland's unit of account prevailing in the late colonial period was that set by a tobacco inspection act passed in 1753, an act which included coin rating provisions (McCusker, 1978, 192). These ratings were published in almanacs, such as the *Maryland Almanack, for the year of our Lord, 1763*.

Figure 1: Maryland coin ratings

The following Species, are to pass in all Payments, relating to the Inspection Law, at the following Rates.

	£.	s.	d.		£.	s.	d.
<i>English</i> Guineas, at	1	14	0	<i>Arabian</i> Chequins,	0	13	6
<i>French</i> Guineas,	1	13	6	Other Gold Coin	}	0	6
Moidores,	2	3	6	(<i>German</i> except-			
Johannes's,	5	15	0	ed), <i>per dwt</i>			
Half Johannes's,	2	17	6	<i>French</i> Silver Crowns,	0	7	6
<i>French</i> milled Pistoles,	1	6	6	<i>Spanish</i> milled Pie-	}	0	7
<i>Spanish</i> Pistoles not	}	1	7	ces of Eight,			
lighter than 4							Other good coined
<i>dwt.</i> 6 <i>gr.</i>				<i>Sp.</i> Silver <i>per Oz.</i>			

Source: *Maryland Almanack for the year of our Lord, 1763*

One rated coin was the Spanish milled piece of eight (a.k.a “the dollar,” see McCusker (1978, 7)), which was assigned a rating of 7½ shillings. Therefore, each dollar of Maryland’s dollar-denominated paper currency was accounted as 7½ shillings in Maryland pounds.

REMARKS PERTAINING TO GRUBB’S USE OF THE HISTORICAL RECORD

Specie plenitude

One of Grubb’s most fervent assertions is that we believe in “specie plenitude.” We are accused of asserting that the colonies were (Grubb 2006a, 47) “awash in specie” and that the colonies (Grubb 2006a, 49) possessed “a large reservoir of specie . . . at all times.” Moreover, many of Grubb’s most blistering attacks center on his belief that we ignore or suppress information that contradicts us on this score. In one such attack Grubb (2006a, 47) notes that Brock (1975) “presents as many or more anecdotal quotes on specie scarcity as on specie plenitude. Michener and Wright simply ignore the specie-scarcity quotes.”

We do not believe nor have we ever argued that specie was plentiful in colonial America. That we champion the belief that the colonies possessed a large reservoir of specie at all times is absurd: Michener (1987, 293-294) argues at length that colonial New England was entirely devoid of circulating specie for a generation and Wright (2001, 19-47; 2005, 44-65) devotes entire chapters to detailed discussions of the diversity of exchange media in early America! We *have* argued, though, that in many colonies and at many times there was as much or more specie in circulation than paper money. This position is easily confounded with another that we do not believe to be true, which is that specie was absolutely plentiful. There is no inconsistency in those views because in many colonies (Pennsylvania in particular) the quantity of paper money in circulation was often quite small.

Let us descend to particulars to free ourselves of this imputation. Jones's probate evidence provides an estimate of the total colonial money supply in 1774 that is roughly consistent with several literary estimates and also with McCallum (1992) (Michener 2003). We have reservations about the probate evidence (Michener and Wright 2006a, 18), but we have reluctantly embraced it. Jones's data indicate the total money supply for the Middle Colonies, reduced to its sterling equivalent, was £1.81 per capita. For the colonies as a whole, Jones (1980, 39, 128) finds a total money supply amounting to £1.087 sterling per capita. In 1774, there was approximately £0.58 sterling per capita in paper money circulating in the Middle Colonies, and the total supply of paper money in the colonies amounted to only about 3,000,000 dollars, or £0.287 sterling per capita (Michener 2003). The implication would appear to be that 68 percent of the money supply in the Middle Colonies and 74 percent of the money supply in the colonies as a whole consisted of specie. However, the implied quantities of specie—£1.23 sterling per capita in the Middle Colonies and £0.8 sterling per capita overall—are not large in any absolute sense. They compare quite unfavorably to estimates of the per-capita specie stock in England (£2.07-£2.15 sterling) or in France (£2.88 sterling) (McCusker and Menard 1988, 338, fn. 14).

