November 1997

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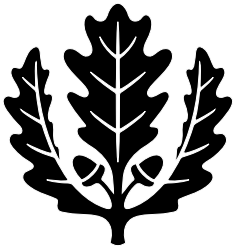
Published in Journal of Economic History, June 1998, 58(2): 494-510. See also the ”Errata” in 58(3): 871.



University of Connecticut

Department of Economics Working Paper Series

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Working Paper 1997-03R

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Abstract

Isolated Shaker communal farms stressed self-sufficiency as an ideal but carefully chose which goods to buy and sell in external markets and which to produce and consume themselves. We use records of hog slaughter weights to investigate the extent to which the Shakers incorporated market-based price information in determining production levels of a consumption good which they did not sell in external markets: pork. Granger causality tests indicate that Shaker pork production decisions were influenced as hypothesized, strongly by corn prices and weakly by pork prices. We infer that attention to opportunity costs of goods that they produced and consumed themselves was a likely factor aiding the longevity of Shaker communal societies.

This paper considers the ways in which decisions made by religious-communal farms in nineteenth century America differed from those made by contemporary family farms. Just how family farms made decisions in the past is an open issue, of course. Writers in the social history tradition have hypothesized the existence of a moral-economic *mentalité* in which farmers exchanged goods and labor outside of market settings. Economic historians, most notably Winifred Rothenberg, have challenged this interpetation by producing evidence of decisions made according to rational economic behavior, including price convergence over time, skill premia in labor markets, and positive supply elasticities in livestock markets.[1]

We contribute to this debate through examination of swine raising decisions in several of the nation's best known communal farms, those of the Shakers. Up to the middle 1840s, we find evidence that the Shakers made pork production decisions in accord with market information. In fact, we find stronger evidence of market orientation in Eastern Shaker pork production decisions than have other researchers who have studied Northeastern farmers. Despite limited involvement in pork factor and product markets, the Shakers processed available price information efficiently and acted as economic theory would predict. We also note systematic efforts to increase meat yields through breeding and creative slaughtering. Because the Shakers were primarily a *religious* commune, we describe the events surrounding the spiritually inspired decision to end pork production and consumption in the 1840s. Finally, we note the uneven acceptance of the ban. The Shakers were unable to end pork production altogether, in large part because of the demands for pork made by their hired hands. We associate this not with strictly economic motivations but with more general cultural issues. Especially in the Ohio River Valley, pork was a popular food

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[1]Two examples from a large literature on the moral economy are James A. Henretta, "Families and Farms: *Mentalité* in Pre-Industrial America," *William and Mary Quarterly* 35 (1978), 3-32; Allan Kulikoff, "The Transition to Capitalism in Rural America,"*William and Mary Quarterly* 46 (1989), 120-144. A work that suggests the existence of moral economies through the nineteenth century is Steven Hahn and Jonathan Prude, eds., *The Country side in the Age of Capitalist Transformation: Essays in the Social History of Rural America*. (Chapel Hill: University of North Carolina Press, 1985). An economic view is Winifred Barr Rothenberg, *From Market-Places to a Market Economy: The Transformation of Rural Massachusetts, 1750-1850*.

item that the hired workers and visitors expected to be provided. We find, then, a complex of motivations for deciding whether and how much pork to produce. The fact that prices were one influence among several is not a sign of their unimportance, but rather evidence that even in relatively isolated communes dedicated to things otherworldly, the influence of the worldly economy was considerable.

