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LAND POLICY: FOUNDING CHOICES AND OUTCOMES, 1781-1802

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Working Paper 15028

<http://www.nber.org/papers/w15028>

NATIONAL BUREAU OF ECONOMIC RESEARCH

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June 2009

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NBER Working Paper No. 15028
June 2009
JEL No. E61,E62,F34,G18,H60,H77,N21,N41,O13,O16,O23

ABSTRACT

Victory in the War for Independence brought a vast amount of land within the grasp of the new American nation—territory stretching from the Appalachian Mountains to the Mississippi River between the southern shores of the Great Lakes and Spanish Florida. These lands were initially claimed by several states. Pressure from states without land claims led to these lands being transferred to the national government. The land so transferred was to be used to pay for the revolution. By 1802 this national public domain totaled roughly 220 million acres of saleable land that was worth about \$215 million dollars at constant-dollar long-run equilibrium land prices. A public finance approach is used to explain the choices facing the government regarding how to use its lands to pay for the revolution. The first choice—directly swapping land for war debt—was superseded by the second choice, namely “backing” the national debt with its land assets and pledging future proceeds from land sales to be used by law only to redeem the principal of the national debt and nothing else. This land policy helped stabilize the national government’s financial position and put the U.S. on a sound credit footing by the mid-1790s.

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Land Policy: Founding Choices and Outcomes, 1781-1802

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Independence brought a vast amount of land within the grasp of the new nation—land unsettled by non-indigenous Americans. Choices had to be made regarding which governments had jurisdiction over these lands, how these lands would be used to benefit those governments as well as the public, and how these lands would be transferred to white settlers. Conflicts over which governments had jurisdiction over these lands created the first crisis of disunion. The choice that resolved this crisis led to other choices on how to use these lands to salvage the nation's financial position. How the government would transfer these lands to the public also required choices over lot sizes, shapes, prices, and methods of sale. Between 1781 and 1802 these land-policy choices were truly founding choices in that they had lasting effects on the economic and political trajectory of the nation.

This short essay cannot adequately address all the land policy controversies which arose in the founding era. Instead, the focus will be on the key choices that affected economic development for which economic analysis can enhance our understanding. The essay begins by documenting the conflicting claims over the trans-Appalachian territories post-revolution and how political debate led to the transfer of some but not all of these lands to the national government. As a condition of political unity, states without land claims required states with such claims to cede them to the national government for the benefit of all. The Constitution as drafted in 1787 may not have occurred without this prior solution to western land claims. The timing and amount of lands ceded to the national government from 1781 through 1802 is also

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documented, with the total being roughly 222 million acres worth about \$215 million by 1802. The U.S. Federal Government was born land rich and land-asset-value rich.

The national government's choices over how to use its lands are addressed next. The public, founding fathers, and states all expected the ceded lands to be used to satisfy the debts incurred fighting the Revolution. A government budget constraint model linking revenue and spending flows with stocks of land assets and debt is developed to show the options available for using land assets to service the national debt, i.e. (1) swap all the land at once for as much debt as possible or (2) sell the land slowly over time at good prices with the proceeds pledged to redeeming debt principal. The first option would have driven land prices down as a result of so much land being thrown on the market at once. The Federal Government was solvent when land prices were valued at their long-run constant-dollar equilibrium price, but insolvent if valued at prices likely to prevail if all the land was dumped on the market at once. In 1790, option 2 became the founding choice, which in turn helped salvage the government's credit position.

Finally, the essay describes the choices made regarding how the land would be sold, i.e. lot sizes and shapes, and discusses the economic benefits of these choices. The Land Ordinances of 1784, 1785, and 1787 that were carried forward largely intact after the adoption of the Constitution are discussed. The choices made in these Ordinances enhanced the value and thus the sale price of the land. The rectangular property grid imposed on land buyers rationalized land boundaries making property rights more secure. The required purchase of minimum lot sizes far larger than the typical farm reduced the cost of surveying and allowed purchasers to capture the positive externalities of their initial development efforts. The essay ends with a brief epilogue summarizing the results and linking the subsequent Louisiana Purchase in 1803 directly to the founding choices made regarding the initial land cessions to the national government.

The First Crisis of Disunion: Who Should Get the Spoils of War?

With George Rogers Clark's victories over the British in the Ohio territories and the pending triumph of the American Revolution, British claims and restrictions over the trans-Appalachian territories were removed and these lands fell into the hands of the revolutionaries.² This transfer was codified in 1783 with the Treaty of Paris that recognized U.S. sovereign independence from Britain, but not without effort and controversy. For example, Spain sought surrender of U.S. claims to the eastern Mississippi region and to free navigation of the Mississippi River through New Orleans in exchange for aid during the Revolution and trade concessions to the Americans, mostly to northern shippers, after the Revolution. These Spanish intrigues were fended off by the southern states, effectively stopping northern commercial interests and their political allies in Congress from trading away these navigation rights and land claims. In addition, U.S. efforts to claim Canadian lands were dropped in the final 1783 treaty.³

The new lands acquired in the Treaty of Paris represented a vast territory stretching from the Appalachian Mountains to the Mississippi River between the southern shores of the Great Lakes and Spanish Florida. What government should get these lands? Initially several states, e.g. Massachusetts, Connecticut, Virginia, North Carolina, South Carolina, and Georgia, claimed

² Being the victor in the French and Indian War (also called the Seven Year's War) Britain acquired in 1763 French Canada and French claims to the upper Ohio and Mississippi regions—claims that conflicted with those of several British colonies such as Massachusetts, Connecticut, New York, Pennsylvania, and Virginia whose royal charters encompassed some of these lands. With the Proclamation of 1763, Britain declared treaties with the Indians in these regions made directly by the British superior to any made by the separate American colonies and forbade, with a few exceptions, further white incursions into these lands. American colonists worked to evade this proclamation which they viewed as an attempt by prominent Englishmen to organize and execute their own land patents in the region. Prominent Americans formed land companies and moved to lay claim to these regions. With the 1774 Quebec Act, the British also attached the lands west of the Alleghenies and north of the Ohio River to the colony of Quebec for administrative purposes and to reaffirm the Proclamation of 1763—in part to counter the American land company incursions into these regions (Friedenberg 1992, 104-42; Livermore 1939, 74-122; Sakolski 1932, 1-28).

³ See Adams (1960, 3: 209-19); Dougherty (2001, 139-40); Friedenberg (1992, 203-12); Henretta et al. (1987, 186, 218, 228, 231); Jensen (1981, 8-18, 171-3); *Journals of the Continental Congress* [JCC hereafter] (13: 239-44, 263-5, 329-30; 14: 955-67; 15: 1084-5; 18: 900-2, 935-47, 1070-1; 19: 151-4; 21: 853-4; 22: 207-8, 219-20; 24: 243-51; 26: 23-9; 27: 489-9, 529-30, 687-90, 705-6, 616-24; 30: 85-7; 31: 469-84, 509-10, 537-52, 565-70, 574-613; 32: 184-204, 210, 216-20; 34: 319, 527, 534-5).

these lands based on old colonial grants and Indian treaties. Many of these claims were overlapping. Other states, e.g. Maryland, Delaware, Pennsylvania, New Jersey, Rhode Island, and New Hampshire, were hard pressed to make claims to these lands.⁴ See Map 1.

Conflicting land claims created discord among the states. For example, as early as 1775 Connecticut claims to the Wyoming Valley in Pennsylvania were brought before an otherwise busy Continental Congress by Pennsylvania for redress—an issue Congress failed to resolve fully even by 1785. Similarly, from 1780 through 1786 a jurisdictional dispute between New Hampshire, Massachusetts, and New York was brought before Congress for redress.⁵

Of greater concern were state claims to the trans-Appalachian territories. Many of these claims overlapped creating potential discord (see Map 1). In addition, states that did not have claims feared that the states that did have such claims, enlarged by these territories, would become economically and politically dominant. The sheer size of these enlarged states would give them economic power, and any move toward a representative national government based on population or land area would give them political dominance. States without western land claims brought these concerns to Congress. If a solution could not be found, disunion was likely.

The *Articles of Confederation* were drafted and approved by Congress and sent to the states for ratification in November of 1777 (*JCC* 9: 906-28). Ratification, which required unanimous consent of the states, was held up until the land issue was resolved. For example, by 1780 Maryland was still flatly refusing to ratify the *Articles of Confederation* until this issue was solved and solved by the states claiming western lands ceding them to the national government for “the general benefit.” The problem of western land claims was viewed in Congress in 1780 as

⁴ See Donaldson (1884, 30-88); Feller (1984, 3-4); Henretta et al. (1987, 201, 227-8); Jensen (1981, 8-18, 25-6, 44-5, 64); *JCC* (6: 946, 1076-9, 1082-3; 17: 806-8; 18: 915-4; 22: 184, 191-4, 223-32; 23: 694-6; 25: 554-64).

⁵ See Donaldson (1884, 4, 85); Jensen (1981, 330-6); *JCC* (3: 321, 335-6, 435, 439-40; 5: 656; 13: 821, 827-8; 20: 770-2; 21: 823-4, 838-9, 892-3, 1115-6; 22: 57-60, 108-13, 166-73, 186-8, 282-6, 389-92; 23: 461; 24: 7-32; 26: 45, 283-7; 27: 532-6, 547-50, 603-5, 666-72; 29: 721, 725-31, 777; 30: 196-7; 31: 636-9, 653-4).



Map 1 *Western Lands Claimed and then Ceded to the U.S. Federal Government by the 13 Original States, 1784-1802*

Source: Stephenson (1934, 248). For similar maps, see Friedenberg (1992, 199); Henretta et al. (1987, 201); Hughes and Cain (2007, 94); and Tindall (1988, 266).

the “only obstacle to final ratification of the articles of confederation.”⁶

States without claims to western lands pressed states with such claims to cede their claims to the national government. In 1779 congressmen from Delaware and Maryland asserted that the western territories were “gained from the King of Great Britain, or the native Indians, by the blood and treasure of all, and ought therefore to be a common estate, to be granted out on

⁶ See Donaldson (1884, 61-4); Feller (1984, 3-5); Gates (1968, 50-7); Jensen (1981, 8-18, 25-6); *JCC* (17: 806-8). Thereafter, Congress repeatedly called on the states that had not yet completed their lands cessions to do so (*JCC* 26: 142-3, 315-7; 33: 692-3).

terms beneficial to the United States.” In 1780 congressmen from New York asserted that the “...uncultivated territory within the limits or claims of certain States ought to be appropriated as a common fund for the expenses of the war....” A congressional committee argued in 1780 that these lands were “essential to public credit and confidence...and so necessary to the happy establishment of the federal union...” and that they could not “be preserved entire” by the claiming states “without endangering the stability of the general confederacy....” Later in 1780, Congress resolved that all lands so ceded by the states to the national government “shall be disposed of for the common benefit of the United States....”⁷

An important controversy over state land cessions was the status of claims made by land speculators to lands north of the Ohio River based on their acquisition of Indian deeds. Many of these speculators were prominent individuals from states that had no claims to the western territories. Virginia insisted that such claims be voided. Virginia did not want to surrender these lands to the general public just to have them fall directly into the hands of prominent New York and Philadelphia land speculators. The political battle in Congress between these land speculators and Virginia held up the major land cessions until 1784 when Virginia got its way. By contrast, speculative land claims by Virginians in Kentucky and by North Carolinians in Tennessee were held valid. As such, Kentucky and Tennessee lands never really came under alienable Federal possession. These regions were the first two trans-Appalachian states to join the union—in 1792 and 1796, respectively. Lastly, Virginia and Connecticut retained sizable portions of their cession of Ohio as their “western and military reserves” to satisfy their commitments during the Revolution to pay their soldiers in land bounties.⁸

⁷ See Donaldson (1884, 61-4); Gates (1968, 50-7); Jensen (1981, 8-18, 25-6); *JCC* (17: 806-8).