In 1782, Mazzei, an Italian, made the following observation: "In 1773, the year disorders began, that is, ten years after the end of the previous war, all transactions were made almost entirely in specie, which, however, did not abound."⁶ Grubb excoriates Michener (1988, 687) for using this quotation to establish that "all transactions were made almost

⁶ Anyone interested in the full context of this quote can find it in Michener and Wright (2006a, fn. 13).

entirely in specie.” “How,” he asks rhetorically (2006a, 61), “did this Italian know so much about colony money supplies?” And how, he asks further, can this be when “Brock (1992) showed all the major colonies except Massachusetts had issued significant amounts of paper money after 1760 and/or had significant amounts outstanding in this period”? Finally, he accuses Michener (1988, 687) of truncating the quotation and leaving off the phrase “which, however, did not abound” so as to make it appear specie was plentiful.

Grubb is mistaken on all counts. “This Italian” (Mazzei) knew something about the medium of exchange in America because he lived in Virginia from 1773 to 1779 (Mazzei, Marchione, et. al. 1983 1: xxxviii). Far from being inconsistent with the quantity of paper money in Brock (1992), Mazzei’s comment makes perfect sense as a statement about the colonies as a whole; Brock’s estimates lead to the conclusion that the colonies as a whole possessed no more than £0.287 sterling per capita in paper money in 1774. Virginia, where Mazzei had first-hand experience, had less than £0.12 sterling per capita in paper money outstanding in December 1773, according to Brock (1992, 116). The quotation was truncated for terseness, nothing more. In fact, in a book, Wright (2001, 22) included the phrase “which, however, did not abound” because he had the luxury of space and because the clause is precisely consistent with our beliefs about specie in America on the eve of the Revolution.

In an apparent suggestion of legerdemain, Grubb sees villainy in our most innocuous statements. We (2006a, p. 5), in the midst of a *literature review* designed to demonstrate that the potential importance of Grubb’s data series, remark that Grubb’s data (if accepted) would have serious implications for those, such as McCusker and Menard, who argue the colonial money supply was adequate. That Grubb’s data series has important implications for the adequacy of the colonial money supply is uncontroversial: Grubb says the same thing (Grubb 2004, 344). Later we (Michener and Wright 2006a, 15) contest the validity of Hamilton’s money supply estimate, which is a linchpin of McCusker and Menard’s position. In a lengthy discussion, Grubb (2006a, 51) derides our “opening contradiction” which is that we “[appeal] to McCusker and Menard (1985, 338) as support for their position,” (Grubb’s misapprehension that we believe in specie plenitude leads him to assume we agree with McCusker and Menard) “and then [trash] the evidence that generated that support.”

Probate Evidence

The debate about the correct interpretation of the probate evidence is lengthy, beginning with Michener (1987, 275-276), then passing to Grubb (2004, 342-343), Michener and Wright (2006a, 15-19) and Grubb (2006a, 60-61). At the end (Grubb 2006a, 60-61), Grubb's argument is in ruins, and he responds with innuendo. One example is Grubb's contention that Michener (1987) is somehow responsible for the brouhaha because he was the first to use Jones's probate evidence to estimate the specie stock, and that, though it was not "easily done," "Michener manipulated Jones's evidence to make it fit his view." But Weiss (1970, 779) was the first to use probate evidence in this way, and both Weiss (1970) and Michener (1987) proceed in exactly the same fashion—by subtracting the known quantity of paper money from Jones's estimate of the total money supply to derive an estimate of the specie portion of the money supply. There is nothing either difficult or devious about this approach.⁷ Grubb goes on to dismiss our refutation of his own calculations as nothing more than a "lengthy diatribe of remanipulation" that validates his original point, which was "that the Jones evidence can be plausibly manipulated to say almost anything." To this, we can only reply that there is scant support in Grubb (2004, 342-343) for the notion that this was Grubb's original point and that Michener and Wright (2006a, 15-19) demonstrate convincingly that Grubb's calculations are insupportable.