The Shakers were (and are, but since it is the historical Shakers that concern this paper, the past tense will be used) a Christian communal group. Some of their distinctive beliefs included the existence of a male and female Godhead, from which followed sexual equality, and active communication between Believers (a Shaker term for members of the sect) and denizens of the spirit world. Practices of the Society (their official name is the United Society of Believers in Christ's Second Appearing, the second appearing being in the body of their foundress, a poor and unlettered Englishwoman named Ann Lee) included pacifism, celibacy, confession of sins to elders, and joint or communal ownership of the Society's assets. Each Shaker received the same return for his or her labor: room, board, clothing, and the experience of divine proximity in a community of like minded Believers.[2]

Communal sharing of goods produced for internal consumption suggests that Shaker communities could be described as a socialist enclave. They even used a now familiar bromide in a recruiting broadside: "Each using according to need. Each enjoying according to capacity." Rather than Marxist principles, their inspirations were the early Christian communities described in *Acts of the Apostles*, but they were socialist nonetheless, if that term is taken to mean equal returns to labor and collective ownership of land and capital. Rather than consider the famous question of why America had no socialism, a more constructive question is how these communes survived for so many years while populated by so many people--up to 4,000 at their peak in the mid-nineteenth century--when they lacked institutions thought to be critical for the success of

[2]The standard history is Stephen J. Stein, *The Shaker Experience in America: A History of the United Society of Believers* (New Haven: Yale University Press, 1992).

present day economies such as private property and wage labor. Part of the success of the Shakers in nineteenth century America, we contend, was their ability to balance competing religious and economic concerns.[3]

With respect to external markets, the Shakers had originally sought separation from the outside world and economic self-sufficiency, as has been common among religious communes. Stein observed that "[t]he religious logic of the Shakers called for strict separation from the world in temporal affairs and a radical form of self-sufficiency." Similar to other religious communes the Shakers found it difficult to achieve independence from the outside markets: "The Believers aspired to independence, but in fact they became functioning members of the expanding market system in the United States." In addition to herbs and furniture, they sold a variety of products, such as brooms and garden seeds, in outside markets.[4] At the same time they produced other commodities solely for internal consumption and set up farms in each commune in order to raise essential foodstuffs for communal existence. Thus, the Shakers had a dichotomous approach to

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[3] Regarding the "socialist enclave," the economist Ludwig von Mises noted, in connection with the debate over the feasibility of socialism, "Such Socialism as we know at first hand exists only, one might say, in socialistic oases in what, for the rest, is a system based upon free exchange and the use of money." See his *Socialism: An Economic and Sociological Analysis* (New Haven: Yale University Press, 1951), p. 119. Regarding the bromide, see broadside, n.d., South Union, Kentucky. The bill left unstated whether the capacity was that of the member or the community. The Shaker success in meeting this ideal was known to no less an authority on socialism than Friedrich Engels, who wrote that the Shakers were "the first people to set up a society on the basis of community of goods in America, indeed in the whole world." (Quote from *Deutsches Bürgerbuch für 1845* in Stein 1992, p. 217.)

[4] For Shaker products and involvement in markets, see Edward Deming Andrews, *Community Industries of the Shakers* (Albany: New York State Museum Handbook 15, 1933); Priscilla Brewer, *Shaker Communities, Shaker Lives* (Hanover: University Press of New England, 1986), pp. 99-102; J. Worth Estes, "The Shakers and Their Proprietary Medicines," *Bulletin of the History of Medicine* 65 (1991), 162-184; and Stein, *Shaker Experience*, pp. 135-48. For agricultural market activity of other religious communes, see Metin M. Cosgel, "Market Integration and Agricultural Efficiency of Communal Amana," *Communal Societies* 14 (1994), 36-48 and John W. Bennett, "The Hutterian Colony: A Traditional Voluntary Agrarian Commune with Large Economic Scale," in Peter Dorner, ed., *Cooperative and Commune: Group Farming in the Economic Development of Agriculture* (Madison: University of Wisconsin Press, 1977).

markets, as noted by Andrews: "Shaker industries are readily divided into two classes--those pursued for the sake of supplying the needs of the society and those 'undertaken with an eye to the demands of the world outside.'" At various times, pork fell into each of these two categories.[5]