⁸ See Map 2 below; Adams (1960, 3: 214-9); *American state papers: Public lands* [*ASP: PL* hereafter] (1: 1, 12, 17, 112, 164, 193-9, 283); Donaldson (1884, 67-70, 82, 86-7); Feller (1984, 3-5); Friedenber (1992, 143-221, 248-60, 275-83); Gates (1968, 50-7); Jensen (1981, 8-18, 25-6, 44-5, 64, 112-4, 171-3, 330-6, 350-9); *JCC* (17: 806-8; 18:

As these conditions were hammered out, states one by one from 1781 through 1802 ceded their western lands to the national government. The commitment to so cede these lands in 1781 opened the door to the final ratification, by Maryland, of the *Articles of Confederation* (JCC 19: 208-24). These lands did not come into the alienable possession of the Federal Government all at once. It took over two decades to complete the transfer (Donaldson 1884, 30-88). Table 1 lists the timing and amount of land ceded by the states to the national government. Figure 1 shows the cumulative total alienable acres from 1784 to 1802, net of overlapping claims and past sales, in the possession of the national government. By the 1787 Constitutional Convention, the question of who would possess the spoils of war—the western lands—had been settled, though the Georgia cession was yet to be executed. The new national (Federal) government representing all the nation’s citizens would own, control, and determine the distribution of these lands. It seems unlikely that the Constitution as written in 1787 could have been created if not for this prior solution to the problem of western land claims.

The shift in the sectional balance of power between the southern, middle, and northeastern states that would have likely breached the union in the early decades of the Republic (if, for example, states like Virginia were allowed to retain their western lands) was averted by the cession of these lands to the national government. The sectional conflict within the national government was shifted to competition over the admission of new states carved out of these territories—a peaceful though spirited competition that would only devolve into a breach in the union some 70 years later.

Between 1784 and 1802, the national government acquired a treasure trove of assets amounting to 220 million acres of potentially salable land lying between the Mississippi River,

914-6; 21: 1057-8, 1076-8; 22: 184, 191-4, 223-32; 25: 554-64; 26: 110-7; 28: 234-6; 34: 133, 270-1, 331-4, 476); Livermore (1939, 74-122); Sakolski (1932, 1-123); Tindall (1988, 268). Negotiations over the future status of Kentucky and Tennessee as separate states also slowed the Virginia and North Carolina land cessions.

Table 1 *Land Cessions to the Federal Government by the 13 Original States, 1781-1802*

Year	State	Acres	Notes
1781	New York	202,187	jointly claimed by Massachusetts
1784	Virginia	229,917,493	some acres jointly claimed by other states, excludes Kentucky, and includes lands reserved in Ohio to Virginia
1785	Massachusetts	34,560,000	jointly claimed by other states
1786	Connecticut	25,600,000	jointly claimed by other states, but with 3,800,000 of Ohio held back as a reserve
1787	South Carolina	3,136,000	solely claimed
1790	North Carolina	26,679,600	mostly Tennessee which had already been alienated and so is typically not counted
1802	Georgia	56,689,920	solely claimed
<i>Gross Total</i>		376,785,200	simple sum
<i>Net Total Ceded To the National Government</i>		221,989,787	minus overlapping claims, the North Carolina cession, and Virginia and Connecticut reserve lands in Ohio

Sources: Map 1; *ASP: PL* (1: 1, 12, 17, 112, 164, 193-9); Donaldson (1884, 11, 86-8); Gates (1968, 57); Grubb (2007b, 146-7); Hibbard (1939, 13); *Historical Statistics* (1975, 1: 428); *JCC* (19: 208-13; 26: 110-7; 28: 271-5, 280-4, 382-7, 408-10; 30: 159-60, 307-8, 310-11; 31: 654-5; 33: 466-77; 34: 320-6).

Notes: The *Net Total* is not consistently estimated across the sources see Grubb (2007b, 147).

the Great Lakes, Florida, and the current western borders of the original 13 states (see Map 1).

Congress adopted the *Constitution* in 1789, replacing the *Articles of Confederation* with this new government. The new *Constitution* reaffirmed congressional control over the ceded western lands. Article IV, section 3, paragraph 2 of the *Constitution* stated, “The Congress shall have Power to dispose of and make all needful Rules and Regulations respecting the Territory or other property belonging to the United States...” The Supreme Court would later determine that this

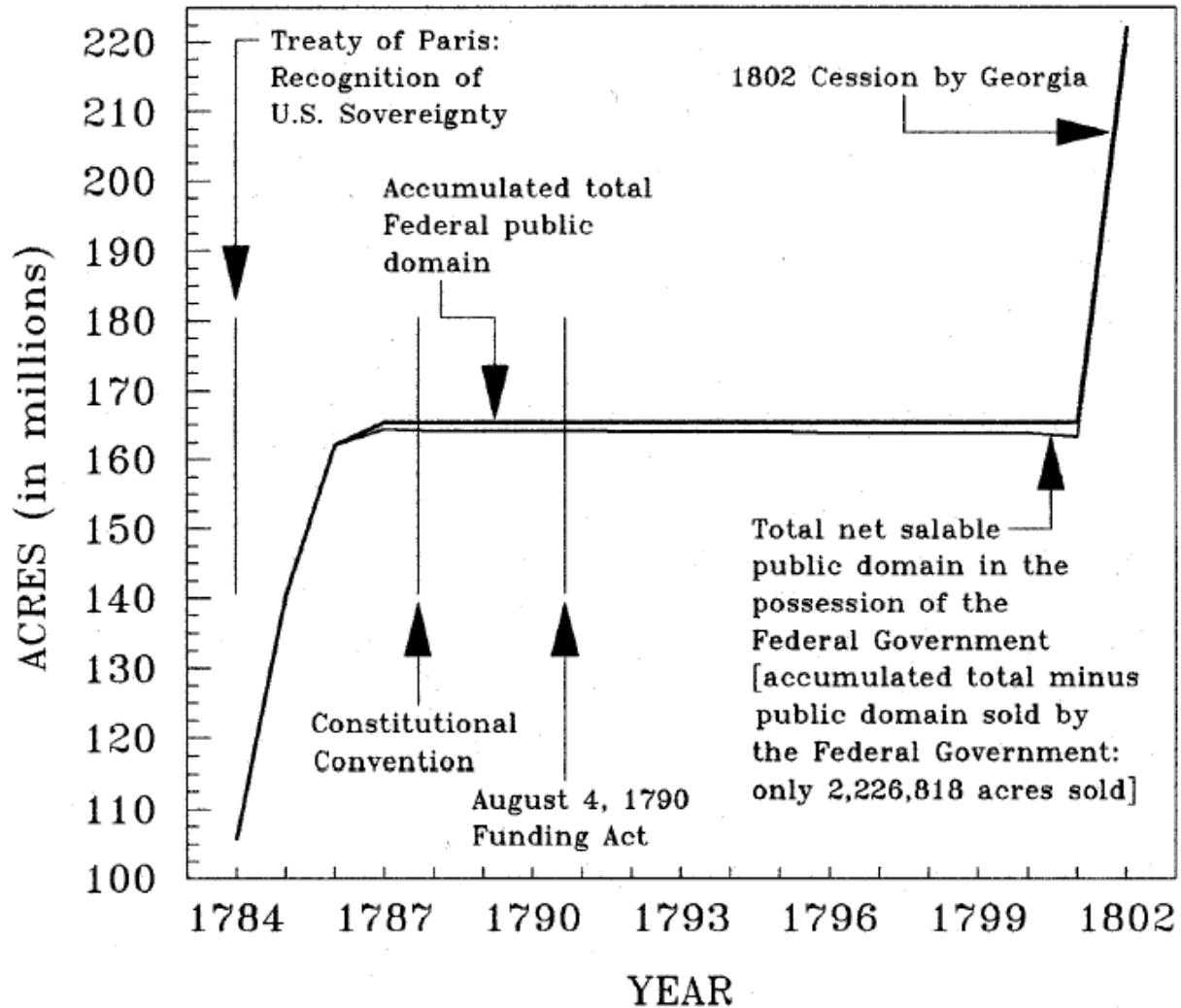


Figure 1 *Total and Net (Total minus Sales) Accumulated Salable Acres Possessed by the Federal Government*

Source: Derived from Grubb (2007b, 146-7).

power vested in Congress was without limitation. (Donaldson 1884, 13; Gates 1968, 73-4) The new Federal Government was born land rich!

What Was the Value of These Federally Owned Land Assets?

Establishing the total asset value of the lands held by the Federal Government matters because these lands were to be used in some fashion to pay off or back the debts incurred

fighting the Revolution, which amounted to \$80 million in interest-bearing bonds in 1792. To do this an average price per acre of the public domain held by the Federal Government is needed. This is hard to come by as land is very heterogeneous and sales in this period were small and sometimes selective—meaning possibly unrepresentative. Given a true average nominal price, that price still has to be adjusted for inflation and deflation. Between 1784 and 1802, prices experienced large swings so that comparing values over time cannot be done in just nominal or current prices (Bezanson et al. 1936, 392-3; Grubb 2003, 1782-3). Given a true inflation-adjusted constant dollar average price of an acre, consideration must also be given to what might happen to that price if the Federal Government tried to sell all its land at once versus trying to sell it slowly over time. The Federal Government was such a large holder of land that trying to sell a substantial amount at once would likely depress the price. Given these formidable problems, presenting a range of estimates based on some likely average prices is the best that can be done.

Figure 2 presents four estimates of the value of the net salable public domain in the hands of the Federal Government in constant dollars over time. Each estimate is based on a different average nominal price for an acre of land that was reported in a different year. Because land is extremely heterogeneous, only the sale or pricing of reasonably large tracts can give some reassurance that the average price observed is close to a true average price. Only one estimate in Figure 2 uses an actual sale price from the period while the other three use official published prices, two set by Congress and one proposed by the Treasury Secretary, Alexander Hamilton.

