Notes de recherche — Research Notes

The Economy of Colonial America: A Critical Note on the Real Per Capita Income Estimates

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The revisionist real per capita net national income estimates for colonial America, derived from Alice Hanson Jones' pathbreaking wealth estimates, do not differ significantly from Robert Gallman's long-standing estimates. And, though it appears that the revisionist estimates are, unlike Gallman's, derived from a firm empirical base, in actual fact the new estimates suffer from the same empirical difficulties as do the old. However, new empirical evidence from early Canada is presented which serves to support the assumptions that underlie the construction of Gallman's national income estimates and growth rates as opposed to those of the revisionists.

Les estimations du revenu national net par capita pour l'Amérique coloniale des révisionnistes, dérivées des estimations originales d'Alice Hanson Jones, ne diffèrent pas de façon significative de celles de Robert Gallman. Bien qu'il semble à première vue que les estimations des révisionnistes, contrairement à celles de Gallman, soient dérivées d'une base empirique assez large, elles souffrent dans les faits des mêmes difficultés empiriques que les anciennes. Cependant, de nouvelles données empiriques du Canada à ses débuts sont présentées et soutiennent les hypothèses de Gallman, plutôt que celles des révisionnistes, dans ses estimations du revenu national et des facteurs de croissance.

Robert Gallman's long standing 1720 real per capita net national income (NNI) estimates for colonial America as well as his and George Taylor's real per capita NNI growth estimates have been criticized by the late Alice Hanson Jones and, more recently and in a similar vein, by John McCusker and Russell Menard. These authors point out that Taylor's and Gallman's estimates are not based on direct empirical evidence but rather are indirectly deduced from information drawn heavily from the post-colonial period.[1] Thus, in reality, the Taylor and Gallman estimates are educated guesses. Consequently, in place of Gallman's estimates, Hanson Jones and Menard and McCusker have produced new real per capita NNI estimates for 1720 which are derived from Hanson Jones' per capita wealth

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1. Alice Hanson Jones, *Wealth of a Nation To Be: The American Colonies on the Eve of the Revolution* (New York: Columbia University Press, 1980), p. 74, argues that, "The difficulty with all these estimates has been the lack of empirical data, for either verification or rejection." John J. McCusker and Russell R. Menard, *The Economy of British North America, 1606-1789* (Chapel Hill and London: University of North Carolina Press, 1985), p. 262, repeat Hanson Jones' reservations: "[Taylor and Gallman] based their judgments on indirect evidence and deduction rather than on observations of measured growth." See also pp. 260-261.

estimates for 1774.[2] But it is not clear from Hanson Jones and Menard and McCusker's work what differences actually exist between the old and the new revised estimates.[3] This paper seeks to establish the extent to which the Gallman estimates and the revised estimates actually differ — whether Hanson Jones' path breaking work estimating the real wealth of colonial America in 1774 has, in effect, significantly altered our understanding of the level of economic development of colonial America for 1720.[4]

It should be noted that the per capita NNI estimates discussed in this article represent but one, albeit critical, measure of the flow of goods and services produced in an economy over a one year period. NNI represents a measure of the produced wealth which individuals in a given society have, on average, available to them.[5] Moreover, NNI per capita, is only a very approximate measure of the material well-being of individuals in society. It does not, for example, take into account how the NNI is distributed. Thus a high NNI per capita may be associated with the bottom 40 percent of a population being very poor in terms of real income. Or conversely, a high NNI per capita may be associated with the bottom 40 percent of the population being relatively well off, all depending, of course, upon how the NNI is distributed. Thus, when focusing on NNI per capita only the average potential material well-being is being examined. By examining the growth of per capita NNI, one is, in effect, evaluating the growth of a society's average potential material well-being. Ultimately, the implications of the revisionists' critique of Gallman's and Taylor's estimates must be placed in the context of what these criticisms imply for our understanding of the level and growth of the average level of material well-being in colonial America.