In economic matters the Shakers strove to maintain a balance between ideals of equality and the market-driven realities of changing opportunity costs. Agriculture was an activity in which ideals of equality were given frequent opportunity to be realized, as when a Family (a subunit of the larger community) or a community experienced a bad harvest while other nearby Shakers were unaffected. Following a wheat crop failure in 1788, all the New Lebanon, New York, Shaker Families contributed to a single kitty of wheat, which was then divided equally among them. The source does not indicate if this "equality" was an equal quantity of wheat for each family or if the quantity of wheat for each family was determined on a per capita basis, families being of different sizes. The Shakers also used markets to smooth out differences in available grain supplies. In 1862 part of the New Lebanon Church Family found its corn harvest small, and so arrangements were made by the community to "buy enough to make the First Order equal."[6]

At the same time, Shakers used prices determined in external markets to make decisions regarding production of consumption and intermediate goods. In some cases the Shakers clearly weighed costs and benefits before deciding to make a product themselves or to buy it. In the first half of the nineteenth century, the New Lebanon Shakers stopped raising flax "as it could be purchased more profitably" and at another time they switched from buying sugar to making it themselves after an unacceptable price increase. The large scale "vacuum pan" equipment used to

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[5]For a detailed discussion of Shaker relations with the world outside their communities, see Andrews, *The People Called Shakers* (New York: Oxford University Press, 1963), pp. 204-23. Stein, *Shaker Experience*, p. 135; Andrews, *Community Industries*, p. 27.

[6]Isaac Newton Youngs, "Concise View of the Church of God..." (1856). Manuscript no. 861, Edward Deming Andrews Memorial Shaker Collection, Winterthur Museum and Library, Winterthur, Delaware, p. 199. Western Reserve Historical Society Shaker Collection manuscript V:B-255, 17 November 1862.

make patent medicines from the roots and herbs they cultivated was easily converted to efficient production of sugar from maple sap.[7]

The Shakers raised hogs because, like many other Jacksonian era Americans, they were enthusiastic pork eaters. A diarist at the South Union, Kentucky, community looked forward to "a feast of Back bones & spare ribs" after the slaughter of November 1834. To illustrate gradual improvements in Shaker diets, Isaac N. Youngs recorded that the typical breakfast at New Lebanon c.1800 began with ham and potatoes, and at mid-century fresh pork was enjoyed at breakfast and spare ribs at supper in early winter, around slaughter time. The Shakers seem to have preferred pork to beef. In 1844, the New Lebanon Shakers reported to the state of New York that they had produced nearly 10 tons of pork and lard, compared to just over 8 tons of beef.[8]

Distinguishing between East and West in pork production, both for the Shakers and in the greater American economy, is useful. Over the course of the antebellum era, American swine production declined in the Northeast and grew to prominence in the Ohio River Valley. As early as 1828, New York farmers complained about competition from Western pork producers, brought home by the recent opening of the Erie Canal. Between 1840 and 1860, the New England swine population fell over 40 percent. On the eve of the Civil War, New York had one

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[7]Youngs, "Concise View," pp. 201, 213.

[8] See Paul W. Gates, *The Farmer's Age: Agriculture 1815-1860* (Armonk, NY: M.E. Sharpe, 1987 reprint of 1960 Holt, Rinehart, and Winston edition), pp. 214-216, and Lorena S. Walsh, "Consumer Behavior, Diet, and the Standard of Living in Late Colonial and Early Antebellum America, 1770-1840," in Robert E. Gallman and John J. Wallis, eds. *American Economic Growth and Standards of Living Before the Civil War* (Chicago: University of Chicago Press, 1992). These scholars concluded that antebellum Easterners, at least, ate more beef than pork, although previous historical writings suggested otherwise. "Feast": South Union Center Family Journal A, Kentucky Library, Western Kentucky University. Youngs, "Concise View," pp. 287-293. New Lebanon meat production: WRHS II:B-38. For convenience, manuscripts from the larger Shaker collections will be abbreviated as follows: WRHS = Western Reserve Historical Society Shaker Collection; LC = Library of Congress Shaker Collection; Andrews = Edward Deming Andrews Memorial Shaker Collection, Winterthur Museum and Library; NYSL = New York State Library Shaker Collection.

hog for every five residents; in Kentucky, swine outnumbered people two to one. As the young nation's regions began to specialize in agriculture, the future of large scale hog production, for the nation and the Shakers alike, lay to the West.[9]

