

**Creating the U.S. Dollar Currency Union, 1748-1811: A Quest for Monetary Stability  
or a Usurpation of State Sovereignty for Personal Gain?\***

Farley Grubb  
Economics Dept.  
Univ. of Delaware  
Newark, DE 19716  
USA

January 26, 2002

[Under Revision for *American Economic Review*. Do  
not quote or reproduce for sale without permission.]

\* The author is Professor of Economics, Univ. of Delaware, Newark, DE 19716 USA. E-mail: grubbf@be.udel.edu. Support from the Financial Institutions Research Center at the Univ. of Delaware is gratefully acknowledged. Earlier versions were presented at Rutgers Univ.; UCLA; Univ. of Colorado; Univ. of Delaware; Univ. Lumiere Lyon 2; Univ. of Maryland; Univ. of Mississippi; the 2000 meeting of the Southern Economic Assoc., Alexandria, VA; the 2000 meeting of the Social Science History Assoc., Pittsburgh; the 2001 meeting of the Allied Social Science Assoc., New Orleans; the 2001 Conference "L'Euro et la Pacification des Relations Monetaires Internationales," Lyon, France; and the 2001 Conference "Conflict Potentials in Monetary Unions," Kassel, Germany. The author thanks the participants of these seminars and conferences, and Burt Abrams, Stacie Beck, David Cowen, Eleanor Craig, Ken Koford, Ronald Michener, John Murray, Laurence Seidman, Bruce Smith, Ned Stinson, Richard Sylla, and Robert Wright for their helpful comments on earlier versions. The author also gives a special thanks to James Butkiewicz, Leslie Goldstein, Edwin Perkins, Rene Sandretto, Lorena Walsh, and Marc Weidenmier for encouragement and assistance regarding sources and methods. Mark Mylin and Anne Pfaelzer de Ortiz provided research and Anne Pfaelzer de Ortiz provided editorial assistance.

# **Creating the U.S. Dollar Currency Union, 1748-1811: A Quest for Monetary Stability or a Usurpation of State Sovereignty for Personal Gain?\***

The U.S. Constitution, ratified by the states and adopted by Congress in 1789, forbade states from issuing their own currency, a practice in which the states had engaged for many decades. Exchange rate and price evidence from 1748 through 1811 indicates that this transition did not improve monetary performance, nor is this evidence consistent with the anti-state-currency rhetoric presented at the Constitutional Convention. Offered as a solution to economic ills that were known to be phantoms, this constitutionally created U.S. dollar currency union was a usurpation of state sovereignty by merchant-bankers for personal gain.

The value of having a single currency, the optimal size of single-currency zones or unions, and the cost of forming such unions, is an unresolved debate.<sup>1</sup> An important aspect of this debate is the empirical success claimed for single-currency zones such as the United States. The fact that otherwise-sovereign states within the United States are not legally allowed to issue their own currency, thus creating a single currency zone for the whole United States based on the U.S. dollar, is commonly used as an example for emulation and as justification for policy choices, such as the current move toward a European currency union based on the Euro.<sup>2</sup>

The benefits of this constitutionally created U.S. currency union and, by analogy, the benefits for other politically manufactured would-be currency unions are assumed to be obvious, namely a reduction in monetary instability and exchange-rate transactions costs within the union thereby stimulating long-run economic growth. These alleged benefits for the U.S., however, are not derived from market evidence, but from simple theoretical assertions and from a historical literature that has taken as fact the rhetoric of the winning side at the U.S. Constitutional Convention. Independent of theory and rhetoric, little is known about how and why the U.S. currency union was created, and about how this union performed in terms of its relevant opportunity cost. Even exactly when the U.S. dollar was adopted by market participants for private transactions is not known.

These deficiencies are addressed here. Market-generated quantitative data on the choice of currency for spot transactions, the choice of currency for forward transactions, exchange rates by currency, and price indices by currency from 1748 through 1811 are used to determine when the transition from state-issued currency to the U.S. dollar occurred and to assess the non-wartime performance of prices, exchange rates, and purchasing power parity before versus after this transition. This evidence indicates that the formation of the U.S. currency union had more to do with usurpation of state sovereignty for the personal gain of merchant-bankers than with solutions to monetary

instability and transaction costs within the union, and indicates that the rhetoric offered against state-issued currency by some of the founding fathers requires reinterpretation. A concise history of 18th-century American monetary regimes is provided first.

### **SETTING THE STAGE: 18th-CENTURY AMERICAN MONETARY REGIMES**

The British Crown did not permit its colonies to mint coins or establish banks, nor did it permit its coins to be exported from England.<sup>3</sup> The North American colonies imported foreign coins through their trade surplus with the Caribbean and Southern Europe. Much of this specie, however, was re-exported, largely as a result of the mercantile policies which held the colonies in a chronic current-accounts trade deficit with the mother country. Colonists constantly complained that they lacked a sufficient circulating medium of exchange, especially with which to pay taxes, since taxes could not be paid through merchant-store book credit or with barter goods. Initially, some colonies allowed non-specie commodity monies, such as paper tobacco contracts or tobacco leaf, to fill this void.

In 1696, Massachusetts, in order to pay its soldiers and meet other emergency wartime expenses involved in the failed campaign against French Quebec during King William's War, issued small-denomination bills of credit (paper money) which could be used to pay taxes levied by Massachusetts. These bills circulated as a medium of exchange within the colony. Soon thereafter other colonies adopted this innovation. They issued bills not only to meet emergency wartime expenses, but also to meet normal peacetime expenses. Some colonies used the ability to issue and redeem bills of credit as an active monetary policy for ameliorating the short-run effects of macroeconomic and foreign-trade shocks.<sup>4</sup> Several colonies also issued bills of credit in exchange for mortgages on land in their respective colonies, i.e., subjects mortgaged privately owned land to their colonial government for cash. The interest on these 'land bank' loans was an important source of income for some colonial governments. Each colony's bills of credit were denominated in pound units, e.g., New York pounds, Pennsylvania pounds, Maryland pounds, and so forth, and circulated at variable market-determined rates of exchange to pounds sterling and to each other. By the middle of the eighteenth century, colonial government bills of credit comprised a substantial portion of the money supply within many colonies. Most prices within each colony were quoted in their respective paper currencies.<sup>5</sup>

At mid-century the British Crown moved to regulate colonial currencies. Participation in the military campaigns of King George's War, as well as mismanagement, led to heavy depreciation of some currencies, especially the Massachusetts pound. The Crown's response was the Currency Act of 1751 which allowed the

colonies to continue to issue their paper money as long as it met two conditions: 1) that it not be legal tender, and 2) that ample provisions (taxes) be put in place to redeem each issue "within as short and reasonable a time as may be, not exceeding five years at the farthest."<sup>6</sup> This Act, while explicitly naming only the New England colonies, influenced policy in all colonies, and was formally extended to all colonies at the conclusion of the Seven Years War by the Currency Act of 1764.<sup>7</sup> Some colonies, such as Maryland, Pennsylvania, and New York, had instituted such policies on their own accord before 1760.<sup>8</sup>

Each colonial government that issued paper money accepted its own issue for payment of the taxes it levied and land mortgages it held at an announced rate,  $X$ , relative to specie, e.g., a tax payment of  $X$  paper pounds being equivalent to a tax payment of one pound sterling. Typically  $X$  was greater than one (see Figure 3 below). As such, each colony's paper money was defacto legal tender for payment of that colony's public debts (taxes). In 1773, the Crown explicitly accepted this defacto legal-tender status, but retained the ban on paper money being made legal tender for private debts. Each colony was able to manage and maintain the market value of its own paper money by accepting its own paper money for payment of its own taxes and publicly-held land mortgages at an announced rate relative to specie, and by the orderly, timely, and forecastable redemption of its issuances of paper money through established taxing provisions. The presence of competitive currency substitutes induced each colonial government to follow a stable path with regard to the relative value of its own paper money.<sup>9</sup>

Armed hostilities erupted between Britain and her North American colonies on 19 April 1775 (the Battles of Lexington and Concord), with the united continental colonies declaring independence 4 July 1776. The *Articles of Confederation*, the first formal U.S. government, was adopted by the Continental Congress on 15 November 1777, but was not ratified by the states (former colonies) until 1 March 1781. Under this government, both individual states and the Continental Congress could issue their own bills of credit (paper money). To meet military expenses the Continental Congress, beginning in 1775, issued bills of credit--Continental dollars--that depreciated to zero by April of 1781 and ceased thereafter to circulate as a medium of exchange. Each of the thirteen states also issued their own currencies during this period, e.g., New York pounds, Pennsylvania pounds, and so forth that, while also depreciating, for the most part held their value to a greater extent than did the Continental dollar.<sup>10</sup> The final military engagement of the American Revolution on land was 17 October 1781 (the Battle of Yorktown). Peace,

however, was not established until the Treaty of Paris was signed on 3 September 1783 whereby Britain recognized the independence of the United States.

After the end of hostilities, individual states levied substantial taxes to redeem rapidly the bills of credit issued during the revolution. The resulting sharp monetary contraction produced substantial price deflation. The scarcity of a circulating medium became so acute in some locations that a few states resorted to accepting farm produce and land claims as legal tender for public debts (tax payments). After the Treaty of Paris was signed, at least seven of the thirteen states (Pennsylvania, North Carolina, and South Carolina in 1785; Rhode Island, New York, New Jersey, and Georgia in 1786) returned to issuing their own pound-denominated paper money, usable--as during the colonial period--to pay taxes levied and land mortgages held by the issuing state. In addition, some states, such as Maryland and Massachusetts, were in the process of enacting legislation to issue new bills of credit, but failed to complete this legislative process before the new federal constitution banned such emissions.<sup>11</sup> By replacing old bills issued during the revolution that were now being rapidly taxed out of circulation with new issues, the states that issued new bills of credit partially ameliorated the circulating-medium scarcity within their borders. States that refrained from such action were more likely to face political unrest, such as Shay's Rebellion in Massachusetts early in 1787.<sup>12</sup>

At the federal level, after the complete collapse of the Continental dollar in 1781, the Continental Congress turned to Robert Morris to restore the confederation's finances. Morris opened the *Bank of North America* (*BNA* hereafter) on 7 January 1782. The bank, headquartered in Philadelphia, was intended to be the federal government's bank with branches throughout the states. It accepted private and federal government deposits of specie, kept accounts in dollar units, and issued dollar-denominated paper bank notes as claims against deposits and as loans both to the federal government and to private citizens, i.e., it engaged in fractional-reserve banking with specie serving as the reserve. Morris and Congress also asked the states not to permit other banks to be established during the war, and asked the states to accept *BNA* bank notes in payment for each state's taxes and then remit these notes to the U.S. Treasury to cover payments each state owed the federal government. The bank notes were intended to be the circulating medium for the nation. Only Connecticut, however, made *BNA* bank notes legal tender for payment of its taxes.<sup>13</sup> On 6 July 1785 Congress declared that the "dollar" in decimal units to be the official monetary unit of the United States.

In the spring of 1787 a constitutional convention was held in Philadelphia. On 28 September 1787 this convention submitted to the states a new *U.S. Constitution*, which would replace the *Articles of Confederation* when ratified by 9 of the 13 states. It was so ratified by 21 June 1788 and adopted by Congress on 4 March 1789. Article I, Section 10, Clause 1 states:

No State shall enter into any Treaty, Alliance, or Confederation; grant Letters of Marque and Reprisal; coin money; emit Bills of Credit; make any Thing but gold and silver Coin a Tender in Payment of Debts; pass any Bills of Attainder, ex post facto Law, or Law impairing the Obligation of Contract, or grant any Title of Nobility.

This clause, in effect, constitutionally manufactured a currency union within the United States. After 1787 states could no longer constitutionally issue new bills of credit. While outstanding state bills could continue to circulate until redeemed and destroyed by their respective states, after 1787 states lost the ability to engage in independent monetary policy with regard to their money supply and price level.

Though not explicitly stating so, the *U.S. Constitution* also forbade the federal government from issuing bills of credit. At the convention, the constitution's construction was understood to be such that any powers not explicitly granted to the federal government were denied to the federal government, and any powers not explicitly denied the states were granted to the states. The proposal to allow the federal government to emit bills of credit by inserting an explicit clause to that effect into the constitution was voted down.<sup>14</sup>

In March of 1791, Congress chartered the *First Bank of the U.S. (FBUS hereafter)*. This bank issued dollar-denominated paper bank notes and, under Alexander Hamilton's guidance, tried to do what Morris had attempted to have his *BNA* do, but on a much larger scale, namely, make *FBUS* bank notes the chief circulating medium of the new nation. While unconstitutional in terms of how the constitution was designed by founders such as James Madison, the *FBUS* was deemed constitutional (but not without considerable and continuing controversy) and saved from President Washington's veto under the aegis of Hamilton's reinterpretation of the constitution as rendering 'implied powers' to the federal government.<sup>15</sup> In addition, state-chartered banks, numbering 28 by 1800, also issued dollar-denominated paper bank notes, backed by fractional-reserves in specie, which circulated as a medium of exchange along side *BNA* and *FBUS* bank notes and specie coinage. In terms of specie, the Mint Act, which Congress passed on 2 April 1792, officially fixed the weight and fineness of the U.S. specie dollar, thus legally distinguishing the U.S. specie dollar from the Spanish dollar. The U.S. Mint, however, did not begin to coin U.S.

dollars in any quantity until after mid-1794.

In summary, the U.S. Constitution legally forced a transition in the circulating medium of exchange. It led not only to a common monetary unit of account within the U.S. (the U.S. dollar), but also to a transformation of the monetary system. Prior to its adoption, the monetary system consisted of specie (largely foreign coins) and individual colony/state-issued pound-denominated bills of credit backed by the issuing state's future taxes and publicly held land mortgages. These bills of credit circulated at market-determined variable rates of exchange with one another and with specie currencies, such as the pound sterling. After the adoption of the U.S. Constitution, the monetary system was transformed into consisting of U.S. and foreign specie coinage, and a plethora of federal- and state-chartered bank-issued U.S. dollar-denominated bank notes backed by fractional-reserves with specie serving as the reserves. These bank notes were exchangeable at face value for specie at the bank of issue, except during liquidity crises. Away from the bank of issue, however, bank notes circulated at variable market-determined discounts with one another and with specie. Therefore, the reduction in transaction costs and exchange-rate risks associated with moving to a single currency were not as great as is commonly assumed.<sup>16</sup> Constitutionally, bank notes could not be declared legal tender for all debts, though governments could make them defacto legal tender for public debts by accepting them in payment for taxes.