Hanson Jones' per capita income estimates are derived from a per capita wealth estimate for 1774 divided by wealth to income ratios of 3.0 to 3.5. But while Hanson Jones' per capita wealth estimate is well grounded in the wealth estimates she derived from sample probate records for colonial America, there are no direct empirical bases for choosing these wealth to income ratios. But one reason for doing so, according to Hanson Jones, is that these ratios generate estimates of per capita income which "...lie within the range of the

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2. Hanson Jones, *Wealth of a Nation To Be*, pp. 61-63, 369-374; McCusker and Menard, *The Economy of British North America*, pp. 55-56, 267. One can argue that Hanson Jones' income estimates are as much based on indirect evidence and deduction as are Gallman's. Since Hanson Jones' income estimates are deduced from wealth estimates, the critical determinant in constructing the income estimates is the wealth to income ratio which Hanson Jones deduces from indirect evidence, including Gallman's own findings, pp. 62-66, 369-374.

3. Hanson Jones, *Wealth of a Nation To Be*, pp. 77-79; McCusker and Menard, *The Economy of British North America*, p. 267.

4. The major contribution of Alice Hanson Jones' *Wealth of a Nation To Be*, is related to her construction of wealth estimates for the colonial America of 1774. These estimates are derived from sample probate records and present us with a first ever snapshot of the amount and distribution of wealth in colonial America. One must emphasize, however, that wealth estimates (the value of individuals' assets at a given year) are not the same as estimates of the wealth produced in a given year, for which the NNI is one proxy. And probate records only record the value of an individual's accumulated wealth at death which, of course, is not the same as what that individual produced over the course of a year.

5. The NNI is the measure of produced wealth net of the value of the depreciation of capital which is the annual value of produced wealth required to replace the value of assets (such as plant and equipment) lost annually in the process of production. Claudia D. Goldin and Frank D. Lewis, "The Role of Exports in American Economic Growth during the Napoleonic Wars, 1793 to 1807," *Explorations in Economic History* 17 (1980), p. 9, estimate that the incorporation of the value of depreciation into Gallman's NNI estimates for 1774 would increase these estimates by only 1.7 percent. The NNI is equivalent to the net national product estimate of produced wealth. Another measure of produced wealth is net domestic product (NDP). This measure differs from the other two in that the NDP does not incorporate estimates of the net income earned by residents from the ownership of foreign assets. The NDP therefore measures only the value of goods and services produced in an economy.

estimate of Gallman of $60 to $70 per capita colonial output for 1774, as expressed in dollars of 1840 purchasing power."[6] Thus while Hanson Jones believes that her resulting per capita income estimates for 1774 can only be tentative, they are, of course, no different than Gallman's.[7]

Hanson Jones's income estimates for 1710-1720 are given in pounds sterling of 1774 prices. In order to make her estimates comparable to Gallman's, I generate estimates for 1710-1720 in terms of American dollars of 1840 purchasing power using Gallman's $60 to $70 per capita output estimate for 1774 (numbers Hanson Jones accepts) and Hanson Jones' suggestion that per capita output grew at 0.3 percent annually from 1700 to 1725, at 0.4 percent from 1725 to 1750, and at 0.5 percent from 1750 to 1775. My estimates for 1710-1720 range between $46 and $55 and fall within the $45-60 suggested by Gallman. Taylor's growth rate for 1710, on the other hand, would yield a slightly lower real per capita NNI of $48 for 1710 and $52 for 1720.[8] Hanson Jones provides no revision of Gallman's estimates for 1710-1720 per capita income nor of Taylor's "estimates" for that matter. (see Table 1).