In raising their swine, Western Shakers pursued careful, scientific strategies to increase production through selective breeding. In 1816, the Union Village, Ohio, Shakers imported a Bedford boar and three sows from England, which were misleadingly called "Big Chinas." Crossing with local "wood" (i.e. feral) hogs yielded the Warren County, or Shaker, hog of some local repute. Breeding this strain with the Berkshire in 1835, which was just then enjoying a burst of popularity, resulted in the Poland China. The success of this variety could be seen in the 1839 slaughter at Union Village, described by a proud Shaker as "half Berkshire & very fat." According to a leading historian of Ohio agriculture, the Poland China developed by the Shakers was "by far the most important breed in Ohio" at mid-century. The Pleasant Hill, Kentucky, Shakers introduced the Berkshire variety to Kentucky in 1836, and along with South Union experimented with Woburn, China, and Irish Grazier hogs as well. And easily could they afford to: in 1834 the two Kentucky Shaker communities owned some 835 swine, in addition to 390 head of cattle, 104 horses, and 1066 sheep.[10]

Pork production was an important part of the Western Shaker economies. South Union had been sending hogs and pork down the Mississippi since 1824, while Pleasant Hill sent theirs to market in Louisville. Even the shortlived West Union, Indiana, community sold 100 barrels of pork in New Orleans in 1825. At Union Village, the center of Western Shakerism, hog

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[9]Percy W. Bidwell and John I. Falconer, *History of Agriculture in the Northern United States, 1620-1860* (Washington: Carnegie Institute, 1925), p. 231; Howard S. Russell, *A Long, Deep Furrow: Three Centuries of Farming in New England* (Hanover: University Press of New England, 1976), pp. 361-362; Gates, *Farmer's Age*, p. 216.

[10]Robert L. Jones, *History of Agriculture in Ohio to 1880* (Kent: Kent State University Press, 1983), pp. 133-136; F. Gerald Ham, “Shakerism in the Old West,” Ph.D. dissertation, University of Kentucky (1962), pp. 227-228; LC Shaker manuscript item no. 104, 1 January 1840; Stein, *Shaker Experience*, p. 139; WRHS Shaker manuscript item II:B-68, 11 September 1834.

production was big business. In the early 1830s, the annual slaughter of some 300 hogs brought to the community some $4000. Some hogs were processed on-site, with the Shakers packing up to 2000 barrels in a year. Others were dressed and shipped to the vast packing plants of nearby Cincinnati, the famous "Porkopolis."[11]

Economic fluctuations caused commercial pork production by the Western Shakers to decline. After the Panic of 1837, ever fewer hogs were brought to Union Village for processing, perhaps because neighboring farmers were postponing slaughters or sales of their hogs in the hope of benefiting from later price increases. The Shakers responded by packing more of their own pork to counter the vanishing demand for their packing facilities. The Shaker packing business never recovered, however, and following the ban, sales of pork by the Union Village Shakers had ended by 1843. Although the most thorough study dated the end of hog raising among the other Western Shakers to no later than 1847, this is not quite accurate, as we discuss below.[12]

Eastern Shakers, mirroring geographical trends in American agriculture as a whole, raised swine on a smaller scale than their Western counterparts. Like many farmers, they fattened their hogs on potatoes and other crops, saving some corn for last. New York Shakers occasionally brought in a butcher from the outside rather than process the hogs themselves. Rather than experiment with cross-breeding varieties of swine, as Western Shakers were doing, the Watervliet, New York, Shakers, had other "scientific" practices: in December 1834, a Shaker there "killed a hog, partly for the purpose of trying an experiment & apertaining whether pork killed in the decrease of the moon will shrink more than that which [was] killed in [the] increase." While we might imagine that the trial yielded no great difference in dressed weights (no record

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[11]Filson Club Shaker Collection volume 4, p. 14; Ham, "Shakerism," pp. 226-228.