This new bank-based monetary system reduced the government's ability to influence movements in the country's monetary base. The U.S. produced little specie, had limited specie reserves, had no ability to sterilize specie inflows, had no regulation of banking specie-reserve to bank-note-loan ratios, and was a 'small' open economy on a specie exchange-rate standard. As such, the transition to the U.S dollar eliminated government monetary-policy tools and exposed the U.S. to unmediated macro-trade shocks. Given the unregulated banking money multiplier, this transition also amplified the effect of such shocks. When facing a recession, banks reduced new loans and called in old loans to protect their specie reserves. This action further reduced the money supply and so exacerbated the recession. By contrast, under the prior system of individual colony/state paper currencies, individual states could engage in active monetary policy--adjusting their paper money supplies by altering the speed of new issues and redemption of old issues--to ameliorate, in the short run, the effects of macro-trade shocks. In addition, given that most taxes earmarked for redeeming bills of credit were commodity sales taxes, such as on tobacco exports, tax payments would vary positively--the amount of paper money left in circulation would vary inversely--with

fluctuations in macro-business conditions, thus providing automatic stabilization. Finally, for states that employed 'land banks', distressed citizens could mortgage land--their most illiquid asset--to the state for cash, thereby expanding the money supply and ameliorating the recession.<sup>17</sup>

### **WHEN DID MARKETS MAKE THE TRANSITION TO THE U.S. DOLLAR?**

Assessing the performance of the medium of exchange before versus after the transition to the U.S. dollar requires determining exactly when this transition occurred, something that is not well established in the literature. Bank and federal government account books were kept in dollar units as early as 1781 (Spanish dollar units prior to 1792). Many merchant account books, however, were kept in state-issued currency well after 1805, and as late as the 1820s several state treasuries were still receiving and burning the pound-denominated bills of credit issued prior to 1787.<sup>18</sup> Because accounting units can differ from transaction units, account books provide little help for determining the transition to the U.S. dollar. Newspaper quotations of average commodity prices suffer a similar problem.<sup>19</sup> No study of frequent and numerous individual private-market transactions has been made to determine what monetary unit was in use. This deficiency is addressed here by examining the Philadelphia market for immigrant servant contracts.<sup>20</sup>

This market has several unique and attractive features for identifying the transition to the U.S. dollar. First, it was a private market with all negotiated transactions taking place in Philadelphia. In this period, Philadelphia was the largest U.S. city, the seat of the federal government, the headquarters of both the *BNA* and the *FBUS*, and the location of the U.S. Mint. Thus, the transition to the U.S. dollar should have occurred relatively early in Philadelphia. Second, the transacting parties came from a wide cross-section of the community. The sellers were merchants and ship captains who were familiar with transatlantic commerce. The buyers mostly were middle-income artisans, tradesmen, merchants, and farmers who hailed from Philadelphia and nearby rural counties.<sup>21</sup> Third, over 2,800 individual contract sales were recorded. These sales occurred, more or less continuously, across the key years of monetary transition, namely, from 1787 through 1804. Finally, each contract sale involved both a current and a forward exchange. The current exchange was the money recorded at the time of sale which was paid by the buyer of the servant to the merchant who imported the servant. The forward exchange was the contractually specified payment to be made by the buyer of the servant to that servant at contract completion.<sup>22</sup>

The record of these transactions reports the choice of monetary units used in exchange, as opposed to merely recording the monetary unit of account. At the behest of the German Society of Pennsylvania, the transactions were recorded and overseen by a third party for the sole purpose of providing an exact record of each transaction to legally protect all parties against fraud. The transactions were recorded as they transpired, as opposed to being recorded afterwards from information in buyer or seller account books. Frequently, different monetary units were recorded within an individual sale, which indicates that monetary exchange units as opposed to monetary accounting units were being recorded. Five examples of recorded sales follow:

Johann Friederich Shetzig bound himself to the forgoing [Samuel Wallis of Muney Township Northumberland County State of Pennsylvania] to serve him four years to have [at end of his contract] customary freedom suits & fifteen Spanish dollars. Consideration [sale price]: 20.16.11 [Pennsylvania] pounds. (10 April 1788)

Henrich Westevein bound himself servant to Christian Henrich Beck Nazareth Township, Northampton County State of Pennsylvania farmer, to [serve] him three years, to have customary freedoms or ten pounds specie in lieu, at his option, & one dollar every three months. Consideration: 22.17.6 [Pennsylvania] pounds. (14 September 1792)

Caspar & Maria Catherine Souerland bound themselves servants to Hieorominus Warner Philadelphia brassfounder, to serve him two years & three months each, the husband to have thirty dollars the woman two guineas in lieu of their freedom suits. [Consideration:] 31.10.- [Pennsylvania] pounds. (18 March 1797)

John Valentine Unger bound himself servant to Peter Biessler of Leacock Township County of Lancaster farmer, to serve him three years, to have one shilling every week during his servitude & customary freedom suits and five dollars. Consideration: 20 guineas. (26 August 1800)

Joseph Obloue, bound himself servant to Samuel Huffsey, of Fairfield Township, Cumberland County, farmer, to serve him three years & six months, to have customary freedom suits, & five [Pennsylvania] pounds in money. Consideration: 70 dollars. (23 June 1804)<sup>23</sup>

Of the contracts that specified end-of-contract cash payments, 40 percent specified those payments in a different monetary unit than that specified for the beginning-of-contract sale price. This divergence would not occur if the recorder were employing a common monetary accounting unit.

The choice of monetary units for current transactions (the sale price) is shown in Figure 1. Before 1795 current transactions were almost exclusively denominated in Pennsylvania pounds. This finding indicates that the efforts in the mid-1780s by Robert Morris, through the *BNA*, to establish dollar-denominated bank notes as the chief circulating medium of exchange in the U.S. had little effect on current transactions in the marketplace. Morris, himself, remarked that his bank notes "constantly returned upon me for payment [in specie] instead of being

absorbed by the taxes."<sup>24</sup> This finding is also consistent with the observation that Morris had to press customers to accept bank notes instead of specie, with the bank-note circulation of the *BNA* being only a fraction of its specie reserves, rather than a multiple as would be expected under a fractional-reserve banking system, and with the *BNA*'s issuance in 1789 of bank notes in denominations of 1/90th of a dollar.<sup>25</sup> This seemingly odd denomination only makes sense when it is noted that 1/90th of a dollar equals one pence in Pennsylvania pounds. Issuing bank notes in the denomination of Pennsylvania paper currency indicates that the *BNA* was struggling to get its bank notes to displace Pennsylvania pounds as the preferred currency in the marketplace. This struggle will be used below to explain why the Constitutional Convention strongly favored a constitutional ban on state-issued bills of credit. [Place Figure 1 Here]

The transition from Pennsylvania pounds to U.S. dollars for current transactions began in 1795 and took several years to complete. The use of dollars climbed from 3 percent of current transactions in 1795 to 65 percent by 1798 and finally to 95 percent by 1802. The Pennsylvania pound ceased to be used in current transactions after 1798. While states could not constitutionally issue new bills of credit after 1787, old state bills could continue to circulate until that state redeemed them through taxation. The evidence here indicates that the retirement of the Pennsylvania pound did not effectively alter the marketplace in terms of a circulating medium of exchange until 1796. Foreign coins, almost exclusively gold guineas, while absent from current transactions prior to 1795, rose to rival U.S. dollars in frequency of use in 1796-1797 and 1800. The increased use of foreign coins may have filled the gap between the retirement of the Pennsylvania pound and the availability and trustworthiness of U.S. dollar-denominated bank notes and specie coinage. After 1801 the use of foreign coins fell to under 7 percent of current transactions.

The rapid disappearance of the Pennsylvania pound as a circulating medium of exchange after 1796 fits the issue-redemption pattern of state paper currencies in this period. In the early 1780s, states that issued bills of credit typically legislated specific taxes lasting 10 to 12 years that were calculated to raise enough to redeem that particular currency issue--the date of issue was typically printed on the money. These taxes could be paid in the state's paper currency or in specie. The paper currency so redeemed would be burnt by the state. Acceptance of state-issued paper currency still outstanding after the tax period earmarked to redeem that currency was contingent on new authorization by the state legislature. If authorized, it would still be accepted by the state in payment for some taxes

and then burnt. Given that the last issues of state paper currencies were in 1785-86, they would be expected to dominate the paper medium of exchange into the mid-1790s as long as the market preferred state paper currency to dollar-denominated bank notes.<sup>26</sup> By 1797, however, the volume of state paper currency left unredeemed would have been too small, and its future redemption too uncertain, to allow it to dominate the medium of exchange.

Changes in the estimated volume of U.S. dollar-denominated specie and bank notes in circulation is also consistent with the mid-1790s being the pivotal period for the transition to dollars for current transactions. Between the periods 1792-95 and 1796-1800, dollar-denominated coinage issued by the U.S. Mint increased by over fourfold, and between 1790 and 1795 the number of banks and the amount of dollar-denominated bank notes in circulation increased sixfold. The result was over a two and one-half fold increase in the total volume of money in circulation per capita. Finally, an unprecedented eight-month peacetime break in the monthly price indices constructed for Philadelphia between 1731 and 1861, with an unprecedented change in index values across this break, occurs between April 1794 and January of 1795. This break is consistent with the mid-1790s being the period of transition to the U.S. dollar for current transactions.<sup>27</sup>

Compared with current transactions, the transition to U.S. dollars in forward transactions was neither as abrupt nor as complete, see Figure 2. The evidence also suggests that there was a high degree of uncertainty in the marketplace over the near-future availability and value of different mediums of exchange. While dollars were not used in current transactions before 1796, they accounted for 14 to 24 percent of forward transactions before 1794, rising to 35 percent between 1794 and 1797. By 1802, when dollars had risen to account for over 95 percent of current transactions, they still accounted only for 75 percent of forward transactions. Prior to 1795, the dominant currency in forward transactions was foreign specie, principally gold guineas and pound sterling. Even among dollar-denominated forward transactions, market participants were more likely to explicitly specify that these dollars be in specie, as opposed to bank notes. Pennsylvania pounds were of secondary importance in forward transactions throughout, except during the transition years of 1794 through 1797, when their usage rivaled that of dollars and foreign coinage. [Place Figure 2 Here]

The evidence in Figures 1 and 2 indicates that prior to 1795 the *BNA* and *FBUS*, were unsuccessful at getting their bank notes to penetrate the market to any great extent as a medium of exchange either for current or forward transactions. For contemporaneous exchanges, market participants judged the Pennsylvania pound to be

relatively superior in terms of expected very-near-term acceptability and stability of value. Uncertainty over the availability and acceptability of Pennsylvania pounds three-plus years into the future, given some uncertainty over the redemption time-path of the Pennsylvania pound post-1787, led market participants to turn to specie coinage, as opposed to dollar-denominated bank notes, as the superior medium for forward commitments. Market participants apparently had little faith, pre-1795, in the dollar monetary system being foisted on them by the federal government and its banks. Given that during the transition to the U.S. dollar the economy was flooded with dollar-denominated bank notes (over a six-fold increase between 1790 and 1795) and then experienced an unprecedented peacetime run-up in prices, the market-revealed resistance pre-1795 to using dollars in future commitments seems prescient.<sup>28</sup>

This market-revealed evidence on individual current and forward transactions indicates that the U.S.-dollar currency union was not readily embraced, welcomed, or supported by market participants. Private traders saw few benefits in this currency union and only grudgingly shifted to U.S. dollar-denominated transactions when a lack of alternatives was forced on them by the new constitution. Given the limited amount of specie dollar coinage, the transition to the U.S. dollar apparently could not have been accomplished without legally (constitutionally) eliminating rival non-dollar paper currencies and without flooding the economy with dollar-denominated paper money, namely, bank notes. Understanding why the market expected few benefits from a U.S. dollar currency union requires assessing the performance of the next-best alternative to this union, that is the performance of the system of state-issued paper currency, which is taken up next.

#### **PRICES, EXCHANGE RATES, AND PURCHASING POWER PARITY: 1748-1811**

Figure 3 presents sterling exchange rate series for colony/state-issued paper money from 1760 through 1790, and for the national government's paper Continental dollar issued during the revolution. Figure 4 presents prices for Philadelphia, New York City, and Charleston, South Carolina, and Figure 5 presents farm prices for rural Massachusetts, the York River Basin in Virginia, and the Western Shore of the Chesapeake in Maryland, from 1760 through 1811.<sup>29</sup> While the sources do not identify the currencies used, the original evidence behind these indices confirms that shifts in currency usage occurred where unprecedented peacetime breaks were left in the indices with unprecedented peacetime shifts in index values. These breaks correspond with the currency regime shift found in Figure 1.<sup>30</sup> These series represent the extent of our current knowledge on prices and exchange rates in this period based on relatively continuous and thick data. [Place Figures 3, 4, and 5 Here]

Figure 3 shows that from 1760 to 1775 (1766 to 1775 for Virginia), the exchange rates for colonial paper currencies were remarkably stable, with little or no trend, and showed no signs of inflationary crisis. It also shows that from 1784 to 1790, the exchange rate for the Pennsylvania State pound was also remarkably stable, with little or no trend, and showed no signs of inflationary crisis. By contrast, during the revolution, the national government's paper Continental dollar collapsed rapidly in value and never recovered. Figures 4 and 5 show that prices in colonial/state currencies, both before and after the revolution, were remarkably stable and, while experiencing some positive trend, showed no signs of inflationary crisis relative to prices in Continental dollars during the revolution or to prices after the transition to U.S. dollars. In fact, the transition to U.S. dollars was accompanied by the largest inflationary jump ever experienced in peacetime between 1720 and 1860, dwarfed only by the wartime inflations of the Continental dollar during the revolution and of the U.S. dollar during the War of 1812.<sup>31</sup> This evidence suggests that colony/state-issued paper currency was relatively well managed during peacetime, and that the market's preference for state currency post-revolution was prudent given the recent experience with the national government's paper Continental dollar.

Table 1 analyzes the colonial data in Figures 3, 4, and 5 in more detail by testing for stationarity in the price and exchange rate series and, in combination with British price data, by testing for stationarity in the yearly deviations from purchasing power parity (PPP). For testing purposes the data are extended back to the end of King George's War (1748) for New York, Pennsylvania, and South Carolina, and as far back as data are available for the other three colonies. While *Augmented Dickey-Fuller* tests are not always reliable with short spans of data, they are useful confirmation of the visual impressions given in the figures. The end of King George's War is an appropriate point from which to start the statistical analysis of pre-revolution monetary performance, not only because data are fewer and less reliable before 1748, but because 1748 is arguably the turning point in colonial monetary behavior. The wartime inflation immediately prior to 1748 caused Massachusetts to go off paper money shortly after 1748 and led the British Parliament to pass the Currency Act of 1751 regulating paper money in the New England colonies.

[Place Table 1 Here]

Table 1 shows that between 1748 and 1775 prices, exchange rates, and PPP for all six colonies are stationary, i.e., they exhibit post-shock mean reversion. Stationarity is probably the best that could be expected of a well managed fiat-paper-currency regime in this world.<sup>32</sup> In addition, exchange rates in all six colonies exhibit no

trend. Prices, excepting Maryland, are positive-trend stationary, but with only Massachusetts prices exhibiting a positive trend substantially above that of British prices. In the immediate aftermath of the Seven Year's War and the passage of the 1764 Currency Act, only Virginia and New York experienced structural breaks in their series. Virginia was the primary cause for the passage of the Currency Act of 1764 and was more at odds with this Act's requirements than were the other colonies.<sup>33</sup> Massachusetts also exhibits a structural break around 1769 caused by the political turmoil related to British Colonial policies. The performance of the one colony that had gone off paper money, Massachusetts, was the worst. Besides suffering structural breaks in both its price and exchange rate series, it suffered the sharpest price rise. In addition, while the coefficients on the  $\ln(y_{t-1})$ s for the other colonies are between -0.45 and -0.84, they are less than -1.0 for Massachusetts, suggesting that Massachusetts suffered overshooting in its post-shock mean reversion process. By comparison, the use of an inside paper money in the other colonies may have smoothed the impact of real world shocks.

Given successful maintenance of stationarity, why not just adopt one common currency? The answer appears to lie in individual colonies/states retaining the flexibility to engage in unilateral monetary action when extreme emergencies demanded such action. For example, during the Seven Year's War and during the revolution individual colonies charted a far more erratic and independent course with regard to their currencies than they did during peacetime. The evidence in Table 1 is also consistent with some independence of monetary policy across colonies with regard to the presence of differently-timed structural breaks in the Virginia, New York, and Massachusetts series. Finally, the fluctuation in monthly exchange rates from 1760 through 1775 are not perfectly correlated. The correlations between monthly  $\ln(\text{Exchange Rate}_t)$ s range from a high of 0.88 for New York versus Pennsylvania to a low of 0.49 for Maryland versus Virginia, and across the monthly  $[\ln(\text{Exchange Rate}_t) - \ln(\text{Exchange Rate}_{t-1})]$ s range from a high of 0.31 for New York versus Maryland to a low of 0.03 for New York versus Virginia.