Land had to be surveyed before being sold at public auction. Surveying and selling the public domain, including administration expenses, cost between three and six cents an acre. These costs were to be paid by the purchaser. Fees for application, registration, and patenting of land were around half a cent an acre and were also to be paid by the purchaser (Donaldson 1884,

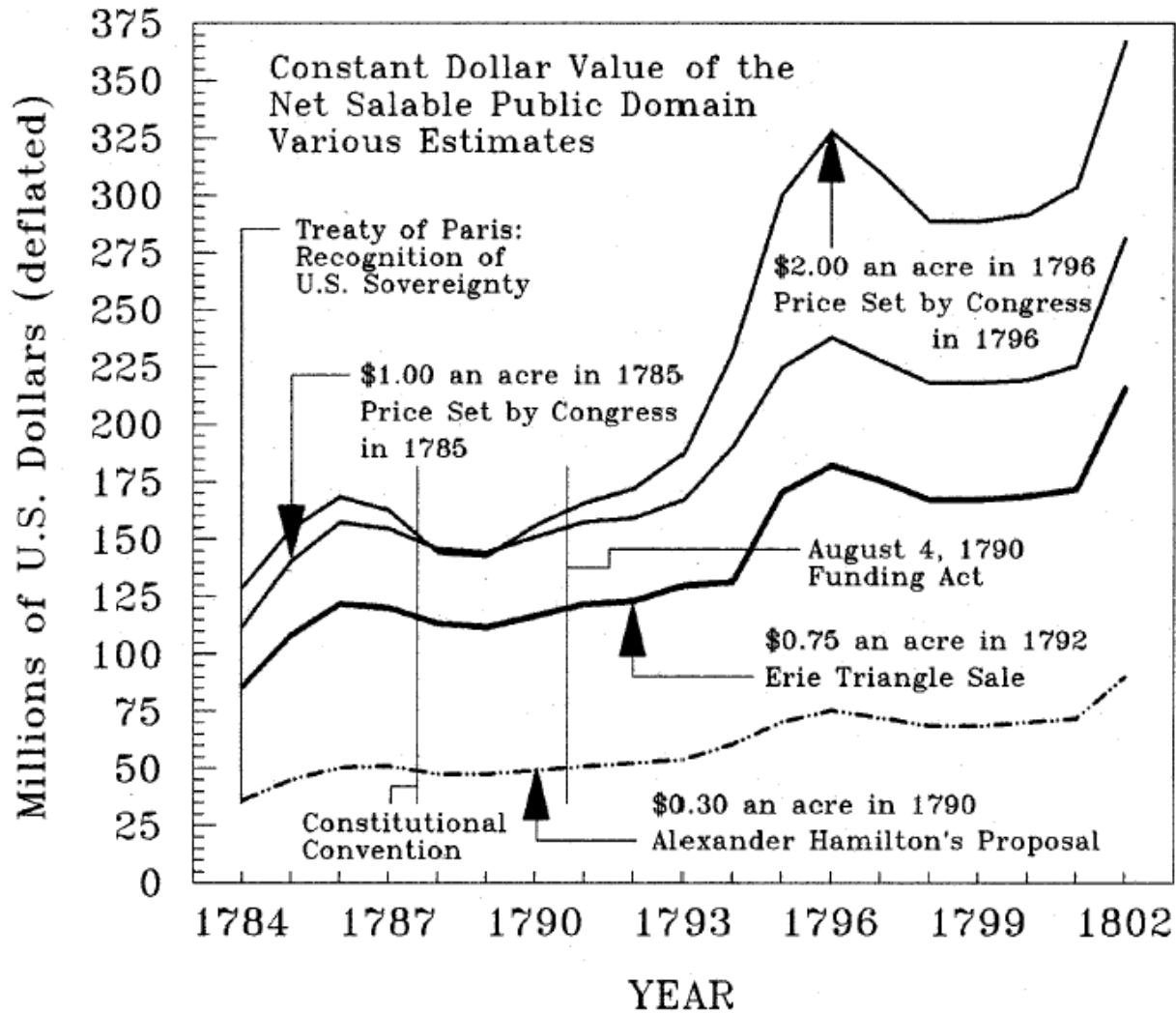


Figure 2 *Constant Dollar Value of Salable Federal Government Land Assets, 1784-1802: Various Estimates*

Source: Derived from Grubb (2007b, 148-51).

Notes: The estimates multiply the total acres of salable public domain remaining in the Federal Government's possession each year from Figure 1 by the nominal price per acre for the year that the respective nominal price was mentioned. From the year when the nominal price was stated, each estimate then inflation-adjusts the price to other years using the Bezanson et al. (1936, 392-3) price index renormalized to the year the nominal price was given.

189-90, 192, 197, 201-2).⁹

⁹ Carstensen (1963, xviii) and Hughes and Cain (2007, 98-9) indicate that the cost of acquiring, surveying, and selling the land exceeded the revenue received from land sales. Their source is Donaldson (1884, 17-21, 517-27). However, Donaldson's estimates show that this assessment arises from decisions made post-1830 to purchase new lands and especially to increase spending on Indian affairs (around 85 percent of the total cost) while at the same

The official minimum price set by Congress (which was not strictly adhered to) for purchasing the public domain which had to be purchased in large tracts—a minimum purchase of a 640 acre lot—was \$1.00 per acre in 1785 and raised to \$2.00 per acre in 1796 (Davis et al. 1972, 104-5; Donaldson 1884, 196-8; Robbins 1942, 15-6). If these prices are inflation adjusted from the year they were enacted, they are almost equal at \$1.00 per acre in 1785 dollars.¹⁰ In 1781, Pelatiah Webster (1969, 93) also placed the average value at one silver dollar per acre. The time series of real prices based on the nominal \$2.00 per acre enacted in 1796 yields the highest overall price series among the official prices enacted by Congress.¹¹

The fact that total land sales were not large through 1802 (see Figure 1) suggests that these official prices may be on the high side of the true value of the public domain. The slowness of sales early on, however, may also have been due to the need to survey the lands before they could be put up for auction and the slowness of such surveying (the basic survey scheme not being fully established until the Land Acts of 1796 and 1800) and to several states having retained significant western and northern lands outbidding the Federal Government for settlers by pricing their lands just under that set by the Federal Government for the public domain. In addition, the difficulty of achieving unison of action under the *Articles of Confederation* inhibited Congress' ability to adequately curb Indian hostilities in the West, stop squatters from occupying the public domain, dislodge the remaining British in the northern territories, and

time revenues from land sales were reduced via giving land away to railroads and homesteaders. The cost of surveying and selling the land was a trivial component by comparison. Pre-1830, and especially pre-1813, virtually all the value of its original cession lands was captured by the U.S. when sold. For example, spending on Indian affairs pre-1813 amounted to less than one cent, and pre-1830 to about one cent, per acre of the public domain.

¹⁰ Interestingly, the sale of the Chickasaw Trust Lands in the central Southern states from 1836 through 1850 (4,025,395 acres for \$3,326,404) yields an average nominal price of \$0.83 an acre which when deflation-adjusted back to 1785 would be approximately \$1.00 an acre (Gates 1968, 186; Bezanson et al. 1936, 392). Similarly, the bounty warrants for land given as compensation to veterans of the Revolution, War of 1812, and Mexican-American War when thrown onto the land market between 1848 and 1853 by these recipients for whatever cash they could get sold for an average of \$0.85 an acre (Lebergott 1985, 199-200).

¹¹ Under the credit payment system inaugurated in 1800 the U.S. sold through 1813 a total of 4,520,933 acres and received \$7,316,615 in actual cash or \$1.62 an acre with \$2,114,136 still owed, see Feller (1984, 12). Deflated back from 1813, \$1.62 an acre in 1813 is the same as \$1.01 an acre in 1785 (Bezanson et al. 1936, 392).

prevent Spanish blockades of the Mississippi River in the South. These inabilities may have in turn depressed the value of western lands until these weaknesses in the Federal Government were remedied by the adoption of the *Constitution* in 1789. To be conservative, the 1785 price of \$1.00 per acre or the 1796 price of \$2.00 per acre (inflation-adjusted) will be used here only to illustrate a possible upper-range-estimate of the value of the public domain.¹²

The lowest price series based on a large actual sale of the public domain and used here in Figure 2 as the best-guess estimate of the value of the public domain is for the Erie Triangle land transfer to Pennsylvania in 1792—202,187 acres for \$151,640 or an average price of \$0.75 an acre. In the same inflation-adjusted range is the average price of all public domain sold prior to 1800 (1,281,860 acres for \$1,050,085, i.e. \$0.82 an acre), the 23 July 1787 act that temporarily reduced the minimum price to \$0.67 an acre, and the proposed one million acre sale of Ohio territory to John Cleve Symmes in 1788 at \$0.67 an acre (Map 2 below; Donaldson 1884, 17, 197-8; Hibbard 1939, 51, 55, 100; *JCC* 34: 480; Rutland 1977, 10: 218). The 1792 estimate of \$0.75 an acre (inflation-adjusted) yields a total value for the public domain in the Federal Government's possession in 1802 (after the Georgia land cession) of \$215 million dollars.¹³

This best-guess estimate is surprisingly close to contemporary guesses. In an essay

¹² See Adams (1960, 3: 155); *ASP: PL* (1: 72-3); Davis et al. (1972, 102-3); Donaldson (1884, 189-90, 197, 201); Dougherty (2001, 175); Feller (1984, 9-10); Gates (1968, 128); Henretta et al. (1987, 221-4); Hibbard (1939, 41); Hughes and Cain (2007, 95-6); Jensen (1981, 414); *JCC* (30: 230-1, 262; 31: 685-6; 32: 213, 231, 238-41; 34: 331); Puls (2008, 200, 246); Robbins (1942, 9); and Map 2 below. A 13 February 1786 congressional report noted "with great satisfaction, the prospect of extinguishing a part of the domestic Debt, by sale of the western Territory of the United States; but [that] a considerable Time must elapse before that Country can be surveyed and disposed of..." (*JCC* 30: 65). In 1788 Congress budgeted \$4,000 for surveying western lands and \$20,000 for Indian treaties—to extinguish Indian land claims. By comparison, \$228,427 was budgeted for the Civil and Military Departments, \$58,000 for invalid pensions, and \$16,000 for contingencies (*JCC* 34: 389, 438). When lands did finally go up for auction some claim that they were worth more than the minimum price set by the government but that collusion among the bidders prevented prices from being offered that were above the minimum (Lebergott 1985, 199).