[12] Ham, “Shakerism,” pp. 226-228; U.S. Census of Population enumeration schedules, 1850, Mercer County, Kentucky.

survives to indicate otherwise), it illustrates the Shaker willingness to experiment with a variety of potentially productivity-enhancing techniques.[13]

Market activity by the Shakers similarly varied by region. As noted above, the Western Shakers sold large quantities of hogs, pork, and lard. Eastern Shaker sales of these three items must have been unusual, although they often skinned the hogs (or paid to have them skinned) and sold the skins after the slaughter. Rare were the occasions of marketing pork products by the Eastern Shakers, but they did occur. For example, in 1835 the New Lebanon Church Family Sisters sold about a fourth of that year's yield of 650 pounds of sausage links in nearby Pittsfield, Massachusetts, for 11 cents a pound. Generally the Eastern Shakers raised their hogs for home consumption.[14]

Eastern Shakers were more active in corn markets than pork markets. It was common for many Shaker communities to purchase grain to make up for shortfalls in their own harvests, and much of the corn they purchased became fodder for their hogs. By the 1830s, the New Lebanon Church Family was purchasing up to 800 bushels of corn in a year and in 1845 they bought 1716 bushels. The amount purchased can be compared to quantities of corn produced and consumed as found elsewhere in this Family's records. In 1842, for example, they produced 300 bushels of corn from their own fields. In that year, 98 bushels of corn were consumed by the Shakers and 505 bushels were fed to 16 hogs, leaving a deficit of 303 bushels. The receipt book notes that the Shakers bought 290 bushels of corn that year, which is close to the deficit. Thus, purchased corn accounted for 60 percent of all corn used as fodder that year, and was almost equal to the amount

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[13]WRHS V:B-104, 6 December 1837; WRHS V:B-69, 17 November 1838 and 5 December 1837; WRHS V:B-293, 24 December 1834. Contemporary almanacs refer to the effects of slaughtering hogs during different lunar phases; see George Lyman Kittredge, *The Old Farmer and His Almanack* (Cambridge: Harvard University Press, 1924), pp. 305ff . We thank the members of the email lists H-Amrel (History of American Religion) and H-Rural (Rural and Agricultural History) for their directions to this reference.

[14]Russell H. Anderson, "Agriculture Among the Shakers, Chiefly at Mount Lebanon," *Agricultural History* 34 (1950), pp. 113-120; NYSL manuscript item A-FM-76, December 1835.

of corn the Shakers grew themselves. Although such detailed corn purchase and use data were available for only a few scattered years, corn purchases to make up deficits in consumption were not limited to the 1830s and 1840s. In 1796 the New Lebanon Shakers bought 227 bushels of corn "for swines & other creatures" during the harsh months of January and February.[15]

Shakers at several communities recorded the weights of hogs at slaughter, with considerable regional and temporal variation in coverage. The New York Shaker communities of Watervliet and New Lebanon, only 25 miles apart, recorded slaughter weights in community journals for most years between 1788 and 1847. In sum, the weights at slaughter of 1,667 New York Shaker hogs were available for analysis. Few individual weights were recorded; commonly the community's journalist noted on a date in November, December, or January that a certain number of hogs had been slaughtered, and the total weight was so many pounds. Occasionally the journalist(s) calculated the average weight of the day's slaughter, or perhaps the weight of the largest hog. No weights were available for a few of the intervening years: 1790-91, 1797, 1807-08, and 1811-1812. While no weights were found for 1835, total weights were estimated from the number and weight of the skins of the slaughtered hogs, on the basis of the ratio of slaughter weights to skin weights from 1836.[16]

From comments in manuscript, these appear to be live weights; no conversion to dressed weights was attempted. The dividing line between pigs and hogs in these manuscripts is not clear, and the Shakers rarely attempted to discriminate between them. Since on one occasion a Shaker journalist described 16 month old swine that averaged 312 pounds live as "pigs", we will not attempt to distinguish between pigs and hogs here. Western Shaker hog weights were recovered

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[15]Edward Deming Andrews and Faith Andrews, *Work and Worship among the Shakers: Their Craftsmanship and Economic Order* (New York: Dover Publications, 1974); Andrews collection manuscript no. 1137; WRHS V:B-69; NYSL A-FM-76; WRHS V:B-72a.