Grubb's attack on the Fixed Exchange rate thesis

The entire question of fixed exchange rates is of little relevance to the issue of whether Grubb's data series is accurate. Everyone, including Grubb, agrees that paper monies issued in the Middle Colonies maintained a stable value in the late colonial period. The debate centers on why. In Michener (1987, 1988, 2003) and Michener and Wright (2005), we have presented a theory to account for "why," but our criticism of Grubb

⁷ Roger Weiss (1970, 779) arrived at a smaller fraction of specie in the money supply. There is a simple explanation: Weiss, whose article was published in 1970, based his analysis on Jones's 1968 dissertation rather than her 1980 book. In her dissertation, Jones (1968, Tables 3&4, 50-51) estimated the money supply in the three Middle Colonies at £2.0 local currency per free white capita. After converting to sterling, Weiss began with an estimated total money supply of £1.2 sterling per capita, rather than Jones's more recent estimate of £1.81 sterling per capita.

(2006a) in no way hinges on our being correct on this issue. Grubb tries to argue that if colonial paper monies did not exchange at exactly fixed rates with one another, they could not have circulated across colony borders, so that accepting our “fixed rate” thesis is a prerequisite for accepting our critique of Grubb. However, belief in the cross-colony circulation of bills of credit would hardly be limited to subscribers of our fixed-rates theory; many economic historians who accept the cross-colony circulation of bills of credit reserve judgment on it and Smith (1988) (to mention a noteworthy example) believes in the cross-colony circulation of bills while vigorously disputing our theory. Moreover, Grubb’s contention that the cross-colony circulation of bills could occur only where relative values of bills were absolutely fixed is doubtful (though, where they were fixed in value, it no doubt facilitated that cross-colony circulation). It is well known that in colonial times many book debts were extinguished with such variegated media as chickens, livestock, and day labor—media far more heterogeneous and variable in their value than, say, New Jersey bills of credit.

Moreover, Grubb’s attack on the fixed exchange rate thesis is inaccurate as well as irrelevant. We cite four particulars.

1) Grubb says (2006a, 54): “Michener and Wright assume that exchange rates were universally fixed in the colonial period.” We make no such claim. In Michener (1987, 288-294) and Michener and Wright (2006b, 26, 29-30) one of the central messages is that in colonial New England all the circulating specie had been exported by about 1713 and that exchange rates floated until the Massachusetts currency reform in 1750. That was why New England’s paper money depreciated even though the paper money in most other colonies did not.

2) Grubb cites McCusker’s exchange rate data (2006a, 55-56) to show there was “no fixity or constancy in the exchange rate.” As we have repeatedly stressed (see, for example, Michener 1987, 265-266; Michener and Wright 2006b, 26-27, 31-32) our proposition is that coin rating fixed the *par of exchange* and that market exchange rates fluctuated about par within specie points, which were relatively wide in the 18th century because of higher transportation costs. The genuine issue is whether the variability of exchange rates documented by McCusker is small enough to be consistent with fluctuations about par within specie points. To that end, Michener (1987, 265-275) presents several histograms of exchange rate fluctuations and

argues that, in many instances, the fluctuations can be so explained. Therefore, simply noting that McCusker's exchange rates are not constant hardly "destroys Michener and Wright's core model of the colonial monetary system," as Grubb (2006a, 55) contends.