¹³ Pennsylvania paid for the Erie Triangle with U.S. public securities, a mixture of 6 percent, 3 percent, and deferred bonds, all taken at face value (par). Albert Gallatin rated the 6 percent bonds at par, but the 3 percent and deferred bonds at 60 and 75 percent of par, respectively (Adams 1960, 100, 197). Using these discounts the total paid was \$119,268 or \$0.59 an acre. Inflation-adjusted to 1802 this yields a total value for the public domain of \$177 million. Gallatin's assessment, however, is arbitrage inconsistent and so the adjusted values should be used with caution.

published in Philadelphia 25 April 1781 (republished there in 1791) Pelatiah Webster (1969, 493, 497) claimed the government had about 200 million acres of good land that could be sold and valued it at about one silver dollar per acre on average. He also did not think that the “profit from our western lands, when disposed of according to my plan, so very distant as many may imagine.” In 1789 Jedidiah Morse, the “father of American geography,” estimated that Congress had 220 million acres of “unappropriated western territory” to dispose of which had been “pledged as a fund for sinking the continental debt.” (Jensen 1981, 111; Morse 1792, 35)

Lastly, in part for heuristic purposes, a low estimate of \$0.30 an acre is also reported in Figure 2. This price does not come from an actual sale, but is the price that Alexander Hamilton, as Secretary of the Treasury, proposed for extinguishing some of the principal of the national debt by swapping it for western lands in his “Report on Vacant Lands” sent to Congress 22 July 1790. Hamilton also mentioned a price of \$0.20 an acre in his January 1790 “Report on Public Credit” (*ASP: PL*, 1: 1-5; Donaldson 1884, 198-9; Syrett 1962, 6: 90-1, 504). The logic Hamilton used to deduce these prices, however, is arbitrage inconsistent.¹⁴ Assuming Hamilton was not stupid implies that his price estimates meant something else or were intended to achieve some

¹⁴ Hamilton combined two observations to deduce his land price (Syrett 1962, 6: 91). First, the public domain had been sold for \$1.00 an acre which could be paid either in specie or in public debt at its face value. Second, the public debt had been trading for \$0.20 to \$0.30 specie per dollar of face value in the mid-1780s because it was in de facto default. Thus, Hamilton deduced that an acre of land was worth in specie \$0.20 to \$0.30 and not \$1.00. This deduction, however, is arbitrage inconsistent if specie and public debt at face value were both used to buy land—which apparently they were, see *ASP: PL* (1: 73); Donaldson (1884, 17, 201); Hibbard (1939, 41). Either anyone paying specie for land at \$1.00 an acre was a fool or anyone selling their public debt for \$0.30 of specie per dollar of value was a fool. Hamilton’s logic also ignores the appreciation effect that substantial land-for-debt sales would have on the market price of debt. The *Massachusetts Centinel*, 19 May 1787, reasoned that substantial land sales “must give an immediate rise to the current value of the securities of the United States, which are received in payment for lands as specie.” Jensen (1981, 384) concluded, “...it was the unsettled land of the United States that seemed the best justification for speculation in American [war] debt.” However, very few land sales, whether paid for in specie or in securities, were consummated before 1790. Little of the national debt, only about 1 percent of the interest-bearing debt, was actually pledged to be swapped for land by 1789 with most of these swaps not consummated until the early 1790s. These pre-1790 sales were restricted mostly to large negotiated swaps between Congress and land companies and not generally open to small purchasers at auction in a competitive venue (Grubb 2007a, 281; Donaldson 1884, 197-9, 201; Gates 1968, 69-71; Hibbard 1939, 41-55; Jensen 1981, 354-9; *JCC* 34: 371-3, 565-6). Land sales did not get the chance to drive security prices up to par before the 4 August 1790 Funding Act solved the security-funding problem causing their prices to re-inflate to face value. In conclusion, something is not right with Hamilton’s logic and his land price estimates should be used with caution (Grubb 2007b, 150).

other political purpose than simply reporting the true expected long-run equilibrium average constant-dollar price of an acre of public domain. Hamilton's rhetorical argumentation often has such a disingenuous tone that it is difficult to grasp its true meaning (Ratchford 1941, 52).

While not directly mentioned by Hamilton in his reports, one interpretation of what his \$0.30 an acre estimate really measures can be derived from the fact that in his reports he was talking about the possibility of selling or swapping most or all of the public domain at once to extinguish the national debt. Such a large sale or transfer of land in a short time interval would depress its market price. Thus, Hamilton's \$0.30 an acre could represent a guess about what would happen to the price of land if the Federal Government tried to unload all its land too quickly. Trying to gauge the effect on the market price of such a massive land dump is difficult, and Hamilton's estimate, as shown in Figure 2, will be taken here as a best guess of this.¹⁵

Given the estimates in Figure 2, how dollar-asset land rich was the Federal Government? The national debt between 1792 and 1802 hovered around \$80 million and tax revenues per year ranged between \$4 and \$15 million (Gordon 1998, 206; Grubb 2007a, 281; *Historical Statistics* 1975, 2: 1104). Using the Erie Triangle estimate (inflation-adjusted and securities discounted), the value of the public domain in the possession of the Federal Government was over \$95 million in 1786 and over \$147 million in 1796. The Federal Government was not just born land rich, it was born dollar-asset rich! Paul Wallace Gates concluded (1968, 56), "The transfer of these territories probably did more than anything else at the time to give prestige to the government."

¹⁵ The effect of throwing such a large amount of land onto the market at once might be gauged from what happened with the Bounty Act of 1847 which awarded land warrants to war veterans amounting to about 68 million acres of the public domain. About 85 percent of these bounty warrants were thrown onto the market in exchange for cash between 1848 and 1853. These land warrants ended up trading at about \$0.85 per acre. The government's minimum price per acre at that time was \$1.25. As such, the effective market price was about two-thirds of the minimum government price for an acre of the public domain (Lebergott 1985, 199-200). By analogy, throwing all the public domain onto the market at once in 1790, about 164 million acres at that time, could well have depressed the price in the marketplace to well over a third below the minimum price set by the government.

What Should Be Done With These Federally Owned Land Assets?

States considered the lands they had ceded to the national government were to be used to satisfy the debts incurred to gain independence. This was the prominent theme in the congressional debates over ceding western lands to the national government, and after 1780 Congress continued to link its ceded land assets with the national debt (Donaldson 1884, 60-81; Gates 1968, 61-2, 124; Jensen 1981, 58). For example, on 5 September 1782 a congressional committee favored “ceding of the western lands, to be sold to ‘discharge the national debt.’” (Hibbard 1939, 33) A 1786 congressional report recommended that, “The whole product [from sales of western lands]...is [to be] appropriated for the payment of the principal and interest of the national debt, and no part thereof can be diverted to other purposes.” (*JCC* 30: 65)

Prominent founding fathers echoed this theme. In a letter to Nathaniel Chipman, 22 July 1788, dealing with how the national war debt might affect Vermont tax-wise if it joined the union, Alexander Hamilton, said, “The public debt, as far as it can prudently be provided for, will be by the Western lands and the appropriation of some general fund.” (Syrett 1962, 5: 186) In a 19 June 1788 letter to Marquis de Lafayette, George Washington remarked, “When the people find...the burdens of war shall be in a manner done away by the sale of western lands...these blessings will be referred to the fostering influence of the new government. Whereas many causes will have conspired to produce them.” (Fitzpatrick 1939, 29: 522-6)

In the 1780s the expectations of both the public and among the founding fathers, as well as the political mandates accompanying the land transfers from the states, were that the lands so transferred to the Federal Government were to be used to pay for the cost of the War for Independence (Feller 1984, 6; Jensen 1981, 246, 359, 384). But exactly how this should be done was not made clear. What choices existed for satisfying such expectations and mandates?

How are a Government's Debts and (Land) Assets Related: What Choices Are There?

A government's debts and (land) assets are related through its budget constraint which connects its cash flows to its capital stocks. The government's yearly tax revenue (T_i) minus its yearly expenditures (G_i) must equal the change in its stock of net capital assets ($A_i - D_i$), where A are salable capital assets—e.g. inventories of specie, bank stock, and land, and D are the face value of its debt liabilities—principally callable perpetuities with the principal payable only at the government's discretion for the U.S. after 1790.¹⁶

$$T_i [(t * I_i) + O_i] - G_i [(1 - k_i) * R_g * D_i + E_i] = \Delta(A_i - D_i)$$

For the Federal Government after 1790 the principal tax revenue (T_i) came from a tariff (t) on current imports (I_i), with O_i representing all other current-year tax revenues such as from the whiskey tax. Yearly expenditures (G_i) comprised the interest the Federal Government owed on the face value of its current stock of interest-bearing debt ($R_g * D_i$) that it does not default on ($1 - k_i$), where k_i is the default rate ($0 \leq k_i \leq 1$), with E_i representing all other current-year expenditures, such as military expenditures.

When the government has a budget surplus [$T_i - G_i > 0$] it has excess revenue and, assuming that it is not in default on its interest payments (i.e. that $k_i = 0$), it must either increase its stock of assets [$A_{i+1} > A_i$] and/or pay down and retire some of the principal on its debt [$D_{i+1} < D_i$]. When the government has a budget deficit [$T_i - G_i < 0$] then the shortfall in revenue must be covered either by selling some assets [$A_{i+1} < A_i$] and/or borrowing more [$D_{i+1} > D_i$] and/or

¹⁶ Debt liabilities (D) include both interest-bearing bonds (B) and non-interest-bearing fiat paper money (M), i.e. $D = B + M$. The Federal Government did not issue new M after 1779 and the new *U.S. Constitution*, by convention vote in 1787, prohibited the Federal Government from issuing new M thereafter (Farrand 1996, 2: 308-10; Grubb 2006a, 43-4, 60-2). As such, only the B portion of D factors into G . Paying down or retiring any of the face value of the principal, either of B or M , without liquidating assets, however, would still require a current-year budget surplus ($T - G > 0$). As part of the debt restructuring plan of 1790, the Federal Government effectively and irrevocably defaulted on the remaining M issued prior to 1780 that was still outstanding in 1790 (Grubb 2007a). As such, distinguishing between B and M in the model is not necessary.

increasing its default on its interest payments ($k_{i+1} > k_i$). If an important goal of the government is to protect its creditworthiness by keeping $k_i = 0$, then increasing k is not an option but a last resort. If the government has no assets (\mathbf{A}) then it has to increase its debt liabilities (\mathbf{D}).

However, increasing \mathbf{D} via interest-bearing liabilities raises \mathbf{G} in the future [$(\mathbf{R}_g * \mathbf{D}_{i+1}) > (\mathbf{R}_g * \mathbf{D}_i)$] which puts increased pressure on the budget to stay in deficit [$\mathbf{T}_{i+1} - \mathbf{G}_{i+1} < 0$], particularly given that in this period the Federal Government's ability to raise taxes in the near future was tightly constrained, i.e. it is likely that per capita $\mathbf{T}_i \geq \mathbf{T}_{i+n}$. This scenario puts the government in an unsustainable long-run position, putting pressure on the government to increase k , i.e. to default in the near future (Taylor 1950, 5). This pressure on future k would be incorporated into current expectations and so lead to an increase in \mathbf{R}_g today thus further constraining the government's ability to escape its current budget deficit anytime soon and further increasing the likelihood of a near-future default.