The evidence presented here indicates that in the quarter century prior to the revolution colonial paper money regimes performing remarkably well. The chief advocates of banning state-issued paper money at the 1787 Constitutional Convention--Robert Morris, James Wilson, and Benjamin Franklin--had not only lived through this era of well managed colony/state paper money regimes, but had lived under the best of them, namely the

Pennsylvania pound, and had commercially prospered under it. Why they so forcefully advocated banning state-issued paper money and why convention delegates in 1787 came to regard paper money as "the mark of the beast in revelations" cannot be traced to their experience with colony-issued paper money.<sup>34</sup>

Table 2 analyzes the data from the Treaty of Paris (1784) to the War of 1812 in more detail by testing for stationarity in the price and exchange rate series and, in combination with British price data, by testing for stationarity in the yearly deviations from purchasing power parity (PPP). The data span for the period of state-issued currency, 1784-1794, including years where data are missing, is too short for testing purposes. Thus, tests are only performed on the entire data sample, 1784-1811, with a structural break positioned at the point of transition from state currency to the U.S. dollar. For comparison, tests are also reported on the subsample of years, 1796-1811, covering the U.S. dollar regime. While *Augmented Dickey-Fuller* tests are not always reliable with short spans of data, they are useful confirmation of the visual impressions given in the figures. [Place Table 2 Here]

With few exceptions, Table 2 shows that between 1784 and 1812 prices, exchange rates, and PPP for all six states are stationary, i.e., they exhibit post-shock mean reversion. The exceptions include rejection of stationarity in South Carolina for PPP post-1795 and failure to reject the presence of a drift factor in many of the PPP series. Of greater interest is the fact that a majority of the coefficients on the  $\ln(y_{t-1})$ s are less than -1.0. This finding suggests that some overshooting or excess volatility in the post-shock mean reversion process is present. Because the coefficient on  $\ln(y_{t-1})$  for British prices is greater than -1.0, the excess volatility in America does not appear to be a direct outcome of British price behavior. This outcome is illustrated more simply in Table 3 which examines the year-to-year deviation in the price indices. With only 3 exceptions out of 12 comparisons, the standard deviation of the yearly change in prices in all six American locations is significantly greater for prices in U.S. dollars between 1797 and 1811 than for prices in either of the two period prior to the transition to the U.S. dollar. On balance, therefore, the transition to the U.S. dollar is associated with an increase in the volatility of peacetime prices over that experience under the prior system of colony/state currencies.<sup>35</sup> Finally, the dramatic jump in prices during the transition to the U.S. dollar circa 1795--illustrated in Figures 4 and 5--does not appear to be a direct outcome of the behavior of British prices. The tests on British prices in Table 2 reject the presence of a structural break prior to 1799, whereas the transition to the U.S. dollar with its associated jump in prices occurs three or more years prior to

1799. [Place Table 3 Here]

While real shocks to the American economy could have been greater between 1797 and 1811 than between either 1748 and 1775 or 1784 and 1793, this possibility seems unlikely. The long list of crises between 1748 and 1775 and between 1784 and 1793, e.g., the ending of King George's War, the Seven Year's War, the Stamp Act, the Townsend Duties, the 1768-1769 import boycotts, the Boston Massacre, the financial panic of 1772, the closing of Boston harbor, Shay's Rebellion, the Whiskey Rebellion, etc., makes the period from 1797 through 1811 look comparatively quiet. The internal real economy of America was not more volatile after 1796.

The exchange rate, price, and PPP evidence suggests that colony/state-issued paper currencies were relatively well managed, at least during peacetime. The Constitutional banning of state-issued paper money after 1787 and subsequent transition to the U.S. dollar circa 1795 produced a marked deterioration in monetary performance both in terms of an initial inflationary spike and in terms of an increased volatility in nominal values. As such, the market's preference for state-issued paper currencies post-revolution was prudent given the recent experience with the Continental dollar, and prescient given the inflationary spike and volatility of prices accompanying the forced switch to U.S. dollars. Performance under the U.S. dollar regime deteriorated because the shift to the U.S. dollar was also a shift to a monetary system of paper bank notes supported by fractional specie reserves in an unregulated environment. The U.S. Constitution caused governments at all levels in the U.S. to surrender paper-money-making power to private bankers. As such, and with the U.S. being a small country in terms of international trade, the transition to the U.S. dollar surrendered control over the U.S. monetary base relative to what could be exercised by states using state-issued paper currencies. Given the unregulated specie-to-bank note ratio and the inability to sterilize gold inflows, the specie flows caused by the Napoleonic wars and Britain moving off the gold standard in 1797, made nominal values under the U.S. dollar regime more volatile than what they would have been under a system of state-issued paper currencies.<sup>36</sup> President John Adams noted this in 1799 when he wrote, "...the fluctuations of our circulating medium have committed greater depredations upon the property of honest men than all the French piracies..."<sup>37</sup>

### **RHETORIC VERSUS REALITY AT THE CONSTITUTIONAL CONVENTION**

In light of the evidence presented above, the frequency and stridency of the anti-state-currency rhetoric at the 1787 Constitutional Convention can only be viewed as surprising and extreme. On issues having little to do with

paper money, speakers would insinuate that states managed their paper currencies irresponsibly.<sup>38</sup> State-issued paper currency was turned into the rhetorical code phrase for evil.<sup>39</sup>

Scholars have frequently accepted this convention rhetoric as an accurate reflection of economic facts rather than as political manipulation.<sup>40</sup> For example, the convention rhetoric has led scholars to hypothesize that delegates who were debtors should have opposed a constitutional ban on state-issued paper money because inflationary issues of state monies could have relieved their financial situation.<sup>41</sup> In a statistical analysis of delegate votes on this issue, however, McGuire and Ohsfeldt (1986, p. 107) found, to their surprise, that debtors were largely indifferent to the adoption of a constitutional ban on state-issued paper currency. By contrast, the evidence here indicates that debtor-indifference to such a constitutional ban is no surprise at all. Debtors had nothing to gain from a system of state-issued paper currencies because states managed their currencies responsibly, at least in peacetime.

In fact, it was not until near the end of the constitution-revision process that any proposal to ban state-issued paper money appeared. The *Articles of Confederation* were silent on state-issued paper money. In the numerous amendments to the *Articles* proposed between 1781 and 1787, state-issued paper money never appears. In the report from the September 1786 Annapolis Convention, the precursor to the Philadelphia Constitutional Convention, state-issued paper money was not mentioned. In the numerous plans proposed at the Constitutional Convention from the Convention's beginning in May through July, e.g., the Virginia Plan, the Pinckney plan, the New Jersey plan, the Alexander Hamilton plan, and so on, state-issued paper money was never mentioned. On 26 July the delegates turned all the various plans and deliberations over to a committee of detail to craft a draft constitution. The committee consisted of John Rutledge of South Carolina, Edmund Randolph of Virginia, James Wilson of Pennsylvania, Oliver Ellsworth of Connecticut, and Nathaniel Gorham of Massachusetts. Buried in the back of the committee's last draft, written in James Wilson's hand, appeared for the first time a clause banning state-issued paper money. This is the same James Wilson who at Pennsylvania's ratifying convention, 4 December 1787, said, "If only the following lines...[banning paper money]...were...in this Constitution, I think it would be worth our adoption..."<sup>42</sup> This draft was submitted to the rest of the Convention on 9 August and, from then until the Convention ended on 17 September, the Pennsylvania delegation blocked any move to temper or remove this clause (Jensen 1976, vol. 1; 1976, vol. 2, p. 500; Farrand 1966, vols. 1-2).

So what was the real purpose of Wilson's ban on state-issued paper money, and of the barrage of anti-state-currency rhetoric presented at the Constitutional Convention by the Pennsylvania delegation? The story begins in 1785, two years before the convention, when the Pennsylvania legislature was considering a new issue of Pennsylvania pounds to replace those issued during the revolution that were now being rapidly retired.<sup>43</sup> This new issue was to help ameliorate the sharp deflation produced by the rapid retirement of wartime bills of credit, see Figure 4. Robert Morris and the *BNA* vehemently opposed the new issue.<sup>44</sup> As was argued above, Morris could not get his *BNA* bank notes into wide circulation given the market's preference for state-issued paper currency. In addition, coincident with this new issue of Pennsylvania pounds, the six-month dividend declared on the *BNA*'s stock collapsed from 9.5 percent in mid-1784 to 3 percent by mid-1785, where it stayed until 1791, see Figure 6. Not until Pennsylvania pounds had finally disappeared from circulation did it recover to a steady return of 6 percent. Morris clearly associated competition from Pennsylvania's state-issued paper currency with the initial dividend collapse in the bank's stock value, and associated the removal of this competition with the subsequent revival of the value of *BNA*'s stock. Figure 6 indicates that other possible events cannot explain the timing of these changes in *BNA*'s stock value.<sup>45</sup> [Place Figure 6 Here]

Robert Morris and other supporters of the *BNA*, as well as other would-be bankers in this period, did not fully understand how fractional reserve banking worked or comprehend its implication for the economy. Thomas Willing, the president of the *BNA* and subsequently the first president of the *FBUS*, explained to some would-be Massachusetts bankers in 1784 regarding how a bank worked that "the business was as much a novelty to us...as it can possibly be to you. It was a pathless wilderness, ground but little known to this side the Atlantick. No book then spoke of the interior arrangement or rules...All was to us a mystery."<sup>46</sup> The *BNA* was run like a private club. Of its non-government loans, over 70 percent went to Philadelphia merchants, and over 50 percent went to the bank's own shareholders. James Wilson, a member of the board, borrowed over \$100,000, well in excess of his assets, and the bank repeatedly extended the loan when he could not repay on schedule.<sup>47</sup> To the Pennsylvania legislature, Morris admitted that the "circulation and amount of bank paper is little understood."<sup>48</sup> Bankers in this period also believed they needed, and fought for, monopoly position in the market through aggressive efforts to eliminate competition.<sup>49</sup>

In retaliation for Robert Morris' political meddling, on 13 September 1785 the Pennsylvania legislature revoked the *BNA's* state charter, which had been initially granted 1 April 1782. From mid-1785 to 17 March 1787, when the state legislature voted to reinstate the bank's charter, the *BNA* fought for its Pennsylvania state charter. Over this period, the level of rhetoric, verbosity, and factional polarization escalated. The bank worked to acquire supporters, some newly elected to the state legislature, such as George Clymer, Robert Morris, Thomas Mifflin, and Benjamin Franklin (all *BNA* stockholders). In addition, the *BNA* provided Franklin with a loan for the expressed purpose of his purchase of *BNA* stock. Franklin's son-in-law also became a director of the bank. Finally, the bank also worked to gain popular support in the press, where it was strongly defended in the *Pennsylvania Gazette*, Franklin's newspaper, and by pamphleteer Thomas Paine, who had switched sides, some say for pay, from opposing to supporting the bank.<sup>50</sup>

Of course, the bank's supporters could not stand up and boldly say that they opposed state-issued paper currency because the bank could not successfully compete against state-issued currency in the marketplace. Instead, bank supporters had to argue that as a general proposition all state-issued paper currency was inherently unsound, fraudulent, and prone to bouts of wild inflation, a position that they knew by experience to be untrue, at least in peacetime. For example, as late as June 1781, Morris had spoken approvingly, and Franklin had been a long-time advocate and defender, of colony/state-issued bills of credit. Morris also noted the difference between wartime and peacetime performance of this system.<sup>51</sup> Only with their investment in the *BNA*, and the failure of *BNA* bank notes to displace other paper currency, did they change their tune. When state legislator William Findley pointed out that he had observed no depreciation in the state's new 1785 issue of paper currency, that it enjoyed rapid circulation, and that everyone was willing to accept it, Morris rejoined that rapid circulation was an infallible sign of a lack of confidence.<sup>52</sup>

Two months after the *BNA* had regained its Pennsylvania State charter, the Constitutional Convention convened in Philadelphia. Pennsylvania sent the single largest delegation, and it was stacked with supporters of the *BNA* fresh from their battle with the Pennsylvania State legislature.<sup>53</sup> Of Pennsylvania's eight delegates, seven were stockholders in the *BNA*, George Clymer, Thomas FitzSimons, Benjamin Franklin, Thomas Mifflin, Gouverneur Morris, Robert Morris, and James Wilson. Robert Morris, FitzSimons, and Wilson were board members of the bank. Seven of them, Clymer, FitzSimons, Franklin, Mifflin, Gouverneur Morris, Robert Morris, and Wilson, had been

vocal supporters of the bank in the Pennsylvania legislature. Gouverneur Morris, who was not even a Pennsylvanian but hailed from New York, was added to the Pennsylvania delegation at the behest of Robert Morris. Gouverneur Morris was Robert Morris' assistant on banking matters. Considering the frequency and single-note refrain of Gouverneur Morris' speeches at the convention, it is hard not to consider him Robert Morris' attack dog on the issue of paper money. Finally, Jared Ingersoll, while not directly connected with the *BNA*, had been involved in proposing a bank.<sup>54</sup> Overall, the Pennsylvania delegation was the most vocal at the convention, with Gouverneur Morris and Wilson being the two most frequent speakers.<sup>55</sup> The single-minded intention of the Pennsylvania delegation is illustrated by Wilson's post-convention comment that "If only the following lines...[banning paper money]...were...in this Constitution, I think it would be worth our adoption..."<sup>56</sup>

The same strident, and relatively vacuous, rhetoric used by this group just months earlier in the fight to save the *BNA's* charter in the Pennsylvania state legislature was transferred to the Constitutional Convention. The Pennsylvania delegation was joined by a couple of vocal anti-paper-money delegates from other states, such as Alexander Hamilton from New York, Gunning Bedford from Delaware, and Elbridge Gerry from Massachusetts. Hamilton and Bedford were stockholders in or had stockholder connections to the *BNA*. Hamilton had previously proposed banking schemes, had corresponded with Robert Morris on banking issues, and would implement Robert Morris' financial blueprint with the *FBUS* in 1791. Gerry opposed state-issued paper money because he held large quantities of old Continental bills of credit and feared their non-redemption if the national government lost money-making power to the states.<sup>57</sup>

The arguments presented at the convention against state-issued paper currency are surprisingly empty of reasoning. No statements, let alone analysis, about banks, bank notes, seigniorage, transactions costs, cross-state exchange rate costs, etc. were offered. Only simplistic, emphatic, and absolute statements were made, asserting that state-issued paper currency was inherently unsound, fraudulent, and prone to bouts of wild inflation. For example, George Read from Delaware stated that the proposition to allow the government to emit bills of credit was "as alarming as the mark of the Beast in Revelations." Oliver Ellsworth from Connecticut "thought this a favorable moment to shut and bar the door against paper money. The mischiefs of the various experiments which had been made [the revolutionary wartime inflations], were now fresh in the public mind and had excited the disgust of all the respectable part of America." Roger Sherman from Connecticut also "thought this a favorable crisis for crushing

paper money." John Langdon from New Hampshire would "rather reject the whole plan [of government] than" allow the government to emit bills of credit.<sup>58</sup> Hamilton explained in the ratification debate that he thought states should be prohibited from issuing bills of credit because such a power was "incompatible...with the principles of good government," and not because such a power was "incompatible with the interests of the union..."<sup>59</sup> Convention delegates who opposed state-issued bills of credit also constantly conflated in their arguments ex-post facto and legal tender powers with the power to emit bills of credit, even though these powers were considered and voted on as separate constitutional clauses at the convention. For example, James Madison noted the sentiments of Pierce Butler from South Carolina as "...that paper was a legal tender in no Country in Europe. He was urgent for disarming the Government of such a power [to emit bills of credit]."<sup>60</sup>

Only a few delegates challenged the anti-paper-currency faction in terms that saw through their rhetoric. For example, regarding Gouverneur Morris' insistence on an absolute prohibition on government bills of credits, Madison asked, "Will it not be sufficient to prohibit the making them a *tender*? This will remove the temptation to emit them with unjust views. And promissory notes in that shape may in some emergencies be best." In essence, Madison was proposing the system that had worked well since the Seven Year's War. Making government-issued paper money legal tender only for payment of that government's taxes provided effective market controls that prevented the mismanagement of such money by the state. In reply to Madison, Gouverneur Morris boldly stated, "The Monied interest will oppose the plan of Government, if paper emissions be not prohibited."<sup>61</sup> While Madison went along with the prohibition on paper emissions, as late as 1831 he still believed that the constitutional prohibition on making state-issued paper money legal tender for private debts solved all the problems raised by the anti-state-paper-currency faction.<sup>62</sup> The addition of the absolute prohibition on state-issued bills of credit seemed unnecessary given the arguments presented at the convention.

The lack of reasoned argumentation for prohibiting state currencies and avoidance of any discussion about banks by the anti-state-paper-currency advocates explains Madison's seemingly contradictory behavior post-convention. In the ratification debate, Madison made, in *Federalist XLIV*, the single most articulate defense of the constitution's prohibition on states emitting bills of credit. His initial arguments repeat the tenor of the rhetoric presented at the convention, namely, he trumpeted "the pestilent effects of paper money...on the industry and morals

of the people, and on the character of Republican Government...." and he conflated legal tender and ex-post facto laws with the emission of paper money through raising the fear that states could engage in "retrospective alterations in its [their paper money's] value..." As at the convention, however, being dissatisfied with the soundness of these arguments, Madison reached for a new reason that was not presented at the convention, namely, the transactions-cost argument for moving to a common currency. He argued that "Had every State a right [to issue bills of credit]...there might be as many different currencies as States; and thus the intercourse among them would be impeded..."<sup>63</sup>

Within a few years of ratification, however, when Hamilton, Robert Morris' successor, unveiled plans for the creation of a national paper currency based on *FBUS* bank notes, thereby revealing the true intentions of the anti-state-paper-currency advocates at the convention, Madison became one of the most ardent opponents of the *FBUS*. Banks and bank-note currencies were not mentioned in the constitution nor debated at the convention. By Madison's understanding, this made a federally-chartered bank unconstitutional.<sup>64</sup> Madison thought he had voted for a specie-only currency union.