3) Grubb (2006a, 55) accurately attributes to us the view that the coin rating agreements that lie at the heart of our theory were "created, maintained and enforced by custom . . . [and] by agreements among merchants in the marketplace." However, he contends that we "present no direct evidence of such a merchant cartel." That is incorrect: Michener and Wright (2005, 2006b, 24), Michener (2003, fn. 19), and Michener (1987, fn. 25) do present "direct evidence" of the merchant agreements underlying the effectiveness of coin rating. One bit of evidence comes from almanacs. Grubb (2006a, 55) objects that the tables adduced tell us no more about the fixity of coin ratings than the presence of a currency exchange table in the *Wall Street Journal*—an objection that misses the point that coin ratings were published not in colonial newspapers, but in almanacs, which then, as now, were annual publications.⁸

4) To discredit the model in Michener (1987), Grubb (2006a, 47) caricatures it. That model assumes, Grubb (2006a, 49) asserts, that:

- i) There is a perfectly fixed exchange rate between a colony's paper money and foreign specie monies (they are perfect substitutes),
- ii) money demand is invariant over time even in the short-run,
- iii) there is a large reservoir of specie in the colony at all times, and
- iv) transaction and information costs are zero.

Michener (1987, 253-256) does introduce a simple formal model as an expository device that incorporates some of those elements. However, Michener holds that the first condition was only met in some colonies at some times, and even in those colonies, condition (iii) was unnecessary. The stock of circulating specie only had to be positive. Moreover, Michener (1987, 256-257, 265-266, 277, 283) explicitly acknowledges the oversimplifications implicit in the model

⁸ Grubb (2006a, 55) also objects that "these almanac coin-rating tables are for unit-of-account exchange rates and not media-of-exchange rates (Michener and Wright are hoisted on their own petard here)." This objection baffles us; the distinction between "unit of account exchange rates" and "medium-of-exchange rates" seems little more than word play.

and distances himself from them. An excellent example is transactions costs; Michener (1987, 266) explicitly discusses specie points. Moreover, Michener (1988, 691) and Michener (2003) explicitly discuss factors that influence money demand: War, Michener argues, disrupted bookkeeping barter by uprooting people from their communities and placing them in mortal peril, increasing money demand. Grubb's summary of our position is neither accurate nor fair-minded.

We could go on, but won't, as we believe that at this point any scholar who has followed the debate closely and objectively will harbor deep reservations about Grubb's monetary history papers.

REFERENCES

- Brock, L. V.** 1975. *The Currency of the American Colonies, 1700-1764: A Study in Colonial Finance and Imperial Relations*. New York: Arno Press.
- Brock, L. V.** 1992. Colonial Currency, Prices & Exchange Rates. *Essays in History* 34: 74-132.
- Carey, M.** 1786. *Debates and proceedings of the General Assembly of Pennsylvania on the memorials praying a repeal or suspension of the law annulling the charter of the bank*. Philadelphia: Printed for Carey and Company.
- Grubb, F. W.** 2001. The Circulating Medium of Exchange in Colonial Pennsylvania, 1729-1775: New Estimates of Monetary Composition and Economic Growth. Working Paper, University of Delaware Department of Economics.
- Grubb, F. W.** 2003. Creating the US Dollar Currency Union, 1748-1811: A Quest for Monetary Stability or a Usurpation of State Sovereignty for Personal Gain? *American Economic Review* 93(5): 1778-1798.
- Grubb, F. W.** 2004. The Circulating Medium of Exchange in Colonial Pennsylvania, 1729-1775: New Estimates of Monetary Composition, Performance, and Economic Growth. *Explorations in Economic History* 41(4): 329-360.