This last scenario fits the United States in the late 1780s as James Madison explained it to Thomas Jefferson on 24 October 1787,

Such is the state & prospect of our fiscal department that any new loan however small, that should now be made, would probably subject us to the reproach of premeditated deception. The balance of Mr. Adams' last loan will be wanted for the interest due in Holland, and with all the income here, will, it is feared, not save our credit in Europe from further wounds. It may well be doubted whether the present Govt. can be kept alive thro' the ensuing year, or untill the new one may take its place. (Rutland 1977, 10: 218; Swanson 1963, 36)

As such, the government's net asset position ($\mathbf{A}_i - \mathbf{D}_i$) should be an important factor in assessing its creditworthiness and for resolving any budget deficit problems. A positive net asset position functions as a safety valve that could potentially relieve the pressure to default when the budget unexpectedly falls into deficit. It is not the actual current revenue or contemporaneous cash flow from the sale of \mathbf{A} that matters to assessing the government's creditworthiness but \mathbf{A} 's

potential solvability to cover or back the government's current and future debt position. As a sovereign entity the Federal Government could not be forced to liquidate its assets to pay off its debts when in default like a private business. Nevertheless, default is costly to sovereign entities in terms of lost reputation, a lowered credit rating, and reduced access to borrowing in the future—a cost that the sale of capital assets could avert.

Between 1781 and 1790 the U.S. Federal Government made almost no interest or principal payments on the domestic portion of its debt (Taylor 1950, 2). In effect, $k = 1$ over the recent past so that even when the Federal Government started paying interest in full ($k = 0$) after 1790, its reputation for paying the interest on its debt would likely not fully recover until sometime after 1790—until after it had established a firm track record for always meeting interest payments. Expected budget surpluses did not look promising even after 1790—even after the new *Constitution* gave the Federal Government an independent power to levy taxes directly on the public (Taylor 1950, 5). The government's revenue expectations were in doubt given its inability to prevent smuggling and enforce tariff (t) payments; in doubt given fluctuations in tariff revenues (the main source of tax revenue) due to ubiquitous fluctuations in foreign trade (I_i); and in doubt given questions about the government's ability to raise other taxes (O_i) considering the public's willingness to engage in violent large-scale tax revolts, e.g. Shay's Rebellion 1786-7, the Whiskey Rebellion 1794, and Fries' Rebellion 1798.¹⁷

All three rebellions were tax revolts that involved calling out the regular army on a substantial scale to confront its own citizens. The Whiskey Rebellion witnessed the only time a sitting U.S. President as commander-in-chief has taken the field at the head of an army. The founding fathers were aware that public resistance was a constraint on raising new taxes. In late

¹⁷ See Bouton (1996); Dougherty (2001, 103-28); Edling and Kaplanoff (2004); Richards (2002); Syrett (1972, 17: 2-6, 9-58, 61-72, 77-8); Szatmary (1980); Tindall (1988, 320-1, 333-4).

1789 James Madison, Congressman from Virginia, wrote to Alexander Hamilton, the Secretary of the Treasury, that, “In my opinion, in considering plans for the increase of our revenue, the difficulty lies, not so much in the want of objects as in the prejudices which may be feared with regard to almost every object. The Question is very much What further taxes will be *least* unpopular?” (Syrett 1962, 5: 439)

Hamilton may have also doubted the government’s ability to raise enough revenue to meet expenses. In late 1789 as Secretary of the Treasury he broached the possibility of quietly approaching the French to see “...if the installments of the Principal of the debt [the U.S. owed France] could be suspended for a few years, [as] it would be a valuable accommodation to the U.S.” (Syrett 1962, 5: 426, 429) Letters between Hamilton, as Secretary of the Treasury overseeing the tariff revenue tax, and his port agents often alluded to the problem of smuggling, the difficulty of enforcing the tariff, and the difficulty of collecting tariff revenues. As one customs officer put it in late 1789, “The difficulties that have occurred in the Execution of the laws respecting the Customs have been infinite, and present themselves daily. The System itself is the most complicated and embarrassing of anything that has employed my attention...[and] the Owners pay with reluctance...others not at all without compulsion; and the law provides none.” (Syrett 1962, 5: 422, 427, 459-64; 1972, 17: 6-7)

The first full year of tariff revenues, 1 October 1789 through 30 September 1790, yielded \$1,903,709. This sum was less than half of what was needed to pay the interest on the nation’s \$77 million interest-bearing debt, let alone meet any other expenses of government (Syrett 1962, 6: 87; 1965, 9: 3). Hamilton expected revenue shortfalls from the tariff to continue and suggested new taxes, such as the Whiskey Tax. This in turn sparked the 1794 Whiskey Rebellion (Tindall 1988, 301, 320; Syrett 1963, 7: 225-36). The yearly value of imports fluctuated greatly between

1789 and 1811 making tariff revenues uncertain and difficult to forecast (North 1966, 19-32, 228). This was due in part to the problem the U.S. had, as a new nation, establishing trade treaties with foreign powers (Tindall 1988, 316-8, 330-1). In 1786 James Madison decried “...the present anarchy of our commerce...” and Hamilton expressed a similar sentiment in 1794 in a letter to President Washington (Rutland 1973, 8: 502-3; Syrett 1972, 16: 261-79). The next Secretary of the Treasury, Oliver Wolcott, in his communication to Congress on 14 December 1796 regarding implementing new direct taxes, recounted the past volatility and future uncertainty of tariff revenues which were in part due to the unpredictable course of European wars (Wolcott 1796). Albert Gallatin, who would be Secretary of the Treasury under Thomas Jefferson, reached a similar conclusion in 1796 regarding past and expected future deficits and the risk of constantly covering such through new loans (Adams 1960, 3: 100-1, 105).

The annual Federal budget actually incurred deficits between \$1.4 and \$2.1 million in 1792, 1794-5, and 1799, and came close to being in deficit in 1793, 1798, and 1800 (Gordon 1998, 206; *Historical Statistics* 1975, 2: 1104). These deficits were not unanticipated. Creditors had to be concerned about the effects these deficits would have on the Federal Government’s ability to meet its future debt obligations purely from current tax revenues. As such, the net asset position of the Federal Government ($A_i - D_i$) in this period may have been especially important to establishing and sustaining the government’s creditworthiness. A positive net asset position would have been viewed as a safety valve to the pressure of increasing k to balance budget shortfalls in a world where the government’s yearly tax revenue capacity was still in doubt.

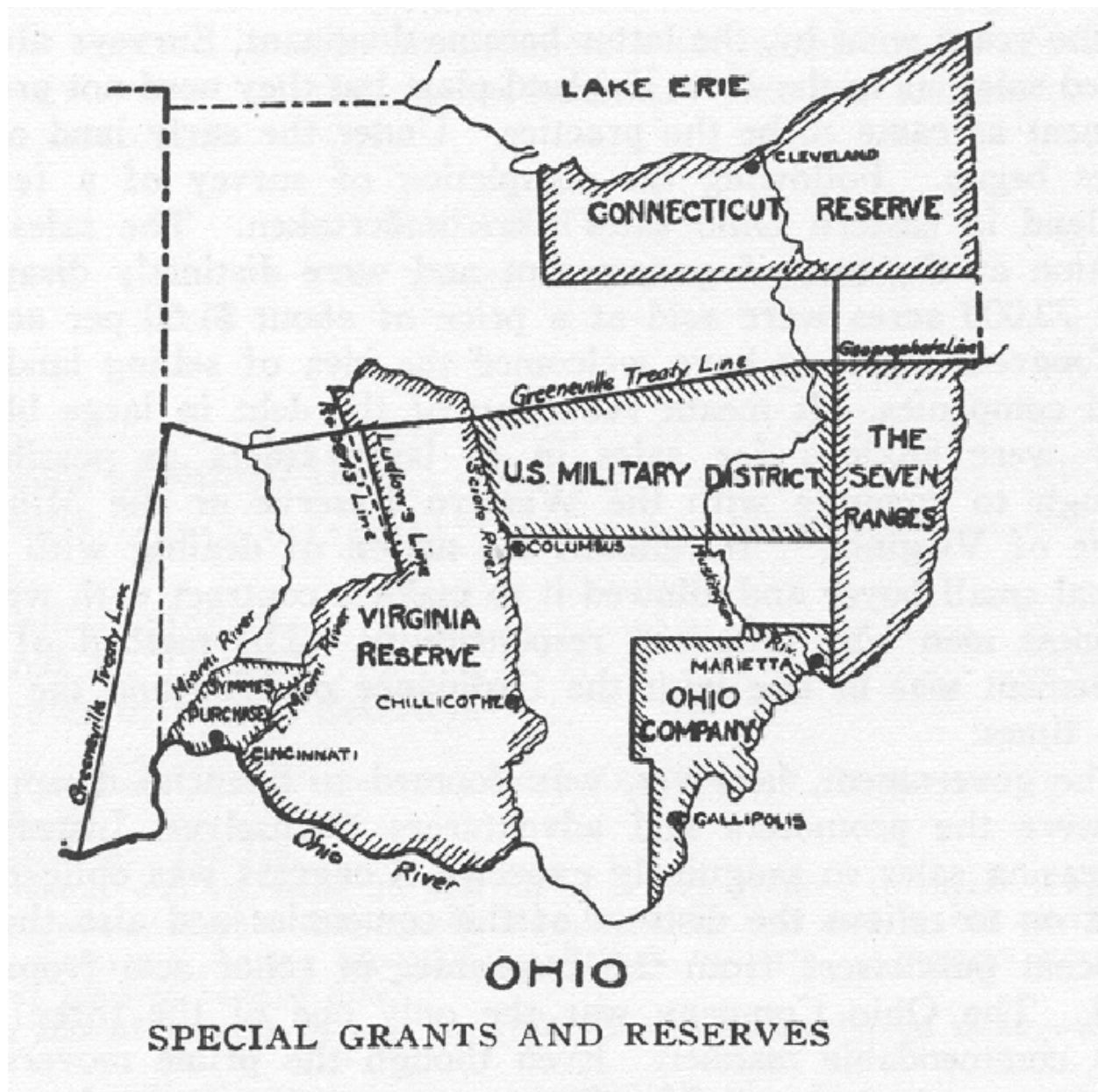
But How Should the Public Domain Be Used to Support the National Debt?