The absolute, uncompromising, and argumentively-superficial position held by the anti-state-paper-currency faction makes sense if their goal was something other than constitutionally establishing principles of sound monetary management. The suggestion here is that these delegates sought the absolute elimination of state-issued paper money in order to increase the ability of the federal government's bank, the *BNA* and subsequently the *FBUS*, to provide and control the circulating medium of the nation and so empower and enrich themselves as stockholders of these banks. If these delegates had simply said their goal was to eliminate state-currency competition with *BNA* bank notes in order to enhance the power and profitability of the *BNA*, they may not have carried the day.<sup>65</sup> That the purpose of these delegates was not just to transfer sovereign power over monetary issues from the states to the federal government, but to enhance the power and profitability of the *BNA*, can be seen in these delegates' opposition to the proposition that the federal government only, and not the states, be allowed to issued bills of credit. If Congress could issue paper money, that would also undercut the power and profitability of the *BNA*.<sup>66</sup> Thus, to succeed in their design, these delegates had to muddle the debate with strident and grand-standing rhetoric of dubious merit and by purposely conflating ex-post facto and legal tender laws with the emission of paper money in general.

The convention's anti-state-paper-currency rhetoric continued through the debates over ratification.<sup>67</sup> Even so, occasionally supporters of the constitution admitted that the problem facing the country in 1787 was deflation and a general scarcity of money rather than some general inflationary tendency generated by irresponsible state-issuances of paper currency.<sup>68</sup> Because the constitution was presented as a complete package for ratification, the clause prohibiting state-issued bills of credit was not, by itself, objectionable enough to rally sufficient opposition to stop ratification. The lack of widespread objection to this constitutional prohibition may have also been due to the fact that only 7 states had issued bills of credit after 1784, with 3 of them, New York, North Carolina, and Rhode Island, also being the last 3 of the 13 states to ratify the constitution.<sup>69</sup> Given that only 9 out of the 13 states were required to ratify the constitution for it to be made operational in place of the *Articles of Confederation*, these last 3 states were faced with a *fait accompli*.

Assuming that the states who had not issued paper money post-revolution could not muster sufficient objection to the clause banning state-issued paper money to stop ratification, only 3 of the 7 states who had issued paper money post-revolution would have to be won over to get the 9 states needed to ratify the Constitution. The ascendance of the *BNA* faction in the Pennsylvania legislature effectively delivered Pennsylvania's vote for the Constitution, as a gentleman from Western Pennsylvania observed (Jensen 1976, vol. 2, p. 732), "...[T]he advocates of this system [the new Constitution]...are under the influence and direction of the Bank [of North America]." The two other paper-money states who were among the first 9 to vote for the Constitution were Georgia and South Carolina. Acute panic caused by eminent Indian warfare on their frontiers led them to vote for the Constitution in hopes of gaining aid from the rest of the union. For example, Joseph Clay of Savannah observed on 17 October 1787, "The new plan of government for the Union I think will be adopted with us readily; the powers are great, but of two evils we must choose the least. Under such a government we should have avoided this great evil, an Indian war."<sup>70</sup>

Finally, while a few objections were raised in terms of questioning how states could finance their expenditures if emitting bills of credit were prohibited, such objections yielded little concerted opposition to the Constitution, perhaps because states had alternatives to issuing bills of credit readily at hand that were close substitutes for financing their expenses. States were allowed to charter banks as a revenue-generating device, which

they increasingly did after the 1790s.<sup>71</sup> The prohibition against state-issued bills of credit was a sovereign power states were willing to relinquish considering that the constitution gave states considerable sovereign power over most other matters internal to each state, most notably slavery--as General Pinckney of South Carolina and Abraham Baldwin of Georgia indicated during the Constitutional Convention (Farrand 1966, vol. 2, pp. 371-72).

### CONCLUSION

Scholars who trumpet the constitutionally-created U.S. dollar currency union and the financial revolution designed and led by Robert Morris and Alexander Hamilton as being key to American success and economic growth, are too sanguine.<sup>72</sup> They forget to ask one simple question: What was the opportunity cost? The suggestion here is that the relevant opportunity cost was a world where the words "emit Bills of Credit" are absent from Article I, Section 10, Clause 1 of the *U.S. Constitution*, but the words "No State shall...make any Thing but gold and silver Coin a Tender in Payment of Debts" are retained. This next-best alternative would have produced a system of states each issuing their own paper currencies that, while structurally different in appearance, would not have yielded, as during the late colonial period, an inferior macroeconomic outcome. The argument is not about banking *per se*, but about whether banks should have unfettered money-creation powers. Stripped of their money-creation powers, banks would still have proliferated and prospered in the Republic as financial intermediaries. State currencies could have easily functioned as bank reserves, as government bonds did under the National Banking Act later in the 19th century, and as loan to the national government. Bankers at the time of the Constitutional Convention saw paper money creating power as a business bonanza whose potential they could reap only if they could be rid of government competition in the paper money creating process. As such, the U.S. dollar currency union was designed to achieve political and personal rather than macroeconomic objectives. It was a counter-revolution led by merchant-bankers intent on usurping state and federal sovereign power over monetary matters to enhance their personal power and wealth.<sup>73</sup> As Robert Morris confided in a letter to Silas Deane, "The present oppert'y of improving our Fortunes ought not to be lost, especially as the very means of doing it will contribute to the Service of our Country at the same time."<sup>74</sup>

## References

- "Account Book of Amos Darlington Senior, 1796-1812." Unpublished manuscript #3186 held by the Chester County Historical Society, West Chester, Pennsylvania.
- Adams, Donald R., Jr., "Some Evidence on English and American Wage Rates, 1790-1830." *Journal of Economic History* 30 (Sept. 1970), pp. 499-520.
- Adams, Donald R., Jr., "Prices and Wages in Maryland, 1750-1850." *Journal of Economic History* 46 (Sept. 1986), pp. 625-645.
- Baack, Ben, "Forging a Nation State: The Continental Congress and the Financing of the War of American Independence." *Economic History Review* 54 (Nov. 2001), pp. 639-656.
- Bailyn, Bernard, ed., *The Debate on the Constitution, Volumes 1-2*. New York: Literary Classics, 1993.
- Beard, Charles A., *An Economic Interpretation of the Constitution of the United States*. New York: MacMillan, 1960.
- Behrens, Kathryn L., "Paper Money in Maryland 1727-1789," *Johns Hopkins University Studies in Historical and Political Science* 41, no. 1 (1923), pp. 9-98.
- Berry, Thomas Senior, *Western Prices Before 1861*. Cambridge, MA: Harvard Univ. Press, 1943.
- Bezanson, Anne, et al., *Prices in Colonial Pennsylvania*. Philadelphia; Univ. of Pennsylvania Press, 1935.
- Bezanson, Anne, et al., *Wholesale Prices in Philadelphia, 1784-1861*. Philadelphia: Univ. of Pennsylvania Press, 1936.
- Bezanson, Anne, *Prices and Inflation During the American Revolution: Pennsylvania, 1770-1790*. Philadelphia: Univ. of Pennsylvania Press, 1951.
- Bishop, Hillman Metcalf, "Why Rhode Island Opposed the Federal Constitution." *Rhode Island History* 8 (Jan. 1949), pp. 1-10; 8 (Apr. 1949), pp. 33-44; 8 (July 1949), pp. 85-95; 8 (Oct. 1949), pp. 115-126.
- "Book A of Redemptioners, 1785-1804." Unpublished manuscript held by the Pennsylvania Historical Society, Philadelphia.
- Bordo, Michael D. and White, Eugene N., "British and French Finance During the Napoleonic Wars." In Michael D. Bordo and Forrest Capie, eds., *Monetary Regimes in Transition*. New York: Cambridge University Press, 1994, pp. 241-273.
- Bouton, Terry, "Tying Up the Revolution: Money, Power, and the Regulation in Pennsylvania, 1765-1800." Unpublished Ph.D. Thesis, Duke Univ., 1996.
- Bradbury, M. L., "Legal Privilege and the Bank of North America." *Pennsylvania Magazine of History and Biography* 96 (Apr. 1972), pp. 139-166.
- Bradford, M. E., *Founding Fathers: Brief Lives of the Framers of the United States*. Lawrence, KS: Univ. Press of Kansas, Second Edn., 1994.

- Brock, Leslie V., *The Currency of the American Colonies, 1700-1764*. New York: Arno Press, 1975.
- Bryan, Alfred Cookman, "History of State Banking in Maryland," *Johns Hopkins University Studies in Historical and Political Science* 17, nos. 1-3 (1899), pp. 1-144.
- Bryan, Michael, Champ, Bruce, and Ransom, Jennifer, "Who is that Guy on the \$10 Bill?" *Economic Commentary, Federal Reserve Bank of Cleveland* (June, 2000).
- Calomiris, Charles W., "Institutional Failure, Monetary Scarcity, and the Depreciation of the Continental." *Journal of Economic History* 48 (Mar. 1988), pp. 47-68.
- Carothers, Neil, *Fractional Money*. New York: John Wiley & Sons, 1930.
- Cole, Arthur Harrison, *Wholesale Commodity Prices in the United States, 1700-1861*. Cambridge, MA: Harvard University Press, 1938.
- Cowen, David Jack, *The Origins and Economic Impact of the First Bank of the United States, 1791-1797*. New York: Garland, 2000.
- Davis, Joseph Stancliffe, *Essays in the Earlier History of American Corporations, Book I*. Cambridge, MA: Harvard Univ. Press, 1917.
- Doerflinger, Thomas M., *A Vigorous Spirit of Enterprise*. Chapel Hill, NC: Univ. of North Carolina Press, 1986.
- Efron, Bradley and Tibshirani, Robert J., *An Introduction to the Bootstrap*. New York: Chapman & Hall, 1993.
- Eichengreen, Barry, "European Monetary Unification." *Journal of Economic Literature* 31 (Sept. 1993), pp. 1321-1357.
- Eicholz, Hans Louis, "The Bank of North America and the Transformation of Political Ideology in Early National Pennsylvania." Unpublished Ph.D. Thesis, UCLA, 1992.
- Ernst, Joseph Albert, *Money and Politics in America, 1755-1775*. Chapel Hill, NC: Univ. of North Carolina Press, 1973.
- Farrand, Max, ed., *The Records of the Federal Convention of 1787, Volumes 1-4*. New Haven, CT: Yale Univ. Press, Revised Edn., 1966.
- Fenstermaker, J. Van, "The Statistics of American Commercial Banking, 1782-1818." *Journal of Economic History* 25 (Sept. 1965), pp. 400-413.
- Ferguson, E. James, *The Power of the Purse*. Chapel Hill, NC: Univ. of North Carolina Press, 1961.
- Forstater, Mathew, *et al.*, "Symposium: The European Economic and Monetary Union." *Eastern Economic Journal* 25 (Winter 1999), pp. 31-115.
- Friedman, Milton, "A Monetary and Fiscal Framework for Economic Stability." *American Economic Review* 38 (June 1948), pp. 245-264.
- Girton, Lance and Roper, Don, "Theory and Implications of Currency Substitution." *Journal of Money, Credit and*

- Banking* 13 (Feb. 1981), pp. 12-30.
- Gordon, John Steele, *Hamilton's Blessing*. New York: Penguin, 1997.
- Grubb, Farley, "Immigrant Servant Labor: Their Occupational and Geographic Distribution in the Late Eighteenth-Century Mid-Atlantic Economy." *Social Science History* 9 (Summer, 1985), pp. 249-275.
- Grubb, Farley, "The Auction of Redemptioner Servants, Philadelphia, 1771-1804: An Economic Analysis." *Journal of Economic History* 48 (Sept. 1988), pp. 583-603.
- Grubb, Farley, *German Immigrant Servant Contracts Registered at the Port of Philadelphia, 1817-1831*. Baltimore: Genealogical Publishing, 1994a.
- Grubb, Farley, "The Disappearance of Organized Markets for European Immigrant Servants in the United States: Five Popular Explanations Reexamined." *Social Science History* 18 (Spr. 1994b), pp. 1-30.
- Grubb, Farley, "The End of European Immigrant Servitude in the United States: An Economic Analysis of Market Collapse, 1772-1835." *Journal of Economic History* 54 (Dec. 1994c), pp. 794-824.
- Grubb, Farley, "The Statutory Regulation of Colonial Servitude: An Incomplete-Contract Approach." *Explorations in Economic History* 37 (Jan. 2000), pp. 42-75.
- Grubb, Farley, "The Circulating Medium of Exchange in Colonial Pennsylvania, 1729-1775: New Estimates of Monetary Composition and Economic Growth." (unpublished working paper, Economics Dept., Univ. of Delaware, 2002).
- Hagen, Jurgen von, *et al.*, "Europe's Moneys and European Institutions." *American Economic Review Papers and Proceedings* 86 (May 1996), pp. 134-146.
- Hammond, Bray, *Banks and Politics in America*. Princeton, NJ: Princeton University Press, 1957.
- Hanson, John R. II, "Money in the Colonial American Economy: An Extension." *Economic Inquiry* 17 (Apr. 1979), pp. 281-286.
- Hepburn, A. Barton, *A History of Currency in the United States*. New York: Augustus M. Kelly, Revised and Enlarged Edn., 1967.
- Hoover, Richard T., "Franklin's Influence on Colonial and Continental Paper Money." *Numismatist* 69 (Dec. 1956), pp. 1357-1362.
- Jensen, Merrill, ed., *The Documentary History of the Ratification of the Constitution, Volumes 1-3*. Madison, WI: State Historical Society of Wisconsin, 1976-1978.
- Kaplan, Edward S., *The Bank of the United States and the American Economy*. Westport, CT: Greenwood Press, 1999.
- Kemmerer, Donald L., "The Colonial Loan-Office System in New Jersey." *Journal of Political Economy* 47 (Dec. 1939), pp. 867-874.
- Kenen, Peter B., *et al.*, "Common Currencies Versus Currency Areas." *American Economic Review Papers and Proceedings* 87 (May 1997), pp. 211-229.

- Lester, Richard, "Currency Issues to Overcome Depression in Pennsylvania, 1723 and 1729." *Journal of Political Economy* 46 (June 1938), pp. 324-375.
- Lester, Richard, "Currency Issues to Overcome Depressions in Delaware, New Jersey, New York, and Maryland, 1715-37." *Journal of Political Economy* 47 (Apr. 1939), pp. 182-217.
- Lewis, Lawrence, Jr., *A History of the Bank of North America*. Philadelphia: J. B. Lippincott, 1882.
- McDonald, Forrest, *We the People*. Chicago: University of Chicago Press, 1958.
- McCusker, John J., *Money and Exchange in Europe and America, 1600-1775*. Chapel Hill, NC: Univ. of North Carolina Press, 1978.
- McGuire, Robert A. and Ohsfeldt, Robert L., "Economic Interests and the American Constitution: A Quantitative Rehabilitation of Charles A. Beard." *Journal of Economic History* 44 (June 1984), pp. 509-519.
- McGuire, Robert A. and Ohsfeldt, Robert L., "An Economic Model of Voting Behavior over Specific Issues at the Constitutional Convention of 1787." *Journal of Economic History* 46 (Mar. 1986), pp. 79-111.
- McKee, Samuel Jr., ed., *Papers on Public Credit, Commerce and Finance by Alexander Hamilton*. New York: Columbia Univ. Press, 1934.
- Mossman, Philip L., "The American Confederation: The Times and Its Money," In Philip L. Mossman, ed., *Coinage of the American Confederation Period*. New York: The American Numismatic Society, 1995, pp. 1-21.
- Mundell, Robert A., "A Theory of Optimum Currency Areas." *American Economic Review* 51 (Sept. 1961), pp. 657-665.
- Mundell, Robert A., "Uncommon Arguments for Common Currencies." In Harry Johnson and Alexander Swoboda, eds., *The Economics of Common Currencies*. Cambridge, MA: Harvard Univ. Press, 1973, pp. 114-132.
- Neumeyer, Pablo Andres, "Currencies and the Allocation of Risk: The Welfare Effects of a Monetary Union." *American Economic Review* 88 (Mar. 1998), pp. 246-259.
- Newman, Eric P., "Franklin and the Bank of North America." *Numismatist* 69 (Dec. 1956), pp. 1368-1370.
- Newman, Eric P., *The Early Paper Money of America*. Iola, WI: Krause Publications, 4th edn., 1997.
- Nussbaum, Arthur, *A History of the Dollar*. New York: Columbia Univ. Press, 1957.
- Officer, Lawrence H., *Between the Dollar-Sterling Gold Points*. New York: Cambridge Univ. Press, 1996.
- Perkins, Edwin J., *The Economy of Colonial America*. New York: Columbia Univ. Press, Second Edn., 1988.
- Perkins, Edwin J., *American Public Finance and Financial Services, 1700-1815*. Columbus, Ohio: Ohio State Univ. Press, 1994.
- Pickering, Danby, *The Statutes at Large from the Magna Charta to the End of the Eleventh Parliament of Great Britain, Anno 1761*. Cambridge, UK: in 46 vols., 1762-1807.
- Rappaport, George David, *Stability and Change in Revolutionary Pennsylvania*. University Park, PA: Pennsylvania State Univ. Press, 1996.