Table 1 **Per Capita Net National Income in Colonial America for 1710 and 1720 (1840 prices)**

1774 NNI per capita	Jones		1710 and 1720 NNI per capita McCusker and Menard			
	1710	1720	1710		1720	
			0.3 percent growth rate	0.6 percent growth rate	0.3 percent growth rate	0.6 percent growth rate
Variant One						
$60.00	$46.00	$47.00	$49.00	$46.00	$51.00	$43.00
$78.00	$54.00	$55.00	$58.00	$48.00	$59.00	$51.00
Variant Two						
$51.00	$39.00	$40.00	$42.00	$35.00	$43.00	$37.00
$60.00	$46.00	$47.00	$49.00	$41.00	$51.00	$43.00

Note: The $60 and $70 pe capita NNI for 1774 are Gallman's. Jones' per capita income figures for 1774, given in pound sterling in 1774 prices, are equivalent to between $60 and $72. The $51 and $60 per capita NNI for 1774 are equivalent to Jones' estimate of between £10.7 and £12.5 sterling. The 1710 and 1720 per capita NNI for Jones are derived from her growth rates for 1710-1720 to 1774. McCusker's and Menard's 1710 and 1720 per capita NNI are generated using their preferred growth rates of 0.3 and 0.6 percent per annum.

Sources: See text.

6. Hanson Jones, *Wealth of a Nation to Be*, p. 371, argues that Gallman's 1774 per capita income estimates are between, what is equivalent to £9.6 and £11.2 pounds sterling in 1774 prices. Other reasons for her choice of wealth to income ratios are that they yield a range of income estimates consistent with her belief that per capita income in colonial America must have been at par with Britain's in 1774, pp. 370-371, 67-68, and with the work on colonial America by David Klingaman, "Food Surpluses and Deficits in the American Colonies, 1768-1772," *The Journal of Economic History*, 31 (1969); James F. Shepherd, "Commodity Exports from the British North American colonies to Overseas Areas, 1768-1772: Magnitudes and Patterns of Trade," *Explorations in Economic History*, 8 (1970); James F. Shepherd and Gary M. Walton, *Shipping, maritime trade, and the economic development of colonial North America* (Cambridge: Cambridge University Press, 1972); James F. Shepherd and Samuel H. Williamson, "The Coastal Trade of the British North American Colonies, 1768-1772," *The Journal of Economic History*, 32 (1972). All these reasons, of course, do not amount to direct evidence. At best, they form the basis for educated guesses.

7. Hanson Jones, *Wealth of a Nation To Be*, pp. 373-374.

8. Robert Gallman, "The Pace and Pattern of American Economic Growth," in Lance E. Davis, et al., *American Economic Growth: An Economist's History of the United States* (New York: Harper and Row,

McCusker and Menard also generate per capita estimates for 1720 using Hanson Jones' per capita income estimate for 1774. But unlike Hanson Jones they present their estimates in 1980 prices and assume annual per capita growth rates of between 0.3 and 0.6 percent from 1650 to 1774.[9] Thus, if one assumes that Hanson Jones' 1774 per capita income estimates fall between Gallman's $60 to $70 range, McCusker's and Menard's 1720 per capita income estimates, when calculated in 1840 prices, fall between $49 and $59 for the 0.3 percent annual growth rate, and, between $41 and $51 for 0.6 percent growth rate (Table 1). Once again, there is no revision of Gallman's per capita income estimates for the period 1710-1720.

A closer scrutiny of Hanson Jones' derivation of her 1774 per capita income estimates reveals that her 1720 estimates actually do not fall within the range of Gallman's estimates. Hanson Jones' estimates for 1774 lie between £10.7 and £12.5 sterling. Using her conversion factor of $4.15 hypothetical 1774 American dollars per 1774 pound sterling, I convert her pound sterling income estimates to $44 and $52 American in 1774 prices. These estimates are then converted to 1840 prices using the deflator of 86.0 given by Hanson Jones.[10] This in turn yields 1840 dollar estimates of per capita income of $51 and $60 respectively. Alternatively, Gallman's 1840 dollar estimates for 1774 per capita output of between $60 and $70 can be converted into pound sterling equivalents of 1774 purchasing power. Firstly, a deflator of 116.2, drawn from Hanson Jones, generates a 1774 dollar estimate of between $52 and $60. This is then divided by Hanson Jones' conversion factor of $4.15, yielding a 1774 pound sterling estimate of between £12.5 and £14.4.[11] In both cases, Hanson Jones' per capita income estimates are less than Gallman's by about 18 percent. Only if Hanson Jones had used a wealth to income ratio of between 2.5 and 3.0 could she have generated per capita income estimates similar to Gallman's.[12]