The budget constraint model above suggests that there were two basic options for using the public domain to support the national debt. The first option would be to sell or swap land (A)

for debt (**D**) as quickly as possible thereby reducing **D** to zero or as close to zero as possible. This would take pressure off the budget by reducing the current yearly expenditure of (**G_i**) by reducing (**R_g * D_i**). In essence this would be like starting with a clean slate by clearing the books of as much old war debt as possible. The second option would be only to sell the land (**A**) when a good price could be had to pay down **D** and in the meantime hold the land in reserve as backing for **D**—a safety valve for when yearly tax revenues might fall short and meeting the interest payments on **D** purely out of current revenues was in doubt. Gallatin articulated these two options in his *Sketch of the Finance* in 1796 (Adams 1960, 3: 155-6).

a. Option One:

Between 1784 and 1790, there was much discussion and some plans, both executed and yet to be executed, to sell or swap the public domain for national government debt (**A** for **D**). The idea of liquidating war debts via land transfers was not strange. For example, one essayist argued in the *Salem Gazette*, reprinted in the *Pennsylvania Gazette*, 22 June 1785, “Our national debt is small, our resources almost untouched, and our means of discharging it,...nearly inexhaustible... The sale of vacant lands, the property of the continent or state, should not be strained for the highest price, but be immediately sold for the most they would readily bring.” (Jensen 1981, 246) In the state cessions of lands to the national government, some states reserved lands for paying their soldiers and war debts, e.g. Virginia and Connecticut held on to sizable chunks of Ohio as their “western and military reserve” lands, see Map 2. Congress itself had offered land bounties to soldiers as inducements to enlist during the Revolution. In addition, land companies sought to acquire large yet-to-be-surveyed tracts of the public domain in part hoping to exchange war debt obligations for said lands. In 1787 the Ohio Company offered to purchase one and one-half million acres and the Scioto Company another five million acres of the public domain from



Map 2 *Example of Lands Not Ceded to the Federal Government But Retained by the States, Plus Some Early Prospective Land Sales, Grants, and Reserves, in the Ohio Territory*

Source: Hibbard (1939, 53). See a similar map in Sakolski (1932, 100).

Congress. In 1788 Judge John Cleves Symmes made a similar offer for two million acres between the Great and Little Miami Rivers, see Map 2. Exchanging or selling land for war debt

was a prominent theme and seen by many as the solution to the national government's financial distress. Merrill Jensen (1981, 384) concluded, "...it was the unsettled land of the United States that seemed the best justification for speculation in American [war] debt."¹⁸

The founding fathers were aware of and talked about these possibilities. For example, on 23 October 1787, Edward Carrington wrote to Thomas Jefferson, who was in Paris at the time, in reference to the land sale schemes just mentioned,

This mode of sale will relieve the U.S. of much expense, and the progress of the sales promise to be sufficiently rapid to give our people early relief from the pressure of the domestic debt. I am inclined to believe that some successful experiment might be made for the sale [of] a part of the territory in Europe, and have suggested a trial with a few Ranges of the surveyed Townships. (Boyd 1955, 12: 256-7)

James Madison wrote to Jefferson on 24 October 1787 on the same issue and, after talking about the woeful state of national government finances and borrowing prospects, said,

Upwards of 100,000 Acres of the surveyed lands of the U.S. have been disposed of in open market. Five million of unsurveyed have been sold by private contract to a N. England Company, at 2/3 of a dollar per acre, payment to be made in the principal of the public securities. A negotiation is nearly closed with a N. Jersey Company for two million more on like terms, and another commenced with a Company of this City for four million. (Rutland 1977, 10: 218)¹⁹

William Findley, congressman from Pennsylvania, claimed that proposals for large sales of the public domain were still being made in 1790. He said that,

Flint and Parker had agreed to purchase three millions of acres. To the second session of the New Congress, Scriba made proposals for four or five millions. And Hannibal William Dobbeyne proposed to take more than all the others, and to settle it with people from Ireland. These proposals were referred to the secretary of the treasury [Hamilton], while he was privately preparing the funding system: but *he never reported on them*....If the proposals of Messrs. Parker, Dobbeyne, and others, which were offered before the funding system was originated, had been accepted, it is a moderate computation to

¹⁸ See Adams (1960, 3: 221); Donaldson (1884, 17, 82-5); Friedenbergh (1992); Gates (1968, 62, 70-1); Hibbard (1939, 10-4, 44-55); Jensen (1981, 32, 352-6, 359, 384-5); *JCC* (6: 946; 17: 808; 25: 681-94; 32: 155-7, 242-3, 276, 345-6, 350-1, 376-7; 33: 692-7, 701-2; 34: 80-1, 177, 181-2, 213-7, 247-2, 331-4, 371-3, 467-8, 473-4, 476, 540-2, 565-6); Livermore (1939, 74-214); Robbins (1942, 10-1); Sakolski (1932, 1-191); Sumner (1968, 2: 251-70).

¹⁹ Of the last three sales mentioned, the first two were only partially executed and not paid for until after 1792 and the last sale failed to be executed, see *ASP: PL* (1: 59-60, 63, 66-8, 73, 115, 236-7); Donaldson (1884, 17, 201); Hibbard (1939, 43-55); Livermore (1939, 134-46).

suppose that fifteen millions of dollars would have been redeemed. (Taylor 1950, 62)

Hamilton, himself, in his 1790 “Report on Public Credit” proposed one plan whereby a full third of the national debt would be extinguished by swapping it for land (Syrett 1962, 6: 91-2).

The problem with this option—to sell all the land as quickly as possible to reduce **D** by as much as possible—was that dumping a lot of land on the market at once would likely reduce its price significantly. At \$0.75 an acre in 1790, or even at \$0.50 an acre, there was enough land to completely pay off the interest-bearing debt, but if the price was driven down to Hamilton’s proposed \$0.30 an acre there was not enough so that afterwards **A** = 0 but **D** > 0 (Grubb 2007a, 280-4).²⁰ Under such an outcome there would be no asset cushion or safety valve for the Federal Government to fall back on in case its current budget fell into deficit, which as explained above was not an unlikely or unexpected possibility. In such an event the government would be forced to increase **D** to meet the shortfall, which as explained above was an unsustainable long-run position as increasing **D** increased future **G**. This would likely worry creditors in that the government’s future creditworthiness might come into question which would in turn raise **R** thus also increasing future **G**, or even cause the government to lose access to borrowing in the near future.²¹ The potential for the government’s creditworthiness to unravel after such a liquidation (swapping or selling all its land to liquidate as much of its debt as possible) would seem high. In addition, if the Federal Government sold all of its lands at once it would lose leverage over populations in the territories regarding issues of local governance and new state formation.

²⁰ In 1790, if all the public domain was exchanged for interest-bearing public debt at \$0.30 per acre that would still leave **D** = \$28 million (\$77 million in debt [**D**] minus \$49 million in land [**A**]). Such a move would also mean that the Federal Government may have had a harder time distinguishing between interest-bearing debt (\$77 million in face value in 1790) and non-interest bearing debt (another \$81 million in face value in 1790). Directly swapping land (**A**) for debt principal (**D**) makes the interest-bearing distinction between types of **D** irrelevant. As such the government would have found it harder to default with impunity on its non-interest bearing debt in 1790 (the Continental Dollars still outstanding) as they in fact successfully did. See Grubb (2007a, 280-4).

²¹ The founding fathers did not articulate such directly or clearly. This is an analytical conclusion not one based on positions clearly articulated by actors at the time, but one that seems consistent with the history and behavior of the parties involved. See also Henretta et al. (1987, 210-2).

b. Option Two:

If the public domain could be pledged to back the national debt only, i.e. held in reserve to meet budget deficit emergencies only—with the interest on the national debt paid out of current revenues, and the public domain only sold slowly over time at good prices with these proceeds dedicated to retiring debt principal, then the creditworthiness of the Federal Government might be more safely ensured. The basic idea was not strange. The linkage of land assets to the “backing” of public financial instruments was deeply rooted in the American experience. Colonial governments formed land banks where a subject’s land served as collateral for loans of government paper money. A colony’s paper bills of credit were understood to be backed or collateralized not by specie but by the mortgaged land assets of the colony.²²

Financiers understood the importance of a “pledge” of security by the government to the backing of its debts to foster public confidence in its debt position. For example, William Bingham, a director of the *Bank of North America*, in a letter to Alexander Hamilton, U.S. Treasury Secretary, on 25 November 1789 explained (Hamilton had solicited advice on how to fund the national debt from leading financiers and politicians such as Bingham),

The Credit of the Funds [the national debt] must essentially depend on the permanent Nature of the Security; & if that is not to be relied on, they will fall in value, the disadvantage of which, Government will experience by the payment of an exorbitant Interest, whenever it is compelled to anticipate its revenues, by the Negotiation of domestic Loans. ... If we offer a less Substantial Security, we must Submit to a consequent Depreciation in the Value of our Funds.... A Government should therefore pledge every security it can offer, to engage the Confidence of the public Creditors, which, if once impaired, the pernicious Effects can be felt in all its future Dealings. (Syrett 1962, 5: 540-1)

Bingham’s reference to “security” of a “permanent nature” would seem to mean government capital assets. And the only capital assets the Federal Government possessed at this time in any substantial quantities were its western lands.

²² See Grubb (2006b); Kemmerer (1939); Perkins (1994, 44-6); Rabushka (2008); Ratchford (1941, 10-2, 18, 21-2).

Financiers in Congress and among the founding fathers, such as James Wilson, also understood the importance of pledging land as security in order to secure loans (Jensen 1981, 222). In 1784 Congress considered the “vacant territories” in its possession to be a “capital resource.” (*JCC* 26: 315-6) Congress’ Board of Treasury recommended in 1786 that the proceeds of the first half-million acres of its western territories surveyed and put up for sale be pledged as “Collateral Security” for a current loan of \$500,000 to the national government (*JCC* 31: 893). Both financiers and Congress knew that lands were capital assets that affected credit.

Along a similar vein, Hamilton in July of 1782 wrote, “The disposal of the unlocated lands will hereafter be a valuable source of revenue, and *an immediate one of credit.*” (Syrett 1961, 3: 105—italic added) As Secretary of the Treasury he said in his January 1790 “Report on Public Credit,”

It is presumable, that no country will be able to borrow of foreigners upon better terms, than the United States, because none can, perhaps, afford so *good security*. Our situation exposes us less, than that of any other nation, to those casualties, which are the chief causes of expense; our incumbrances, in proportion to our real means, are less, though these cannot immediately be brought so readily into action, and our progress in resources from the early state of the country, and *the immense tracts of unsettled territory*, must necessarily exceed that of any other. The advantages of this situation have already engaged the attention of the European money-lenders... (Syrett 1962, 6: 89—italics added)

Option Two became the founding choice. With the 4 August 1790 Funding Act Congress restructured its debt position by turning all its interest-bearing national debt into callable perpetuities with the yearly interest paid out of current-year revenues. The public domain was pledged to back that debt. In particular, the proceeds from any sale of the Federal Government’s western lands were dedicated to retiring the national debt. There was no rush, no pressure, and no mandate to reduce **D** via land sales immediately. The salient feature of the act with respect to the use of the public domain reads,

That the proceeds of the sales which shall be made of lands in the western territory, now belonging, or that may hereafter belong, to the united states, shall be, and are hereby appropriated towards sinking or discharging the debts, for the payment whereof the United States now are, by virtue of this act may be, holden, and shall be applied solely to that use, until the said debts shall be fully satisfied. (United States Congress, *The Debates and Proceedings in the Congress of the United States*, 2: 2251)