- Ratchford, B. U., *American State Debts*. Durham, NC: Duke University Press, 1941.
- Ratner, Sidney, Soltow, James H., and Sylla, Richard, *The Evolution of the American Economy*. New York: Basic Books, 1979.
- Redish, Angela, *Bimetallism: An Economic and Historical Analysis*. New York: Cambridge University Press, 2000.
- Reubens, Beatrice G., "State Financing of Private Enterprise in Early New York." Unpublished Ph.D. Thesis, Columbia Univ., 1960.
- Rockoff, Hugh, "How Long Did It Take the United States to Become an Optimal Currency Area?" *NBER Historical Paper #124*, April 2000.
- Rolnick, Arthur J., Smith, Bruce D., and Weber, Warren E., "In Order to Form a More Perfect Monetary Union." *Federal Reserve Bank of Minneapolis Quarterly Review* (Fall, 1993), pp. 2-9.
- Rothenberg, Winifred B., "A Price Index for Rural Massachusetts, 1750-1855." *Journal of Economic History* 39 (Dec. 1979), pp. 975-1,001.
- Schumpeter, Elizabeth Boody, "English Prices and Public Finance, 1660-1822." *Review of Economic Statistics* 20 (Feb. 1938), pp. 21-37.
- Schwartz, Anna Jacobson, "The Beginning of Competitive Banking in Philadelphia, 1782-1809." *Journal of Political Economy* 55 (Oct. 1947), pp. 417-431.
- Schweitzer, Mary M., "State-Issued Currency and the Ratification of the U.S. Constitution." *Journal of Economic History* 49 (June 1989), pp. 311-322.
- Selgin, George, "The Suppression of State Banknotes: A Reconsideration." *Economic Inquiry* 38 (Oct. 2000), pp. 600-615.
- Smith, Bruce, "American Colonial Monetary Regimes: The Failure of the Quantity Theory and Some Evidence in Favor of an Alternative View." *Canadian Journal of Economics* 18 (Aug. 1985a), pp. 531-565.
- Smith, Bruce, "Some Colonial Evidence on Two Theories of Money: Maryland and the Carolinas." *Journal of Political Economy* 93 (Dec. 1985b), pp. 1178-1211.
- Stark, Robert, "The Dollars of 1794-1803." In Richard G. Doty, ed., *America's Silver Coinage 1794-1891*. New York: The American Numismatic Society, 1987, pp. 177-185.
- Sumner, William Graham, *A History of Banking*. New York: The Journal of Commerce & Commercial Bulletin, 1896.
- Sylla, Richard, "Long-Term Trends in State and Local Finance: Sources and Uses of Funds in North Carolina, 1800-1977." In Stanley L. Engerman and Robert E. Gallman, eds., *Long-Term Factors in American Growth*. Chicago: University of Chicago Press, 1986, pp. 819-868.
- Sylla, Richard, "Shaping the U.S. Financial System, 1690-1913: The Dominant Role of Public Finance." In Richard Sylla, Richard Tilly, and Gabriel Tortella, eds., *The State, the Financial System and Economic Modernization*. New York: Cambridge University Press, 1999, pp. 249-270.

- Sylla, Richard, Legler, John B, and Wallis, John J., "Banks and State Public Finance in the New Republic: The United States, 1790-1860." *Journal of Economic History* 57 (June 1987), pp. 391-403.
- Ver Steeg, Clarence L., *Robert Morris, Revolutionary Financier*. New York: Octagon Books, 1976.
- Walton, Gary M., and Rockoff, Hugh, *History of the American Economy*. New York: Dryden Press, Eighth Edn. 1998.
- Walton, Gary M., and Shepherd, James F., *The Economic Rise of Early America*. New York: Cambridge University Press, 1979.
- Weiss, Roger W., "The Issue of Paper Money in the American Colonies, 1720-1774." *Journal of Economic History* 30 (Dec. 1970), pp. 770-784.
- West, Roger Craig, "Money in the Colonial American Economy." *Economic Inquiry* 16 (Jan. 1978), pp. 1-15.
- Wicker, Elmus, "Colonial Monetary Standards Contrasted: Evidence from the Seven Years' War." *Journal of Economic History* 45 (Dec. 1985), pp. 869-884.
- Wilson, Janet, "The Bank of North America and Pennsylvania Politics: 1781-1787." *Pennsylvania Magazine of History and Biography* 66 (Jan. 1942), pp. 3-28.

**TABLE 1. Tests for Stationarity of Prices, Exchange Rates, and Purchasing Power Parity: 1748-1775**

$$\text{Regression: } [\ln(y_t) - \ln(y_{t-1})] = a_0 + a_1 \ln(y_{t-1}) + a_2 \text{time} + a_3 D + k \text{ lags of the dependent variable} + e_t$$

Colony/Period/Series	k	a <sub>0</sub>	t <sub>a<sub>0</sub></sub>	a <sub>1</sub>	t <sub>a<sub>1</sub></sub>	a <sub>2</sub>	t <sub>a<sub>2</sub></sub>	a <sub>3</sub>	t <sub>a<sub>3</sub></sub>	F-test
<b>Massachusetts, 1751-1775</b>										
Price Index	1	6.114	9.70	-1.519	-9.53	0.019	4.55	-0.150	-2.87	49.46
Exchange Rate	1	5.146	2.97	-1.051	-2.97			-0.035	-2.12	5.11
PPP	1	6.283	4.21	-1.174	-4.21					8.86
<b>New York, 1748-1775</b>										
Price Index	1	3.153	3.55	-0.711	-3.56	0.012	2.76	-0.087	-1.75	6.73
Exchange Rate	1	3.738	3.75	-0.720	-3.76	-0.001	-0.94			7.16
PPP	1	3.481	3.32	-0.671	-3.32					5.51
<b>Pennsylvania, 1748-1775</b>										
Price Index	1	2.587	3.51	-0.547	-3.51	0.004	2.80			6.15
Exchange Rate	1	3.478	3.91	-0.677	-3.93	-0.001	-1.49			7.95
PPP	1	3.469	4.04	-0.709	-4.05					12.50
<b>Maryland, 1756-1775</b>										
Price Index	0	3.767	3.51	-0.830	-3.51					12.31
Exchange Rate	0	3.142	2.67	-0.618	-2.68					7.16
PPP	0	2.719	2.43	-0.519	-2.42					5.88
<b>Virginia, 1756-1775</b>										
Price Index	0	1.981	3.08	-0.452	-3.06					9.39
Exchange Rate	2	2.812	4.62	-0.570	-4.71	0.011	2.60	-0.245	-5.18	9.06
for only 1766-1775	1	3.948	4.66	-0.821	-4.79	0.002	0.34			17.29
PPP	2	3.493	4.23	-0.664	-4.21			-0.096	-3.00	6.23
<b>South Carolina, 1748-1775</b>										
Price Index	1	3.236	4.23	-0.774	-4.19	0.006	1.92			8.94
Exchange Rate	2	5.521	3.37	-0.842	-3.38	>0.001	0.81			4.92
PPP	1	5.103	4.12	-0.742	-4.13					8.53
<b>England, 1748-1775</b>										
Price Index	2	4.369	4.33	-0.971	-4.32	0.008	3.83			6.24

*Notes:* Data are yearly. *time* runs from 0 though *n* for each sample, respectively. Exchange rates are colonial pounds per 100 pounds sterling. *D* is a structural break dummy variable coded as one for Massachusetts, New York, and Virginia for the years 1769-1775, 1764-1775, and 1766-1775, respectively, and zero otherwise. *F-test* is the relevant *Dickey-Fuller F-test*. *y* for PPP (purchasing power parity) equals [(England's Price Index \* Exchange Rate)/Colony's Price Index] for each colony, respectively. *k* > *n* were statistically insignificant at the 0.1 level and were dropped. For the Virginia and Maryland Price Indices and the Massachusetts and Maryland Exchange Rates, while *time* is statistically insignificant at the 0.1 level, if it is retained in these regressions stationarity would be rejected.

*Data Sources:* Bezanson, *et al.* (1935, pp. 425, 433); Cole (1938, pp. 120-21, 155); McCusker (1978, pp. 141-42, 164-65, 185-86, 198-99, 211-12, 223-24); Rothenberg (1979, p. 983); Schumpeter (1938, p. 35). See Figure 5 for the source of the Virginia price index. The Maryland price index is constructed as an unweighted nine-commodity geometric index by the author using the raw price data reported in Adams (1986, p. 643). The nine commodities are corn, wheat, oats, rye, salt, beef, pork, sugar, and rum.

**TABLE 2. Tests for Stationarity of Prices, Exchange Rates, and Purchasing Power Parity: 1784-1811**

---

Regression:  $[\ln(y_t) - \ln(y_{t-1})] = a_0 + a_1 \ln(y_{t-1}) + a_2 \text{time} + a_3 D + k \text{ lags of the dependent variable} + e_t$

---

State/Series/Period	k	a <sub>0</sub>	ta <sub>0</sub>	a <sub>1</sub>	ta <sub>1</sub>	a <sub>2</sub>	ta <sub>2</sub>	a <sub>3</sub>	ta <sub>3</sub>	F-test
<b>Massachusetts</b>										
Price Index 1784-1811										
With D = 1793-1811	2	4.846	4.88	-1.127	-4.85		0.009	2.37	0.194	3.76
Price Index 1793-1811	0	4.055	3.49	-0.886	-3.48		0.006	1.54		12.13
PPP 1796-1811	3	11.603	4.25	-1.716	-4.24					4.50
<b>New York</b>										
Price Index 1785-1811										
With D = 1795-1811	2	10.175	6.96	-2.128	-6.97		-0.008	-0.33	0.828	6.91
Price Index 1795-1811	2	11.569	4.85	-2.235	-4.85		-0.003	-0.73		7.87
PPP 1796-1811	3	7.565	4.07	-1.211	-4.06					4.11
<b>Pennsylvania</b>										
Price Index 1784-1811										
With D = 1795-1811	1	3.827	5.71	-0.863	-5.68		-0.002	-0.61	0.393	4.71
Price Index 1795-1811	2	9.624	3.67	-1.957	-3.69		-0.015	-2.23		5.24
PPP 1784-1811										
With D = 1795-1811	3	5.395	3.72	-0.972	-3.72			0.999	3.75	2.77
PPP 1796-1811	3	6.130	3.27	-0.932	-3.26					2.65
Exchange Rate 1784-1811										
With D = 1795-1811	3	6.809	4.12	-1.322	-4.11		-0.002	-0.55	1.407	4.61
<b>Maryland</b>										
Price Index 1784-1811										
With D = 1796-1811	3	7.694	3.64	-1.693	-3.63		0.020	2.71	0.323	2.24
Price Index 1796-1811	3	11.889	4.41	-2.401	-4.42		0.011	1.33		4.88
PPP 1796-1811	3	10.700	4.16	-1.669	-4.14					4.28
<b>Virginia</b>										
Price Index 1784-1811										
With D = 1796-1811	3	6.679	5.81	-1.436	-5.81		-0.005	-0.87	0.503	4.38
Price Index 1796-1811	0	4.312	3.21	-0.873	-3.21					10.30
PPP 1796-1811	3	9.229	3.88	-1.425	-3.85					3.71
<b>South Carolina</b>										
Price Index 1784-1811										
With D = 1796-1811	2	9.001	4.25	-1.898	-4.27	-0.056	-3.99	1.129	4.08	4.57
Price Index 1796-1811	2	8.903	3.52	-1.786	-3.53	-0.052	-3.30			4.16
PPP 1796-1811	3	2.976	1.98	-0.587	-1.93					0.93
<b>U.S. Dollar Exchange Rate</b>										
1796-1811	3	8.737	4.58	-1.410	-4.54		-0.001	-0.34		7.75
<b>England</b>										
Price Index 1784-1811	1	3.461	4.45	-0.739	-4.43		0.019	4.04		19.72
With D = 1799-1811	1	4.115	5.40	-0.870	-5.38		0.005	3.22	0.127	2.35

---

Notes: Data are yearly. Price data are missing for South Carolina during 1792-1795 and for New York during 1784 and 1792. State currency exchange rate data are missing except for the Pennsylvania pound during 1784-1790. The exchange rate before 1791 is the number of Pennsylvania pounds needed to purchase 100 pounds sterling. U.S. dollar exchange rate data are available only after 1795 and are the number of U.S. dollars needed to purchase 100

pounds sterling. This rate is derived by applying the Baltimore-White paper currency market adjustments to the true mint parity (Officer 1996, pp. 51-57, 80-84). If the U.S. exchange rate is taken to be the legal or true mint parity unadjusted for paper currency discounts, then PPP fails to be stationary. *time* runs from 0 though *n* for each sample, respectively. *D* is a structural break dummy variable coded as one for the years indicated and zero otherwise. *F-test* is the relevant *Dickey-Fuller F-test*. *y* for PPP equals [(England's Price Index \* Exchange Rate)/State's Price Index] for each state, respectively.  $k > n$  were statistically insignificant at the 0.1 level and were dropped. For the Virginia Price Index 1796-1811, while *time* is statistically insignificant at the 0.1 level, if it is retained in the regression stationarity would be rejected.

*Data Sources:* Bezanson, *et al.* (1936, p. 388); Bezanson (1951, p. 346); Cole (1938, pp. 121-22, 135, 156); Officer (1996, pp. 54, 82-84); Rothenberg (1979, pp. 983-84); Schumpeter (1938, p. 35). See Figure 5 for the source of the Virginia and Maryland price indices.

**TABLE 3. Yearly Volatility of Seven Price Indices, 1750-1811**

Colony/State	Colonial Currency 1750-1775		State Currency 1785-1792		U.S. Dollars 1797-1811	
	<i>STD</i>	<i>SE of STD</i>	<i>STD</i>	<i>SE of STD</i>	<i>STD</i>	<i>SE of STD</i>
Massachusetts <sup>a</sup>	0.1584	0.0073	0.0791	0.0052	0.0956	0.0048
New York City, NY <sup>b</sup>	0.0643	0.0016	0.0511	0.0039	0.0933	0.0038
Philadelphia, PA	0.0449	0.0013	0.0758 <sup>#</sup>	0.0062	0.0801 <sup>#</sup>	0.0025
Western Shore Chesapeake, MD <sup>c</sup>	0.0609	0.0080	0.0461	0.0031	0.1369	0.0059
York River Basin, VA <sup>d</sup>	0.0663	0.0024	0.1104	0.0065	0.1893	0.0104
Charleston, SC <sup>e</sup>	0.1420	0.0030	0.0841	0.0063	0.1151	0.0045
England (pounds sterling throughout)	0.0521	0.0020	0.0357	0.0028	0.1213	0.0076

<sup>#</sup> Not statistically different from one another above the 0.1 significance level.

<sup>a</sup> For the *Colonial Currency* period, only data for  $n = 1751-1775$  are available.

<sup>b</sup> For the *State Currency* period, only data for  $n = 1786-1791$  are available.