My 'correction' of Hanson Jones' 1774 per capita income estimates yields revised per capita output estimates for 1720 (Table 1). Hanson Jones' per capita income growth rates generate real per capita income estimates for 1720 ranging from $39 to $47 in 1840 prices. McCusker's and Menard's growth rates give rise to real per capita income estimates for 1720 of between $42 and $49 for their 0.3 percent annual growth rate, and, from $35 to $43 for their 0.6 percent annual growth rate. These revised estimates cluster about Gallman's lower-bound estimate of $45 for the period 1710-1720 and are less Taylor's would-be estimate of $52 for 1720.[13]

1972), pp. 20-24. To derive her per capita income estimates, Hanson Jones relies upon educated guesses for the per capita wealth of 1650, 1700, 1725, and 1750, and, her rigorously deduced 1774 wealth estimates. To these wealth estimates Jones applies her 3.0 to 3.5 wealth to income ratios. The resulting per capita income estimates generates her per annum growth rates (*Wealth of a Nation To Be*, pp. 77-78). George Rogers Taylor, "American Economic Growth Before 1840: An Exploratory Essay," *The Journal of Economic History*, 24 (1964), p. 429, suggests an annual growth rate of about 1 percent from 1710 to 1775 and no growth from 1775 to 1840. With a per capita net national income in 1840 of $90 (1840 prices), projecting backwards yields a per capita NNI in 1710 of $48 and, in 1720, of $52.

9. McCusker and Menard, *The Economy of British North America*, pp. 55-56.
10. Hanson Jones, *Wealth of a Nation To Be*, p. 10.
11. *Ibid*, p. 10.
12. The private nonhuman wealth per capita for 1774 given by Hanson Jones for the thirteen Colonies is £37.4 pounds sterling. Dividing by 2.5 and 3.0, yields per capita income estimates of £15.0 and £12.5 pounds sterling respectively. This is converted to American dollars of 1840 prices using Hanson Jones' $4.15 hypothetical American dollars per pound sterling for 1774 and her deflator of 86.0. This yields a per capita income of between $60.3 and $72.4 (*Wealth of a Nation to Be*, pp. 10, 54 Table 3.5, 63 Table 3.10). See also ibid., p. 370, on Gallman's suggestion of an appropriate wealth to income ratio.
13. See note 8, above.

Such revised estimates appear implausible if Gallman is correct in arguing that, on average, $42 to $45 per capita (in 1840 prices) was required to meet basic consumption needs in 1720 and that some economic surplus was produced at the time.[14] It is important to note that no evidence has yet been presented to challenge Gallman on this point. And, moreover, recent research on early Canada provides indirect empirical support of the Gallman thesis.[15] Thus, if one accepts the hypothesis that the typical colonist consumed about $45 in 1720 and that per capita income in 1720 was between $45 and $60 (Gallman's conjecture) together with Hanson Jones' 1774 per capita income estimates of between $51 and $60, there could only have been a growth rate of between zero and 0.53 percent per annum from 1720 to 1774. If, on the other hand, one accepts Gallman's per capita income estimates for 1774 there could have been growth rates, from 1710-20 to 1774, of between zero and 0.47 percent for his $60 estimate and of between 0.25 and 0.73 percent for his $70 estimate. In light of these growth rates, a growth rate of about 0.35 percent appears to be the most plausible one. Therefore, the 0.60 percent annual growth rate for this period favored by McCusker and Menard appears to be much too high.[16]

A lower growth rate for colonial America means that the population of colonial America did not, on average, experience the more rapid increases in material well-being suggested by the revisionists. If the revisionists had been correct and the colonial economy had grown by 6 percent annually, then the per capita NNI would have increased 13 percent in 20 years and by 43 percent in 60 years. If, however, one accepts the 3 percent annual growth rate as the most plausible one, then the per capita NNI must have grown by about only 6 percent in 20 years and by about 20 percent over a 60 year period. Moreover, if the

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14. Gallman, "The Pace and Pattern," pp. 20-21; Gallman, "The Statistical Approach: Fundamental Concepts as Applied to History," in George Rogers Taylor and Lucius F. Ellsworth, eds., *Approaches to American Economic History* (Charlottesville: University Press of Virginia, 1971), pp. 68, 74-76, 78.