Hamilton sent this act to William Short, U.S. agent in Europe—principally Holland—for securing U.S. loans, who reported that “the acts of Congress were well known here.” Dutch bankers who advised and interacted with Short in 1790 would also engage heavily in American land speculation within the next two years as the Holland Land Company (Livermore 1939, 205-14; Syrett 1963, 7: 6, 176, 178). The importance of this part of the funding act is revealed in Hamilton’s notes that he prepared 1 December 1790 to aid President Washington in his second annual message to Congress. Therein, Hamilton’s states as his first item,

Confidence that measures for the further support of the public Credit and for the payment of the interest and gradual extinguishment of the principal of the public debt will be pursued with zeal & vigour. And that as one mean to this a plan for the sale of the Western lands will be adopted, which will give them the effects intended, appropriating them to the sinking fund... (Syrett 1963, 7: 172-2)

The importance of debt being backed by land can also be seen in William Short’s May 1791 letter to Hamilton where he suggests in reference to potential European lenders that “It is possible also that it might be an agreeable circumstance to them to render them bonds for these loans or any part of them receivable in the land office of the U.S. for the purchase of lands agreeable to the prices fixed by law. This is only an idea which occurs as being an additional security against depreciation.” In August 1791 Hamilton answered Short with “There can be no objection to making the bonds...receivable in payment for lands at the price or prices which *shall* be fixed by law...” (Syrett 1965, 8: 325; 9: 2)

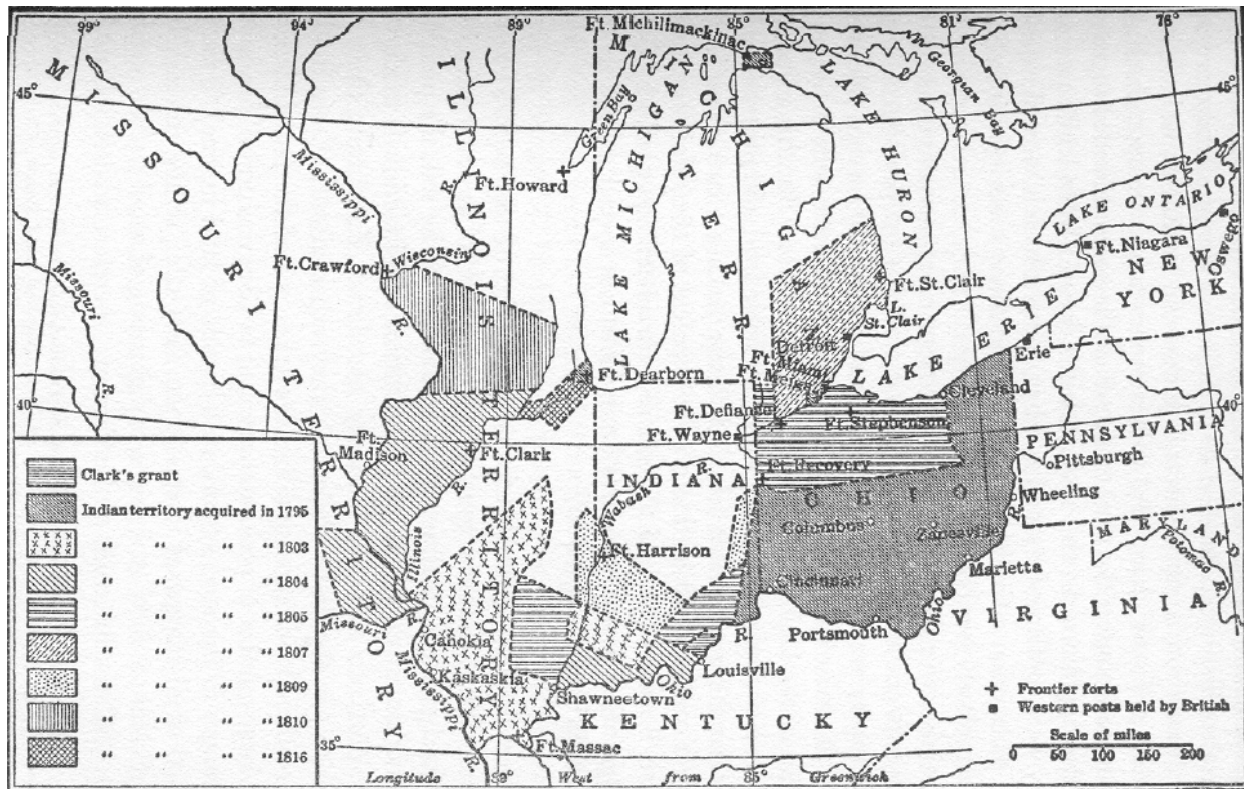
Contemporaries knew how much land the Federal Government had, knew its approximate value, and believed the government had pledged the public domain and had the potential to sell

chunks of it if necessary to cover and service the national debt. It is the pledge to back and eventually redeem that debt with land assets, rather than any promise to quickly sell those assets to retire the debt right away, that mattered most.²³ Contemporaries could also observe the Federal Government following through on this pledge. Some of the first monies from land sales post-1790 going into the sinking fund created by the 1790 Funding Act to redeem public debt were from the 1792 Erie Triangle land sale to Pennsylvania (Adams 1960, 3: 113, 197). By the mid-1790s the Federal Government may have been seen as a good credit risk in spite of its recent checkered past of defaulting on its debt payments, because by the early 1790s it had acquired enough land assets and had credibly committed those land assets to fully backing and then eventually redeeming its debt. The Federal Government's land assets made it solvent.

How Should the Land Be Controlled, Distributed, and Sold?

Non-European Native Americans (Indians) occupied much of the western lands ceded by the states to the national government. Land was to be sold by the national government, not by the Indians. As such, the Federal Government via treaty and coercion acquired land cessions from Indians when needed, amounting to about 22 million acres between 1795 and 1802 (Lebergott 1985, 211). See Map 3. Federal Government policy was to prevent hostilities between Indians and white settlers, but when conflicts arose the government was often powerless to stop them and when the government did have the power it was seldom tolerant of Indian resistance. The de facto policy was to treat Indians like bears and wolves. They were on the land and could be a dangerous nuisance if they did not voluntarily vacate lands coveted by white settlers. In case of

²³ For more on the land-to-debt linkage, see Grubb (2007b, 136-41); Robbins (1942, 15); Taylor (1950, 40); Syrett (1962, 5: 526); and the United States Congress, *The Debates and Proceedings in the Congress of the United States*, 1: 647-54 (13 July 1789); 2: 1345-7 (22 February 1790); 4: 1314 (15 December 1794), 1017-8 (23 December 1794); and 5: 60 (18 February 1829). Even by 1832 congressmen still referred to the requirement of applying the proceeds from the sale of public lands first to payments on the national debt and only after the national debt was paid off could they use the proceeds for some other use (United States Congress, *The Debates and Proceedings in the Congress of the United States*, 5: 1452 (27 December, 1832), 1475-8 (4 January 1832)). See also Jensen (1981, 414).



Map 3 *Indian Cessions to the Federal Government in the Northwest Territories, 1789-1816*

Source: Robbins (1942, 23).

hostile resistance, like bears and wolves, Indians were to be forced out or killed. This was often done by local militias, but sometimes by Federal military involvement.²⁴

In 1786 Virginia delegates proposed that Congress “destroy [the Indians] if they do not make concessions” in the Ohio territories. In a letter to General Josiah Harmar in 1790, General Henry Knox, Secretary of War, in reference to hostilities by the Indians in the Ohio region said,

²⁴ See *ASP: PL* (1: 21-2, 63, 66, 146, 173); *JCC* (5: 616-7; 6: 1076-9; 1082-3; 25: 681-94; 26: 134-5, 152-4, 275; 27: 453-65, 625-6, 658; 28: 88, 118-20, 136-9, 159-62, 172-4, 330-3, 423-6, 431-2; 29: 735-7, 806, 822; 30: 133-5, 185-95, 257-8, 340, 342-3, 346-53, 368-81, 425-9; 31: 490-3, 562-3, 656-8, 760; 32: 66-9, 237-8, 266-9, 327-32, 347-9, 365-76; 33: 385-91, 407-8, 410-11, 454-63, 477-81, 504-5, 696-7, 707-14; 34: 59-60, 108, 124-6, 139-40, 160, 164-5, 267-9, 299-300, 326-7, 342-5, 368-71, 411-4, 423-5, 476-9). The number of American troops both militia and Federal deployed in battles against the Indians was relatively small and thus relatively inconsequential in terms of costs and efforts. Being under 2,600 men and often under 1,000 men, their numbers were many times smaller than the troops employed in battles during the Revolution, the War of 1812, the Mexican War, and the Civil War. Their numbers, and hence cost and effort, were on the order of the forces deployed to crush Shay's Rebellion in 1787 (Dougherty 2001, 107-21; Gates 1968, 59-61; Henretta et al. 1987, 227-30, 239, 243-5; Jensen 1981, 357-9; Pul 2008, 205-9; Tindall 1988, 318-9).

“No other remedy remains, but to extirpate, utterly, if possible, the said banditti.” After a few military setbacks, General “Mad Anthony” Wayne with a force of about 2,600 men broke Indian power over the region at the battle of Fallen Timbers near the mouth of the Maumee River in 1794 and thus secured the Ohio and Indiana territories for the U.S. government. The template was set for Federal Government dealings with Native Americans for decades to come.²⁵

For whites, the public domain became a fact in 1784 with the Virginia cession. Between then and 1787, Congress confirmed its authority over the ceded lands and established the basic principals and policies of land distribution and governance for decades to come. This was accomplished by the passage of three great ordinances—the Ordinance of 1784, the Ordinance of 1785, and the Northwest Ordinance of 1787—initiated under Thomas Jefferson and then fleshed out and carried forward by others in Congress—with the 1785 and 1787 Ordinances superseding the 1784 Ordinance. These ordinances codified many of the intentions stated by Congress as early as 1780 regarding the ceded territories. They established conditions and procedures in the territories for moving from direct Federal rule through democratic self-government and finally to the formation and admission as new states into the union under terms of equality of representation with the original 13 states in Congress. They outlined potential new states. When new states were admitted to the union, however, they did not get possession of the remaining public domain within their borders. The Federal Government retained possession of its unsold lands regardless. This gave the Federal Government some continuing leverage over fledgling states. Finally, a provision in the Ordinance of 1784 to ban slavery in all the lands west of the Alleghenies after 1800 was lost in Congress by a single vote, but the subsequent Northwest

²⁵ See Dougherty (2001, 107-12); Gates (1968, 59-61); Henretta et al. (1987, 227-30, 239, 243-5); Hibbard (1939, 41-2); Jensen (1981, 357-9); Pul (2008, 205-9); Tindall (1988, 318-9).