<sup>c</sup> For the *Colonial Currency* period, comparable data are only available for  $n = 1771-1775$ . See Figure 5.

<sup>d</sup> For the *Colonial Currency* period, only data for  $n = 1757-1775$  are used. See text for discussion.

<sup>e</sup> For the *State Currency* period, only data for  $n = 1785-1791$  are available.

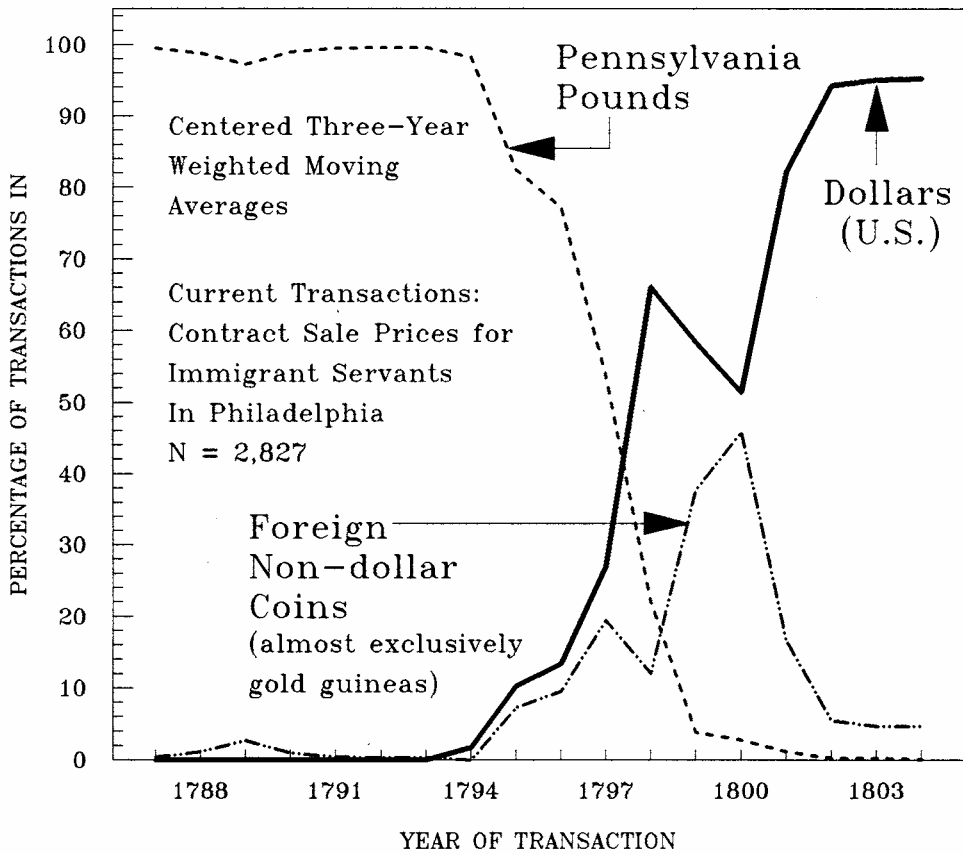
*Notes:* *STD* = standard deviations of  $[\ln(\text{Price Index}_n) - \ln(\text{Price Index}_{n-1})]$ . *SE* = standard errors of the *STDs* and are derived from the variances around the *STDs* generated by bootstrap resampling techniques, see Efron and Tibshirani (1993). With the one exception noted above, per row any two *STDs* are statistically different from one another above the 0.1 significance level. Currency divisions are taken from Figures 1, 4, and 5. Because of uncertainty over what currency dominated transaction usage in the market (as opposed to newspaper usage) in each index between 1793 and 1796, and to avoid biasing the estimates by erroneously including in the volatility measure the large price-index jump that occur during the transition to the U.S. dollar, state currency measures were only carried through 1792, and U.S. dollar measures were taken to begin in 1797.

*Data Sources:* See the notes to Tables 1 and 2 and Figures 4 and 5.

**FIGURE 1. Currencies Used in Current Market Transactions, 1787-1804**

*Notes:* See text for discussion.

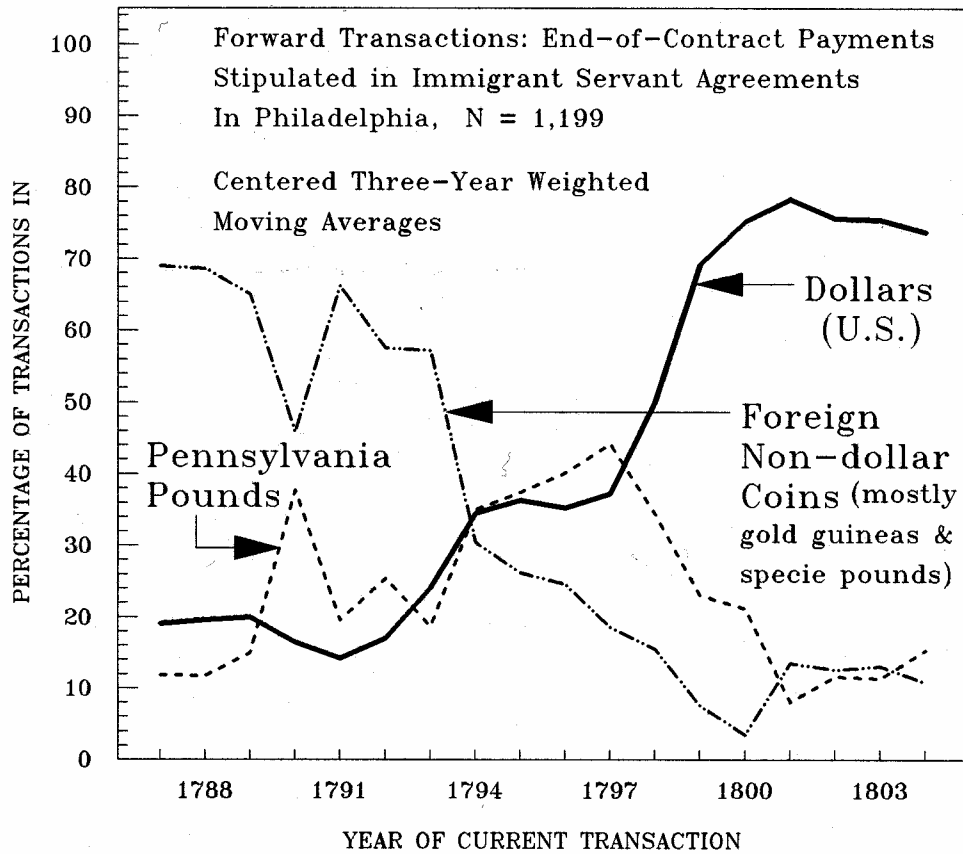
*Data Source:* "Book A of Redemptioners."



**FIGURE 2. Currencies Used in Forward Market Transactions (3-Year Forward Contracts), 1787-1804**

*Notes:* See text for discussion.

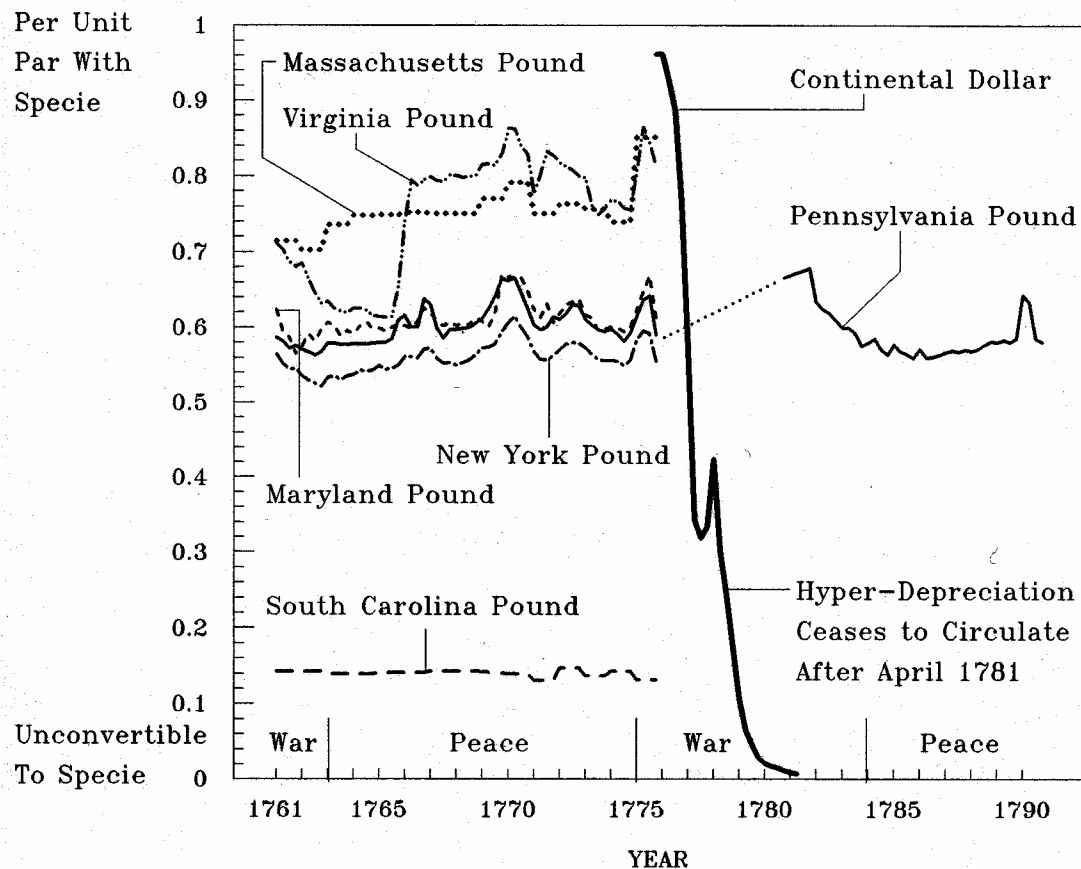
*Data Source:* "Book A of Redemptioners."



**FIGURE 3. The Value of a Unit of American Paper Currency: 1761-1790**

*Notes:* For the Virginia, Maryland, Pennsylvania, and New York pound, and for the Continental dollar, the original data are reported monthly. In place of missing monthly data, which are a rare occurrence, linear interpolations are used. For display purposes, these series are presented as centered four-month moving averages. The small dotted line spans the period during which no observations of Pennsylvania pounds are reported, which is also the period spanned by the American Revolutionary War. For the South Carolina and Massachusetts pound, monthly exchange rates are so intermittent that only yearly averages are considered reliable and reported here. For all series expressed in pounds, the specie per-denomination-unit par reference is pounds sterling. The original sources report this data as the number of pounds of each respective currency needed to purchase 100 pounds sterling. After dividing these numbers by 100, the inverse yields the value of a unit of paper currency per the same unit of pound sterling specie. For the Continental dollar, the specie per-denomination-unit par reference is the Spanish dollar, which the original source expresses in terms of the number of Continental dollars needed to purchase a Spanish dollar. The inverse of these numbers yields the value of this paper money per the same unit of Spanish dollar specie.

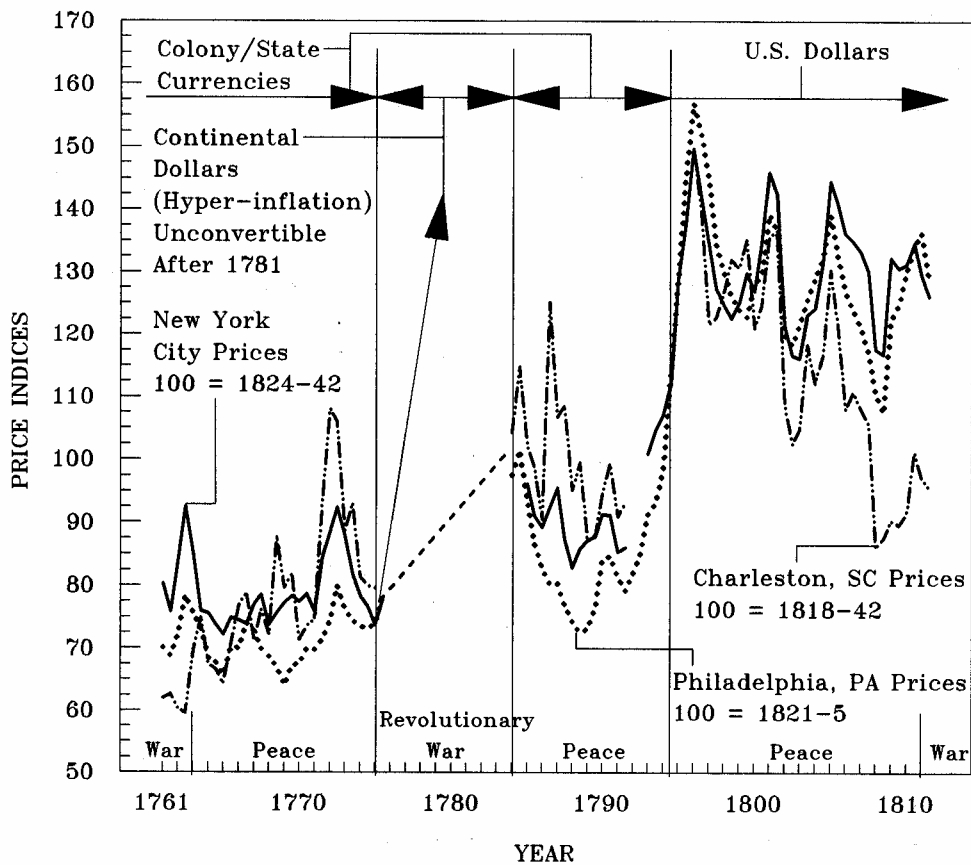
*Data Sources:* Bezanson (1951, pp. 65, 346); McCusker (1978, pp. 142, 165, 185-86, 199, 211-12, 224).



**FIGURE 4. Price Indices for Philadelphia, New York City, and Charleston SC, 1761-1811**

*Notes:* The original data are reported monthly. For display purposes all series are presented as centered six-month moving averages. The dashed line spans the American Revolutionary War when observations of prices are scanty. The only peacetime breaks in the series occur in late 1794, in 1792 and late 1796 through early 1797, and between 1791 and 1796, for the Philadelphia, New York, and Charleston series, respectively. The Philadelphia series is a 20-commodity unweighted geometric wholesale price index. The New York City series is produced by splicing together a 15-commodity arithmetic wholesale price index using variable group weights for 1761 through 1786, a 71-commodity arithmetic wholesale price index using variable group weights for 1787 through 1796, and an "all"-commodity arithmetic wholesale price index using variable group weights for 1797 through 1811. The base year for the New York City series is standardized following the procedure in Cole (1938, p. 122). The Charleston series is a weighted "all"-commodity arithmetic wholesale price index.

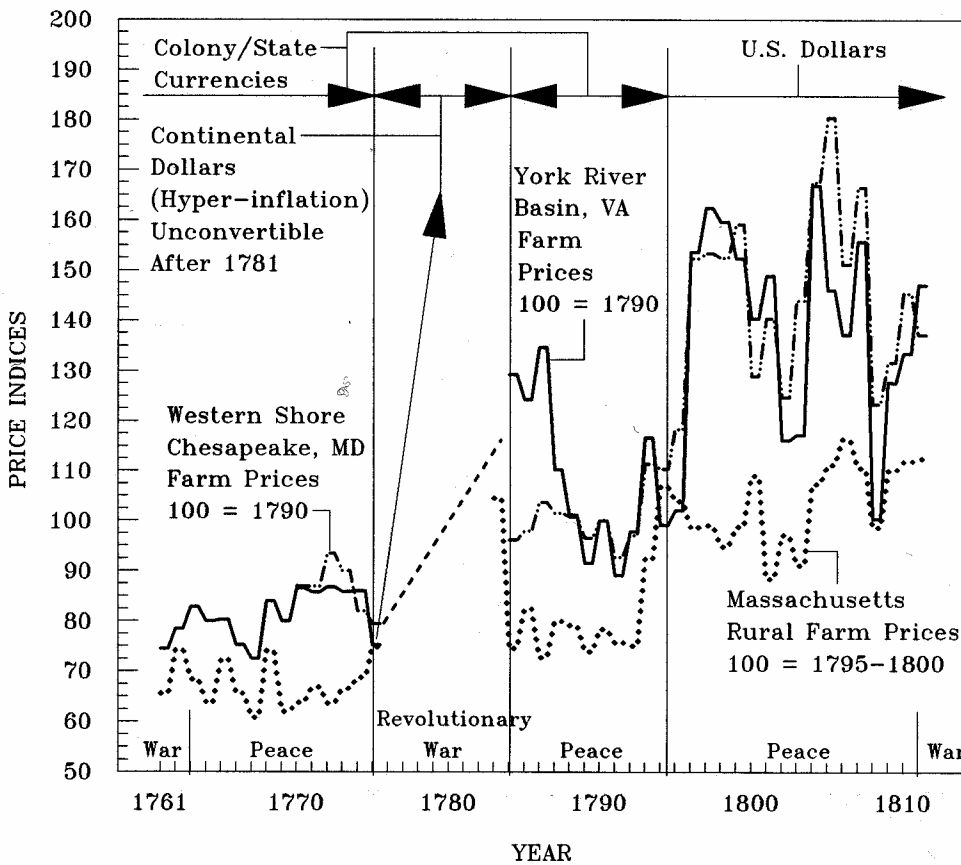
*Data Sources:* Bezanson, et al. (1936, p. 388); Cole (1938, pp. 120-22, 135, 155-56).