- Grubb, F. W.** 2005. Creating the U.S. Dollar Currency Union: A Reply to Michener and Wright — Including a New View from Canada. *American Economic Review* 95(4): 1341-1348.
- Grubb, F. W.** 2006a. Theory, Evidence, and Belief—The Colonial Money Puzzle Revisited: Reply to Michener and Wright. *Econ Journal Watch* 3(1): 45-72. [Link](#).
- Grubb, F. W.** 2006b. The Constitutional Creation of a Common Currency in the U.S., 1748-1811: Monetary Stabilization Versus Merchant Rent Seeking in Jurgen Nautz and Lars Jonung, eds., *Conflict Potentials in Monetary Unions*. Stuttgart: Steiner Verlag, forthcoming.
- Hepburn, A. B.** 1967. *A history of currency in the United States*. 1903. Reprint. New York: Augustus M. Kelley.
- Hockley, R.** 1753. Richard Hockley to T. Penn, 24 February 1753. Penn Official Correspondence, 1747-1771, HSP vol. 6: 17.
- Hutson, J.** 1970. Campaign for a Royal Province. *Pennsylvania Magazine of History and Biography* 94(4): 427-463.
- Jones, A. H.** 1968. Wealth Estimates for the American Middle Colonies, 1774, Ph.D. diss., University of Chicago.
- Jones, A. H.** 1980. *Wealth of a Nation to Be: The American Colonies on the Eve of the Revolution*. New York: Columbia University Press.
- Maryland Almanack, for the year of our Lord, 1763.*** 1762. Annapolis: Printed by Jonas Green.
- Mazzei, F., M. Marchione, et al.** 1983. *Philip Mazzei: Selected Writings and Correspondence*. Prato, Italy: Cassa di Risparmi e Depositi di Prato.
- McCusker, J. J.** 1978. *Money and Exchange in Europe and America, 1600-1775*. Chapel Hill: University of North Carolina Press.
- McCusker, J. J. and R. R. Menard.** 1985. *The Economy of British America, 1607-1789*. Chapel Hill: North Carolina, University of North Carolina Press.
- Michener, R. W.** 1987. Fixed Exchange Rates and the Quantity Theory in Colonial America. *Carnegie-Rochester Conference Series on Public Policy* 27: 233-307.

- Michener, R. W.** 1988. Backing Theories and the Currencies of Eighteenth-Century America: A Comment. *Journal of Economic History* 48(3): 682-692.
- Michener, R. W.** 2003. Money in the American Colonies. EH.Net Encyclopedia. R. Whaples. [Link](#).
- Michener, R. W. and R. E. Wright.** 2005. State “Currencies” and the Transition to the U.S. Dollar: Clarifying Some Confusions. *American Economic Review* 95(3): 682-703.
- Michener, R. W. and R. E. Wright.** 2006a. Miscounting Money of Colonial America. *Econ Journal Watch* 3(1): 4-44. [Link](#).
- Michener, R. W. and R. E. Wright.** 2006b. Development of the U.S. Monetary Union. *Financial History Review* 13(1): 19-41
- Morris, R., E. J. Ferguson, et al.** 1973. *The Papers of Robert Morris, 1781 - 1784*. Pittsburgh: University of Pittsburgh Press.
- Pennsylvania Evening Post*. Philadelphia, Pa: B. Towne.
- Pennsylvania Packet, and the General Advertiser*. Philadelphia, Pa.: J. Dunlap
- Smith, B. D.** 1988. The Relationship Between Money and Prices: Some Historical Evidence Reconsidered. *Quarterly Review* 12(3): 18-32.
- Tilghman, J.** 1768. Letter to Sir William Johnson, 29 November 1768. Printed in *The Papers of Sir William Johnson, 1715-1774*. Albany: The University of the State of New York 6: 507-508.
- Weiss, R. W.** 1970. The Issue of Paper Money in the American Colonies, 1720-1774. *Journal of Economic History* 30(4): 770-784.
- Wright, R. E.** 2001. *Origins of Commercial Banking in America, 1750-1800*. Lanham, Md.: Rowman and Littlefield.
- Wright, R. E.** 2005. *The First Wall Street: Chestnut Street, Philadelphia, and the Birth of American Finance*. Chicago: University of Chicago Press.

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