Ordinance of 1787 was able to prohibit slavery in the territories north of the Ohio River along with prohibiting life-leases and quitrents.²⁶

The 1785 and 1787 Ordinances divided the Northwest Territories into uniform townships measuring six miles square. These townships were subdivided into 36 one-mile square sections—one square mile being equal to 640 acres. A half-section was 320 acres and a quarter-section was 160 acres, and so on. One section out of every 36 was reserved “for the maintenance of public schools.” These lands were to be surveyed using the “magnetic needle” to establish “true meridian” boundaries and then sold fee-simple into private ownership through competitive public auctions. Settlement was to be a lawful, patterned, and orderly process with secure property rights given to individual owners.

This rectangular pattern of property division and ownership, possibly derived from Dutch, Roman, and some New England precedents, was a rationalization of land-boundary structures. It contrasted sharply with the traditional “metes and bounds” land-boundary configurations found in England and in much of colonial and post-revolutionary America, such

²⁶ See Davis et al. (1972, 102-6); Donaldson (1884, 63-88, 146-63); Feller (1984, 6-9); Gates (1968, 59-74); Henretta et al. (1987, 202, 214, 224-5); Hughes and Cain (2007, 92-8); Jensen (1981, 348, 352-5); *JCC* (26: 118-21, 247-52, 255-60, 274-9, 324-30; 27: 446-53; 28: 251-6, 298-303, 309-17, 335-40, 342-3, 370-81; 30: 133-5, 230-1, 255-7, 262, 390-4; 32: 281-3, 314-20, 334-43; 34: 95-100, 107, 243-6, 277-81, 297-9, 301-3, 306-10); North and Rutten (1987, 25-7); Tindall (1988, 267-70). On 19 April 1784 Congress voted on whether the language banning slavery in all the western territories ceded to the national government should remain in the 1784 Land Ordinance. Votes in Congress were by state and a majority of the 13 states were needed to pass the motion. Delaware and Georgia were not present and New Jersey only had a single delegate present, who while voting “yes” being his state’s only delegate present meant, by rule, that New Jersey’s vote would not count. That left 10 states of which 7 were needed to pass the motion. Not only did the six states north of Delaware vote for the motion but every single delegate from those states (13 in total) voted for it. This was, however, one state short of the seven needed for a majority. The motion failed. Maryland, Virginia and South Carolina voted “no” with every single delegate except Thomas Jefferson from those states (7 in total) voting against the motion. North Carolina was divided with Williamson for and Spaight against. The motion would have passed (received seven state “yes” votes) if any one of the following had happened: one more New Jersey delegate would have attended and voted yes; Spaight from North Carolina would have voted yes; either Hardy or Mercer from Virginia would have voted yes; or Delaware delegates would have been present and voted yes. Finally, if the motion had been worded in the reverse, namely if the motion would have been to remove the words banning slavery from the original draft of the 1784 Land Ordinance, then that motion too would have failed and the ban would have stayed. When the vote is reversed only three states would have cast yes votes—four short of the majority needed to pass such a motion and so the ban would have stayed in the Ordinance. The razor’s edge margins by which the historical trajectory of the nation could have been dramatically and fundamentally changed on 19 April 1784 is a rather sobering consideration (*JCC* 26: 247).

as in Virginia and Maryland. Under metes and bounds, land boundaries typically followed natural contours and breaks, such as creeks, ridge lines, swell impressions, and so on, which in turn led to irregular land-plot shapes and sizes. The choice to replace metes-and-bounds with rectangular land boundaries had economic advantages. Rectangular patterns reduced survey costs (the government had to survey land before selling it); reduced boundary disputes between land owners by making boundaries clear, unchanged by natural events (e.g. naturally shifting river beds), and easy to adjudicate; and reduced odd lot sizes and shapes that were harder to use and to sell. All these advantages increased the overall value of the public domain and hence what price the government could command when sold. It did this in part by enhancing the value of an average acre to a private property owner by rationalizing land market transactions with less idiosyncratic qualities to boundaries thereby creating firmer property rights.²⁷

The 1785 and 1787 Ordinances also established minimum acreage sizes for public land sales, i.e. 640 acres. In 1800 it was reduced to 320 acres, and in 1804 it was reduced again to 160 acres where it stayed through 1819. Why was such a large minimum purchase requirement chosen? The average farm size in the northern U.S. in 1800 was only 125 to 150 acres (Lebergott 1985, 185). As such, a 640 acre plot, or even a 320 acre plot, was several times the size of the typical farm. Therefore, the minimum acre purchase requirement did not reflect some natural economies of scale in farming for this period.

The choice to require these large minimum acre purchases may have been due to economic advantages gained by the government. For example, this requirement reduced survey costs. It allowed more land to be surveyed in a given space of time and so brought land under the auctioneer's gavel more quickly. Surveying a square of 640 acres would amount to "chain" or

²⁷ See Adams (1960, 3: 222); Davis et al. (1972, 102-6); Donaldson (1884, 189-90, 197, 576-8, 615-6); Feller (1984, 6-8); Henretta et al. (1987, 224-5); Libecap and Lueck (2009).

“pace” measuring four miles of distance. By contrast, if the government divided the 640 acres into four 160-acre squares or into sixteen 40-acre squares, then surveying would amount to chain or pace measuring six and ten miles of distance, respectively. In addition, more corner boundary markers would need to be established—4 for one 640-acre square, 9 for four 160-acre squares, and 25 for sixteen 40-acre squares.

The large minimum acre purchase requirement may have served another economic function, namely allowing purchasers to capture the externality effects on adjacent acres of land improvements the purchaser implemented. In a frontier region where much of the land is initially unoccupied the value of a particular acre depends on the degree of development of adjacent acres. Selling large lots, much larger than the typical farm, meant that the purchaser would be able to reap some of the spill-over value on adjacent acres of his land improvements within his purchased allotment. He could capture that externality effect, being now capitalized into the value of that land, by selling those adjacent acres in the marketplace. If land were sold in smaller lots, buyers would not necessarily know who would own the adjacent lands or what would be done with them. As such, buyers could not gauge the true value of any particular small lot that they were considering for purchase from the government. Large minimum tract sales may have been a way to make sure that initial development externalities could be internalized by the purchaser and so maximize the sale price the government could command at auction.

Finally, the 1785 and 1787 Ordinances also established the minimum price per acre, payment credit conditions, and methods of sale. Minimum prices per acre were discussed above and appear to reflect a rough guess as to what the deflated long-run equilibrium value of land was given the pace of settlement. The method of sale was to be at competitive public auction venues in the relevant districts where the land was, with the lands sold for fee-simple ownership

to the highest bidder above the minimum price. In 1785 only immediate payment was accepted, but over time the upfront payment portion was reduced and the length of credit extended. In 1787 payment requirements were amended to one-third upfront and the rest in three months. In 1796 they were further amended to one-half paid within 30 days and the remainder in one year. After 1800 they were amended even further to one-fourth paid within 30 days and the balance over four years including 6 percent interest. The credit system often suffered from abuse, corruption, and non-payment. The auction system occasionally suffered from corruption and non-competitive manipulation at the local level. The credit part of this system ended in 1820 with a return to upfront payment only.²⁸

The new *Constitution* affirmed Congress in possession and jurisdiction over the western ceded territories and in its intention to create new states out of said territories. It also protected the border-sovereignty of existing states and guaranteed all states, new and old, republican forms of government (Article IV, sections 3 and 4). Congress under the *Constitution* carried the structure of the Land Ordinances of 1784, 1785, and 1787 created under the Confederation forward largely intact, making only minor modifications periodically thereafter.²⁹

Epilogue

Choices made over land policy in the founding era had a lasting impact on the nation. They established the Federal Government as the largest land owner in North America and as the manager of the public domain, a role in which it has continued to the present day. The western lands from the Appalachian Mountains to the Mississippi River had been more or less peaceably and successfully transferred from the original 13 states to the national government. The national

²⁸ See Davis et al. (1972, 102-6); Donaldson (1884, 189-90, 197, 576-8); Feller (1984, 8-13); Gates (1968, 59-72, 121-43); Henretta et al. (1987, 224-5); Hughes and Cain (2007, 92-100).

²⁹ See Davis et al. (1972, 104); Donaldson (1884, 13); Feller (1984, 7); Gates (1968, 73-4). For the debates on these issues at the 1787 Constitutional Convention, see Farrand (1966, 1: 22, 28, 117, 121, 202, 206, 226-7, 231, 237, 245; 2: 39, 47, 133, 159, 188, 220, 313, 316, 321, 324, 454-66, 470, 628; 3: 119-20, 223-7, 404).

government established rules whereby these lands could be acquired by citizens and new states could be formed. The rights to property had been clearly defined. Land would be distributed by the auctioneer's gavel for cash and credit in fee simple ownership to competing citizens and to soldiers who earned their land warrants through service to the nation. There would be no "colonies" of eastern states in the western territories, no life-leases, no quitrents, and, in the Northwest Territories, no slavery. There would be no landed aristocracy given large tracts of the public domain based on nobility of birth, political power, or private treaties with Native Americans. By 1800 some 387,000 Americans lived in the trans-Appalachian territories, about 7.3 percent of the U.S. population, and two new states carved out of these territories had been formed and admitted to the union, Kentucky and Tennessee. The sectional conflict over power within Congress that threatened to dissolve the union at the end of the Revolution was transformed into a contest over new state formation and admission, a peaceful conflict that would last at least a half century before devolving into civil war (Henretta et al. 1987, 202, 204, 214, 221-9; *Historical Statistics* 1975, 1: 8, 24-37).

The Federal Government was born land rich and asset-value rich. It chose to use its land assets to back the national debt, pledging the proceeds from land sales to be used, by law, only to redeem the national debt and nothing else. This land policy helped stabilize the national government's financial position and put the U.S. on a sound credit footing by the mid-1790s. The national debt was finally paid off in 1834, and Congress debated what it could now do with its remaining land. Freed from the 1790 Funding Act restriction, Congress could either continue to sell its land but now use the revenues on other projects, or Congress could devise some other land-transfer schemes that did not involve getting significant revenues from land sales, such as homesteading, land grants for transportation development, and the creation of national parks.

One final legacy of these early choices was perhaps unintended, but nevertheless became a game-changer for U.S. history. By 1800, the Spanish/French obstruction of American navigation through New Orleans threatened not only the value and viability of U.S. western lands, but posed the threat of these areas breaking away to form a separate country or merging with nearby Spanish/French colonies. In order to retain the loyalty of these western citizens and the viability and value of these lands, Thomas Jefferson sought free navigation of the Mississippi River and the purchase of New Orleans from Napoleon—the current owner. An unexpected change in fortune led the French to offer the whole Louisiana territory to the U.S. on relatively cheap and easy terms. The 1803 Louisiana Purchase more than doubled the size of the U.S. with almost all these lands falling under Federal jurisdiction and control to be administered following the policies laid down in the 1780s and 1790s. While not without constitutional controversy—it is unclear that purchasing foreign territories is within the constitutional power of Congress, the end result continued the Federal Government's land possession and management role into the 20th century (Henretta et al. 1987, 231-4; Lewis 1998, 12-32; Tindall 1988, 347-52).

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