**FIGURE 5. Farm Price Indices for York River Basin, Virginia; Western Chesapeake Shore, Maryland; and Rural Massachusetts, 1761-1811**

*Notes:* The original data are reported annually. The Massachusetts series is an "on-the-farm" agricultural arithmetic commodity index weighted by the share of each commodity in total receipts for the year 1800. The Virginia and Maryland series are unweighted geometric indices combining corn, wheat, and tobacco prices. The sources do not identify the currencies used. The currency regime breaks are taken from Figures 1 and 4.

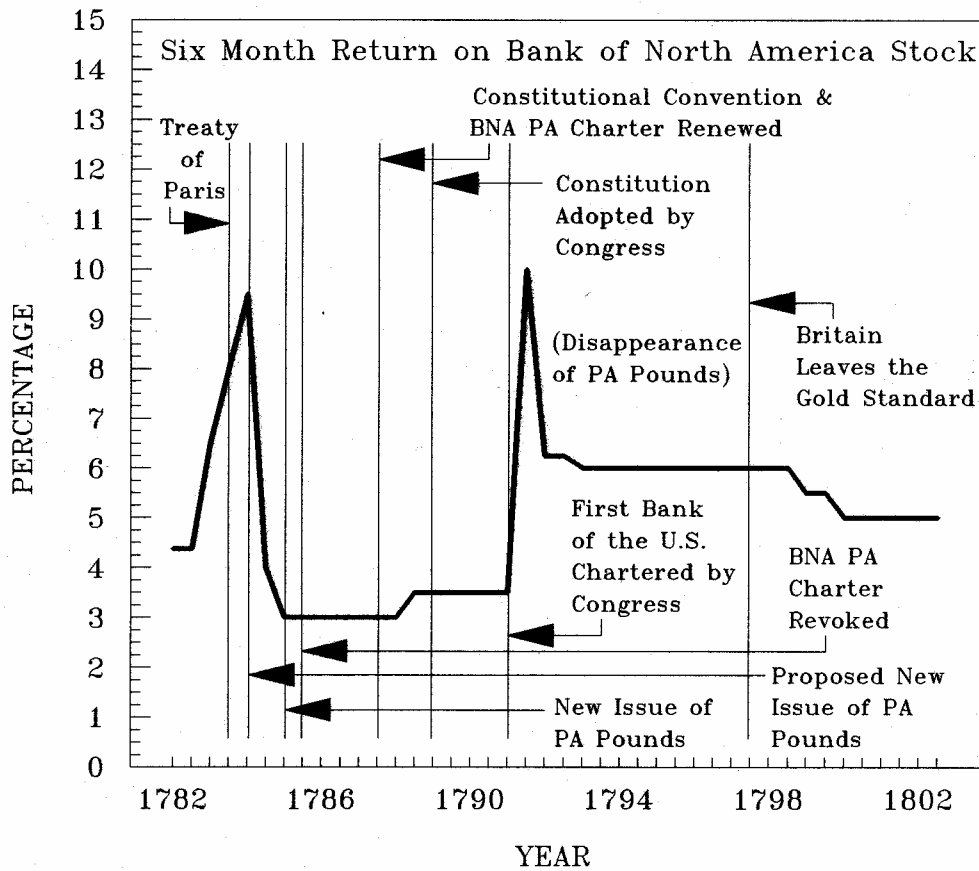
*Data Sources:* Rothenberg (1979, pp. 983-84). The Maryland and Virginia indices are constructed by the author from original raw price data provided by Lorena Walsh (personal communication).



**FIGURE 6. Bi-Yearly Dividend Return on Bank of North America Stock, 1782-1802**

*Notes:* For 1782 and 1792-1802, only the yearly return is known. For these years, the bi-yearly return is simply taken as half the yearly return.

*Data Sources:* Lewis (1882, pp. 152-53); *Pennsylvania Gazette*, January and July issues.



## Footnotes

---

<sup>1</sup> See Eichengreen (1993); Forstater (1999); Hagen (1996); Kenen (1997); Neumeyer (1998); Rockoff (2000) and the sources cited therein. The classic treatment is by Mundell (1961, 1973).

<sup>2</sup> Recently some scholars have challenged the notion that the United States really achieved an optimal currency zone with its constitutionally mandated currency union. See Rockoff (2000).

<sup>3</sup> The summary in this section is derived from Baack (2001); Berry (1943, pp. 357-405); Bezanson, *et al.* (1935, 1936); Bezanson (1951); Bishop (1949); Bouton (1996); Brock (1975); Calomiris (1988); Cowen (2000); Davis (1917, pp. 278-338); Ernst (1973); Fenstermaker (1965); Ferguson (1961); Hammond (1957, pp. 3-226); Hanson (1979); Hepburn (1967, pp. 1-87); Kaplan (1999); Kemmerer (1939); Lester (1938, 1939); McCusker (1978); McKee (1934); Newman (1997); Nussbaum (1957, pp. 3-60); Officer (1996); Perkins (1988, pp. 161-86, 1994); Ratchford (1941, pp. 9-72); Ratner, Soltow, and Sylla (1979, pp. 82-99); Redish (2000, pp. 209-32); Schwartz (1947); Schweitzer (1989); Smith (1985a, 1985b); Sumner (1896, pp. 1-57); Ver Steeg (1976); Walton and Rockoff (1998, pp. 79-89); Weiss (1970); West (1978); Wicker (1985); Wilson (1942).

<sup>4</sup> See Ernst (1973, pp. 197-350); Kemmerer (1939); Lester (1938, 1939).

<sup>5</sup> In Pennsylvania between the Seven Year's War and the revolution specie accounted for 22 percent, and paper money for 78 percent, of transactions involving currency (Grubb, 2002). The amount of specie, both in total and relative to paper, that circulated as currency in the other colonies is not currently known.

<sup>6</sup> Pickering (1765, vol. 20, pp. 306-09); Wicker (1985, p. 873).

<sup>7</sup> See the *Pennsylvania Gazette*, 12 July 1764; Brock (1975, pp. 496-508, 524-27); Lester (1939, p. 196).

<sup>8</sup> See Behrens (1923, pp. 12-58); Brock (1975, p. 70); Lester (1938, p. 372; 1939, p. 207); Smith (1985a, 1986b).

<sup>9</sup> See Girton and Roper (1981, p. 26). This colonial system is similar to the system proposed by Friedman (1948).

<sup>10</sup> See Adams (1986, pp. 626-27); Calomiris (1988); Cole (1938, p. 121); Ratchford (1941, pp. 33-37).

<sup>11</sup> In both states, the upper legislative house (Senate) was blocking the paper money bills passed by the lower legislative house. See Behrens (1923, pp. 78-87); Kaplan (1999, p. 150).

<sup>12</sup> See Hammond (1957, pp. 3-39); Kaplan (1999, p. 15); Perkins (1994, pp. 137-86). Mossman (1995, p. 7) claims that Maryland and Vermont also issued new paper money in 1786. This claim is clearly erroneous in the case of Maryland. While the Maryland State House of Delegates passed legislation in late 1785 to issue new paper money, powerful and wealthy merchants in the Maryland State Senate blocked the enactment of this legislation until the adoption of new U.S. Constitution in 1787 made the issue moot. Maryland's last emission of paper money was in 1781, some of which continued to circulate and which continued to be accepted by the state for payment of its taxes well after the Treaty of Paris, see Behrens (1923, pp. 68-87). Likewise, the case for Vermont cannot be confirmed in other sources.

<sup>13</sup> See Ferguson (1961, p. 123); Lewis (1882, pp. 13-85); Newman (1997, pp. 356-64); Ratner, Soltow, and Sylla (1979, p. 87); Schwartz (1947, p. 417); Ver Steeg (1976, pp. 66-69, 84-87).

<sup>14</sup> Farrand (1966, vol. 2, pp. 308-10). Baack (2001, p. 653) and Rolnick, Smith, and Weber (1993, p. 3) mistakenly claim the opposite.

---

<sup>15</sup> At the constitutional convention, Robert Morris wanted to propose that the constitution authorize the chartering of a bank by the federal government. Morris was talked out of making such a proposal by his protege and assistant on banking matters, Gouverneur Morris, who considered making such a proposal so controversial that its very mention might kill the chances of getting the constitution ratified. See Hammond (1957, p. 105). Thus, no vote at the convention was taken regarding allowing the federal government to charter a bank, which in turn led to the ongoing controversy regarding the constitutionality of the *FBUS* and *Second Bank of the U.S.*, see Kaplan (1999, pp. 22-25).

<sup>16</sup> See Berry (1943, pp. 357, 392-93, 402-5); Selgin (2000); Reubens (1960, pp. 43-44); Rockoff (2000). The *FBUS* bank notes held their value and were not heavily discounted in exchange, in part because they were accepted at face value in payment of U.S. federal government customs taxes. This was the same mechanism used by the colonies/states to control the value of their bills of credit. See Cowen (2000, p. 139).

<sup>17</sup> The divergent effect of these two monetary regimes is illustrated in the 1784 financial crisis, see Rappaport (1996, pp. 165-73). See also Friedman (1948); Girton and Roper (1981) for theoretical discussions.

<sup>18</sup> See "Account Book of Amos Darlington"; Berry (1943, pp. 359-60); Behrens (1923, p. 76); Bezanson, *et al.* (1936, p. 2); Sylla (1986, pp. 843-44).

<sup>19</sup> As late as 1795 the *Philadelphia Gazette and Universal Daily Advertiser* quoted most prices in Pennsylvania pounds (Bezanson, *et al.* 1936, p. 2). See also Rappaport (1996, p. 36).

<sup>20</sup> "Book A of Redemptioners."

<sup>21</sup> Approximately 45 percent of the buyers were from Philadelphia, and 21 percent were farmers. For a complete cross-sectional analysis of buyers in this market, see Grubb (1985).

<sup>22</sup> Contracts for adult servants typically lasted three years. By law, all servants were to receive customary freedom dues (end-of-contract payments) of two suits of clothes one of which was to be new. Roughly 20 percent of the servants, however, explicitly contracted for the option of taking the clothes or a specified sum of cash. The cash sums averaged 29 dollars which equalled 38 percent of the average contract's initial sale price ("Book A of Redemptioners") or a month's pay for an unskilled laborer (Adams 1970). In addition, roughly 23 percent of the contracts included a supplemental end-of-contract cash payment added to the customary freedom dues. For an economic, legal, and documentary analysis of the history of this market, see Grubb (1988, 1994a, 1994b, 1994c, 2000).

<sup>23</sup> "Book A of Redemptioners." By custom, unless otherwise explicitly indicated by the modifier "specie" or "sterling", the symbol and designation "pounds" referred to Pennsylvania pounds and not pounds sterling.

<sup>24</sup> Ver Steeg (1976, p. 119). In a letter to Morris, Alexander Hamilton remarked, "Your Notes though in Credit with the Merchants by way of remittance do not enter far into ordinary circulation, and this principally on account of their size; which even makes them inconvenient for paying taxes" (Bouton 1996, p. 107).

<sup>25</sup> See Doerflinger (1986, pp. 302-4); Lewis (1882, pp. 41-42); Newman (1956, pp. 1369-70); Rappaport (1996, p. 146); Ver Steeg (1976, pp. 116-18). The reluctance to use *BNA's* bank notes may have also been due to questions about the bank's long-run viability. Europeans were refusing to invest in the bank's stock, and Jeremiah Wadsworth of Connecticut, the single largest *BNA* stockholder, raised concerns, publicly, that the amount of loans given to bank directors to speculate in western lands threatened the solvency of the *BNA*. See Bouton (1996, pp. 295-301, 307).

---

<sup>26</sup> See Behrens (1923, pp. 68-87); Sylla (1986, pp. 843-44). This timing for the disappearance of the Pennsylvania pound is also consistent with the scarcity of paper money that led to the August 1794 "Whiskey Rebellion" in Western Pennsylvania. See Bouton (1996, pp. 9, 20-21, 402-40).

<sup>27</sup> See Bezanson, *et al.* (1936); Caothers (1930, p. 316); Hepburn (1967, pp. 52 and 87); Figure 4 below.

<sup>28</sup> Compare Hepburn (1967, p. 87) with Figures 4 and 5 below.

<sup>29</sup> The Philadelphia index consists of 20 commodities, namely, beef, bread, corn, flour, molasses, pitch, pork, rum, salt, sugar, tar, wheat, cotton, gunpowder, indigo, rice, staves, tobacco, turpentine, and wine. The basic secular pattern in prices holds even when examining only domestically traded goods. Given the close attention paid to maintaining consistency in commodity measurements over time, this is probably the single best long-run price index. For the New York City and Charleston indices, the degree of consistency of commodities used over time is difficult to determine. See Bezanson *et al.* (1936, pp. 292-304); Cole (1938, pp. 120-22, 135, 155-56).

<sup>30</sup> Bezanson, *et al.* (1936, p. 2) kept prices in the prevailing currency, but did not report what currency was in use in the tabulated indices. The price indices were then spliced together across currency regimes by using the exchange rate at the point of currency transition. For the transition from Pennsylvania pounds to U.S. dollars in 1794-95, Bezanson, *et al.* (1936, pp. 336, 340) used the official exchange rate of one dollar equaled 0.375 of a Pennsylvania pound which also equaled 0.22 of a pound sterling. See also Bezanson (1951, p. 11); McCusker (1978, p. 10). The same exchange rate is revealed in the market transactions in Figure 1 for the years 1794 through 1796. For otherwise identical contracts, those whose prices were denominated in Pennsylvania pounds versus U.S. dollars versus pounds sterling would be equivalently priced if the exchange rates listed above held.

<sup>31</sup> See the extended price indices in Bezanson, *et al.* (1936, pp. 388-91); Bezanson (1951, p. 344).

<sup>32</sup> See Girton and Roper (1981, p. 26).

<sup>33</sup> Maryland, Pennsylvania, and New York were in compliance with the 1764 Currency Act well before 1760. See Behrens (1923, pp. 12-58); Brock (1975, p. 70); Lester (1938, p. 372; 1939, p. 207); Smith (1985a, 1985b). Virginia, however was not. Unlike the other colonies, Virginia had no experience issuing bills of credit before the Seven Years War. Its first issue was in 1755. Virginia also redeemed old bills with new bills rather than with taxes in 1757, and failed to adequately redeem and destroy bills of credit so ear-marked through taxes in the early 1760s. Complaints about Virginia's behavior regarding its bills of credit were, in part, responsible for the passage of the 1764 Currency Act. See Brock (1975, pp. 465-508); Ernst (1973, pp. 43-88).

<sup>34</sup> Contemporary writers knew this. For example, Lester (1938, p. 375) found that "There seems to have been general agreement among contemporary writers that currency issues and the paper standard were managed very successfully in colonial Pennsylvania for over half a century after 1723." See also Behrens (1923, p. 58); Bouton (1996, p. 333); Ferguson (1961, p. 244).