15. My work on early Canada tends to corroborate Gallman's findings for colonial America. I find that the typical individual in the French colony consumed approximately what is equivalent to $36 U.S. in 1840 prices in the period 1695-1739. This is inclusive of the consumption of firewood, but excludes the consumption of fruits, vegetables, sugar, syrups, and fish; all of which are part of Gallman's estimate of total per capita consumption of $45 for colonial America. These items comprised about 17 percent of per capita consumption of freemen and house servants in Gallman's estimate (See "The Statistical Approach," p. 77). Applying this percentage to the Canadian total would yield $42 U.S. as the estimate for Canadian per capita consumption. Thus, if one rejects Gallman's suggestion for per capita American consumption as being significantly inflated one must demonstrate that the average white American colonist experienced a much lower standard of living, in terms of consumption, than the French-Canadian peasant. I apply American prices for wheat, beef, pork, and butter to Canadian quantity estimates of the consumption of these products to generate American dollar values in terms of 1839-1840 prices, which are $10.32, $8.77, $4.77, and $4.18 respectively, for a total of $26. This total is inflated to incorporate the value of items consumed for which a similar conversion procedure to American dollar values was not possible. For details see Morris Altman, "Economic Growth in Early Canada, 1695-1739: Estimates and Analysis," *The William and Mary Quarterly*, 45, 3rd series (1988), forthcoming, note 16, Table V, Table VII.

16. McCusker and Menard, *The Economy of British North America*, pp. 55, 269-268, argue that colonial growth must have exceeded the British annual growth rate of 0.3 percent for the relevant period. The weighted average of Hanson Jones' growth rates for this period is 0.42 percent. James F. Shepherd and Gary M. Walton, *The economic rise of early America* (Cambridge: Cambridge University Press, 1980), p. 141, suggest a growth rate of slightly below 0.5 percent per annum for the eighteenth century. Gallman's, "Pace and Pattern," pp. 20-22, data yield a growth rate of between zero and 0.75 percent annually from 1710-1720 to 1774. If per capita output in 1774 was $60 and in 1710-1720, $60 there could not have been any growth. If, however, per capita output was $70 in 1774 and $45 in 1710-1720 there could have been a growth rate of 0.75 percent per annum. Gallman, himself, argues for a growth rate of between 0.3 and 0.5 percent ("The Pace and Pattern" p. 22). Marc Egnal, "The Economic Development of the Thirteenth Colonies, 1720 to 1775," *The William and Mary Quarterly*, 32 (1975), p. 200, argues for a 0.5 percent annual growth rate for period 1720-1795, based upon an analysis of export data.

3 percent growth rate approaches the 'correct' growth rate, contrary to what McCusker and Menard argue, the colonial American economy grew no faster than the British.[17] As well, recent research on early Canada effectively demonstrates that a 3 percent growth rate in colonial America was no greater than what was experienced in the French colony, at least prior to 1740.[18]

One must conclude that Hanson Jones' wealth estimates, although clearly invaluable to understanding other aspects of colonial America, do not revise in any significant way, Robert Gallman's income estimates. His results stand up to Hanson Jones' and McCusker's and Menard's critiques even though they are not based on direct empirical evidence.

17. McCusker and Menard, *The Economy of British North America*, pp. 55, 269-268.

18. See Altman, "Economic Growth in Early Canada, 1695-1739." I estimate that the annual per capita growth of real gross domestic product (which is similar to NNI) in early Canada ranged from 5 to 6 percent from 1695 to 1739.