<sup>35</sup> Nor were the movements in American prices simply reflecting that of British prices--America's primary trading partner. For example, the correlation coefficients between British and American prices for the period 1760 through 1775 range from a high of 0.69 for British to Charleston prices to a low of 0.19 for British to New York prices. For the period 1784 through 1793, they range from a high of 0.56 for British to Massachusetts prices to a low of -0.20 for British to Virginia prices. And for the period from 1797 through 1811, they range from a high of 0.59 for British to Massachusetts prices to a low of -0.40 for British to Charleston prices.

<sup>36</sup> See Hammond (1957, pp. 131-205); Reubens (1960, pp. 43-48, 61-67). On the difficulty the *FBUS* had managing the monetary base after the transition to the U.S. dollar, see Cowen (2000). On the specie flow effects that

---

European wars had on Britain and France between 1795 and 1812, see Bordo and White (1994).

<sup>37</sup> Hammond (1957, p. 36). Lester (1938, p. 373) concluded that "...the price level in Pennsylvania was more stable during the fifty years following the first Colonial currency issue in 1723 than the American price level has been during any succeeding fifty-year period."

<sup>38</sup> For example, in support of the proposition that an executive veto not be too easily overridden, Madison recorded (Farrand, 1966, vol. 2, p. 299) that Gouverneur Morris "...dwelt on the importance of public credit...He recited the history of paper emissions, and the perseverance of the legislative assemblies in repeating them, with all the distressing effects..." On the proposition that the federal government not be allowed to interfere with the government of the individual states in any matters of internal police where the welfare of the United States was not concerned, Madison recorded (Farrand, 1966, vol. 2, p. 26), "Mr. Gouverneur Morris opposed it. The internal police, as it would be called & understood by the States ought to be infringed in many cases, as in the case of paper money & other tricks by which the Citizens of others States may be affected." For additional examples, see Farrand (1966, vol. 1, pp. 137, 142, 146-47, 154-55, 165, 289, 291-93, 317-18; vol. 2, pp. 52, 76, 252). For a discussion of how the propaganda war was waged and won, see Rappaport (1996).

<sup>39</sup> Throughout the convention and the ratification debates, and in most historiography up to the present day, Rhode Island was frequently held up as the archetype example of irresponsible state government regarding paper money. However, it should be noted that Rhode Island was the only state not represented at the Constitutional Convention, had initially voted not to ratify the new constitution, and prior to the Constitutional Convention was the only holdout from approving the Continental Impost, which required a unanimous vote, and so helped to destroy the *Articles of Confederation*. As such, much of the whipping-boy rhetoric pointed at Rhode Island was political retribution. In 1783 Robert Morris even stated that Rhode Island would one day regret her "breach of our union..." (Ver Steeg 1976, p.186). Rhode Island issued paper money in 1786, which, until 1789, was made legal tender for both private and public debts. This paper money was to be used to retire the state's wartime debts by requiring holders of the state's revolution-era securities to swap them at face value for these newly issued bills of credit. By August 1787, Rhode Island's paper money was trading relative to face value at 7 to 1. As such, Rhode Island was accused of defrauding creditors by forcing them to take depreciated paper money in exchange for both private and public debts. The evidence, however, indicates that little fraud actually occurred. Only about 200 actions were undertaken between 1786 and 1789 under the legal tender law to compel creditors to accept paper money at face value for private debts. The simple fact that Rhode Island's paper currency circulated relative to face value at 7 to 1 by August of 1787 belies the enforcement of the legal tender law. Market reputation and repeat business dealings effectively rendered the legal tender law impotent. At best, this law produced delays in legal actions by creditors against bankrupt debtors, and led to a few fraudulent defaults when debtors expected the transaction to be a one-off affair. Finally, the state's wartime securities were trading in the market relative to face value at 8 to 1. Given that the vast majority of state security holders had acquired their securities at this rate, forcing them to swap their securities at face value for paper money that was trading relative to face value at 7 to 1 was no loss. The post-1786 harsh Federalist rhetoric against Rhode Island came from wealthy merchants who had acquired state securities in the market at 8 to 1, and who had hoped, through their control of the state legislature, to get the state to increase taxes substantially thereby enabling the state to redeem the securities at 1 to 1. Electoral defeat in 1786 and the subsequent adoption of the paper money policy thwarted their plan of speculative enrichment. The same forces in Massachusetts led to Shay's Rebellion. See Bishop (1949); Ferguson (1961, pp. 243-47); Perkins (1994, pp. 154-7, 173-86); Ver Steeg (1976, pp. 129-31).

<sup>40</sup> See McGuire and Ohsfeldt (1984, pp. 514-16; 1986, pp. 106-7); Sylla (1999, p. 254); Walton and Rockoff (1998, p. 143); Walton and Shepherd (1979, p. 187).

<sup>41</sup> See Beard (1960, pp. 28, 31); Kaplan (1999, p. 15); McDonald (1958, pp. 5-11, 349); McGuire and Ohsfeldt (1984, 1986).

---

<sup>42</sup> This is also the same James Wilson who was a member of board of the *BNA*, who had borrowed over \$100,000 from the bank, well in excess of his assets, to speculate in western lands, and who got the bank to repeatedly extend the loan when he could not repay on schedule (Rappaport 1996, p. 201). This is also the same James Wilson who within the decade would owe hundreds of thousands of dollars to creditors and, for failing to pay, would be arrested twice, would flee and, in his own words, would be "hunted like a wild beast" (Bradford 1994, p. 93).

<sup>43</sup> See Doerflinger (1986, pp. 267-72); Rappaport (1996, pp. 159-77); Wilson (1942).

<sup>44</sup> The *Freeman's Journal*, 13 December 1786, claimed that, in private, the *BNA* did "everything to depreciate it [the new state issue of Pennsylvania pounds]." The *BNA* also refused to accept deposits of Pennsylvania pounds. It later relented when threatened by revocation of its charter, accepting such deposits into "entirely distinct and separate" accounts (Wilson 1942, p. 10). See also Bouton (1996, pp. 99-100); Bradbury (1972, p. 143); Doerflinger (1986, pp. 267-72); Eicholz (1992, pp. 88, 104, 256); Rappaport (1996, pp. 159-88); Rolnick, Smith, and Weber (1993, p. 7).

<sup>45</sup> That Morris was concerned about *BNA*'s stock value can be seen in his initial promise that "few will find Other parts of their Fortunes to Yield them so large or certain an income as the Stock they have in the Bank." (Bouton 1996, p. 92). See also Bouton (1996, pp. 129-31, 307); Ver Steeg (1976, p. 67).

<sup>46</sup> Hammond (1957, p. 66). See also Doerflinger (1986, pp. 304-5); Rappaport (1996, p. 146).

<sup>47</sup> Rappaport (1996, pp. 201, 233-36). Bradbury (1972, p. 155) concluded that "Morris and his small circle of Philadelphia speculators largely ran the bank to suit themselves..." See also Bouton (1996, pp. 196, 201); Ver Steeg (1976, pp. 85, 196); fn. 25.

<sup>48</sup> Eicholz (1992, p. 266).

<sup>49</sup> See Cowen (2000); Bradbury (1972, pp. 141-43, 154); Eicholz (1992); Hammond (1957); Rappaport (1996, pp. 137-221); Schwartz (1947); Stark (1987, p. 178).

<sup>50</sup> See Bouton (1996, pp. 184-88); Bradbury (1972); Eicholz (1992); Newman (1956); Rappaport (1996, pp. 159-221); Wilson (1942).

<sup>51</sup> See fn. 35; Hooper (1956); Ver Steeg (1976, pp. 39, 63, 91).

<sup>52</sup> Morris said that paper money was being "pushed from hand to hand, like the lighted stick in the play of 'Jack's alive, and alive like to be,' each holder fearing that it should die in his hands." (Wilson 1942, p. 20). Bradbury (1972, p. 156) concluded that "In the struggle to recover their charter Morris and his followers obscured the pursuit of their economic self-interest..." Supporters of the bank also boldly asserted that bank notes would always be redeemed in specie, see Eicholz (1992, pp. 98-99, 104-7); Ver Steeg (1976, pp. 66-69).

<sup>53</sup> Similar events occurred in Maryland. In 1782 James McHenry introduced a bill in the Maryland Senate to establish a bank. The Senate passed the bill, but the Maryland House of Delegates rejected the bill. The same effort was tried again in 1784 with the same result. In 1785, the House of Delegates proposed that the state issue a new emission of paper money. The Senate blocked this proposal. This stalemate continued through 1787. Interestingly, one of the leaders of Maryland's delegation to the Constitutional Convention in Philadelphia in 1787 was none other than James McHenry, the leading advocate for the blocked banking bill. In addition, it was the very same James McHenry who argued the pro-Constitution case before the Maryland ratifying convention. Finally, members of the

---

Maryland Senate also worked to prevent the election of anti-bank/pro-state-paper-money delegates to the state's convention on ratifying the constitution. See Behrens (1923, pp. 79-87); Bradford (1994, pp. 117-18); Bryan (1899, pp. 17-19).

<sup>54</sup> Eicholz (1992, p. 195). See also *Freeman's Journal*, 17 October 1787, reprinted in Jensen (vol. 2, 1976, pp. 182-85); Bouton (1996, p. 201).

<sup>55</sup> See Bradford (1981); Farrand (1966, vol. 2, pp. 664-65); Hammond (1957, p. 104); Lewis (1882); Rappaport (1996); Wilson (1942).

<sup>56</sup> From Wilson's speech to the Pennsylvania ratifying convention, 4 December 1787, reprinted in Jensen (1976, vol. 2, p. 500). The *Freeman's Journal*, 17 October 1787, reprinted in Jensen (vol. 2, 1976, pp. 182-85), reached a similar conclusion.

<sup>57</sup> See Bradbury (1972, pp. 154-55); Farrand (1966, vol. 3, p. 171); Hammond (1957, pp. 46-48, 65, 104); Kaplan (1999, pp. 7-14); McKee (1934); Wilson (1942, p. 13).

<sup>58</sup> Farrand (1966, vol. 2, pp. 309-10, 439).

<sup>59</sup> Bailyn (1993, vol. 2, pp. 476-77).

<sup>60</sup> Farrand (1966, vol. 2, p. 310). See also Wilson's speech to the Pennsylvania ratifying convention, 4 December 1787, reprinted in Jensen (vol. 2, 1976, p. 500); and the discussion in fn. 38.

<sup>61</sup> Farrand (1966, vol. 2, p. 309).

<sup>62</sup> Farrand (1966, vol. 3, p. 495). In the ratification debate, some anti-federalists also saw through the charade of equating legal tender laws with paper money in general. For example, see anti-Federalist Paper "Agrippa" XVIII (*Massachusetts Gazette*, May 5, 1788) attributed to James Winthrop (Bailyn, 1993, vol. 2, p. 159). See also the discussion in fn. 38.

<sup>63</sup> "Publius," *New-York Packet*, January 25, 1788, known as Federalist Paper XLIV and ascribed to James Madison, see Bailyn (1993, vol. 2, p. 94).

<sup>64</sup> See Farrand (1966); Hammond (1957, pp. 106, 115-18). Nor were they mentioned in the ratification debates, see Bailyn (1993); Jensen (1976-1978).

<sup>65</sup> The *Freeman's Journal*, 17 October 1787, made a similar charge (Jensen vol. 2, 1976, pp. 182-85). See also fn. 15.

<sup>66</sup> Rolnick, Smith, and Weber (1993) argue that the constitutional ban on state-issued paper money was enacted to prevent ruinous competition among states in the race to collect seigniorage income from the citizens of other states. There are several empirical and theoretical drawbacks to this view. First, problems with seigniorage on state-issued paper money were never mentioned at the Constitutional Convention or in the subsequent ratification debates (Bailyn 1993; Farrand 1966; Jensen 1976-1978). Second, the evidence presented by Rolnick, Smith, and Weber (1993, pp. 8-9) is from before the Seven Year's War, which would be of little importance to the conventioners in 1787. Post-1763, there is little quantitative evidence that paper currency circulated freely as a medium of exchange in neighboring colony/states that also issued their own paper money (Grubb 2002). While some merchants who traded across colonies specialized in exchanging currencies, and operated like currency clearinghouses, out-of-colony currencies did not freely circulate within a colony among its subjects. Third, delegates from the larger states,

---

such as Pennsylvania and New York who had the most to gain in seigniorage income collected from the citizens of their neighboring states, led the charge to constitutionally ban state-issued paper money. These states dominated their smaller neighbors economically, had the strongest state currencies in 1787, and thus had the greatest expectation of collecting seigniorage from their neighbors. Delegates from these states were not shy about supporting positions that benefitted large states at the expense of small states, such as the proposition that all congressional representation be based on population. Their initiative to ban state-issued paper money, therefore, would be inconsistent with their states' economic interests and inconsistent with their general behavior at the convention if seigniorage competition across states was the key problem. Fourth, these same delegates prevented the national government from being allowed to issue paper money (Farrand 1966, vol. 2, pp. 308-10), which again would be inconsistent behavior if seigniorage competition across states was the key problem. Fifth, the delegates voted for a specie money union. Given that the U.S. produced no gold or silver, the entire money supply would have to be imported. Thus, in essence, Rolnick, Smith, and Weber (1993) are holding a rather strange economic and political position, namely, that in order to prevent one state from collecting some seigniorage from its neighboring states, the founding fathers were willing to surrender all seigniorage to foreign powers. Finally, the theoretical position that Rolnick, Smith, and Weber (1993, pp. 7-8) adopt that creates the problem of seigniorage competition, namely that when exchange rates are fixed alternative currencies become perfect substitutes and so the money supply is indeterminate, assumes away critical real world costs. When these costs are put back into the model, the seigniorage competition problem disappears. Exchange rates between specie coins are fixed and near perfectly forecastable. An ounce of gold is an ounce of gold no matter whether it is a pistole or a guinea. Thus, we should not be surprised to find all sorts of specie coins circulating in countries other than where they were minted. For example, soon after the U.S. started to mint silver dollars, they showed up in places like South America and China (Stark 1987, p. 183). Fiat paper money is different. While colonies/states tried to maintain a fixed exchange rate, they retained the option to opt out of said exchange rate at any time. Distance traders could not easily forecast or hedge against this possibility. Thus, while specie coins circulated everywhere, fiat paper money did not. Colony/state paper money did not circulate as currency anywhere in Europe, Canada, or the Caribbean, and at best only circulated outside the colony/state of issue in the immediate commercial marchland of neighboring colonies/states.

<sup>67</sup> See Bailyn (1993); Bouton (1996, pp. 321-71); Farrand (1966, vol. 3); Jensen (1976-1978).

<sup>68</sup> See George Washington's letter to John Armstrong, 25 April 1788 (Bailyn, 1993, vol. 2, pp. 420-23); Hamilton's address to the New York state ratifying convention, 28 June 1788 (Bailyn, 1993, vol. 2, p. 830); and Luther Martin's address to the Maryland legislature, 29 November 1787 (Farrand, 1966, vol. 3, p. 215).

<sup>69</sup> Jensen (vol. 2, 1976, pp. 19-25). The lack of opposition may have also been due to the irregular procedures pushed on ratifying conventions by the Federalists, see Bouton (1996, pp. 321-71, 449); and in some states to merchant-bankers working to prevent pro-state-paper-currency advocates from being elected to their state's ratifying convention, see fn. 53.

<sup>70</sup> Jensen (vol. 3, 1978, p. 232). See also the letter sent by George Handley, Governor of Georgia, to the Governor of South Carolina, 19 February 1788, accompanied by a copy of the deliberations at Georgia's ratifying convention, which pointed out the gravity of the Indian threat to the frontiers of both states (Jensen, vol. 3, 1978, p. 281).

<sup>71</sup> See W. R. Davie's speech to the North Carolina ratifying convention, 29 July 1788 (Farrand 1966, vol. 3, p. 350). See also Bailyn (1993, vol. 1, pp. 167-68); Reubens (1960); Sylla, Legler, and Wallis (1987).

<sup>72</sup> See Bryan, Champ, and Ransom (2000); Gordon (1997, pp. 17-41); Kaplan (1999); Sylla (1999).

<sup>73</sup> Selgin (2000) presents a similar story regarding the effort to suppress individual state bank note currencies in favor of a common national bank note currency in 1864.

---

<sup>74</sup> Ver Steeg (1976, p. 17). See also Bouton (1996, p. 134); Ferguson (1961, pp. 70-105, 118); Ver Steeg (1976, p. 196). Morris ended up with investments of around eight million acres of western lands (Bouton 1996, p. 377).