[16] For weights from Watervliet, NY, see WRHS V:B-285 through V:B-294 and V:B-321; for New Lebanon, NY, see WRHS V:B-63 through V:B-69, V:B-72a, V:B-104, V:B-132. On weights of skins and hogs, Anderson, "Agriculture among the Shakers," p. 116.

for just a few years. Numbering some 497 hogs, no indication was given if the weights were live or dressed. They originated at both Kentucky communities and Union Village and North Union in Ohio.[17]

Few series of hog weights in the early nineteenth century are known to exist apart from the records examined in this paper. The continuous part of Cuff's series of weights of Western commercially processed hogs extended back only to about the mid-1840s, although he found a few weights from as early as 1822. These hogs weighed on average about 135 pounds (live) in the 20s, 150 pounds in the 30s, and by 1850 reached 200 pounds. Hogs raised for home or small scale commercial processing in the East tended to be bigger. Bidwell and Falconer described early nineteenth century hogs in New York State that were fed on grass and reached live weights of 300-450 pounds. The wealthy few in New England who could afford to experiment with imported breeds claimed to produce hogs that *dressed* 500 pounds at 16 months of age, a tremendous size. Probably more common were the 366 hogs slaughtered by Massachusetts farmers whose account books were studied by Rothenberg. She estimated gross weights of about 275 pounds in the late eighteenth and early nineteenth century. After 1820, Rothenberg estimated, live weights at slaughter grew in Massachusetts to around 350 pounds. Walsh's estimates for the same time in the Chesapeake region ran to 185 pounds.[18]

Figure 1 is a graph of average slaughter weights of hogs at the two New York Shaker communities as well as the Western communities for which data could be found. At the turn of the nineteenth century the average weight of the New Lebanon hogs was increasing steadily, more

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[17] WRHS V:B-104, 14 December 1842; WRHS V:B-132, 19 December 1838; for Pleasant Hill, see Filson Club Shaker manuscript volume 4; for South Union, see Shaker Records A, B, and C; for Union Village, and North Union, Ohio, see Library of Congress items 232 and 278.

[18]Timothy Cuff, "A Weighty Issue Revisited: Commercial Swine Weights and Pork Production in Mid-nineteenth Century America," *Agricultural History* 66 (1992), 55-74; Bidwell and Falconer, *History of Agriculture*, p. 230; Russell, *Long, Deep Furrow*, p. 361; Winifred Barr Rothenberg, *From Market-Places to a Market Economy: The Transformation of Rural Massachusetts, 1750-1850* (Chicago: University of Chicago Press, 1992); Walsh, “Consumer Behavior.”

than doubling over the short time between 1788 and 1802. A longer run perspective might see a similar doubling between the beginning of the period and roughly 1820, which is consistent with the trend in the (slightly smaller) weights of Rothenberg's Massachusetts hogs. She also found a steady secular increase in weights until about 1820, after which time, she asserted, market factors began to influence slaughter weights more heavily. Although many years had data from just one of the Shaker sources, those years with overlapping weights showed a great deal of co-movement, as the following table of estimated correlation coefficients suggests (p-values in parentheses; that is, the probability of being wrong in asserting a nonzero correlation):

	Watervliet	Ohio and Kentucky
New Lebanon	.59 (.007)	.74 (.056)
Watervliet		.76 (.028)

Over the post-1820 period Shaker hogs weighed on average about 400 pounds at slaughter. These hogs were larger than Rothenberg's estimates of common Massachusetts hogs, but smaller than estimates of imported varieties in New England, and about the same as the Bidwell and Falconer estimates of grass-fed New York hogs. Cycles in hog weights can be seen over time, with peaks around 1802, 1820, and 1836. Such patterns were well known to later economic observers as functions of the corn-hog cycle. Like family farms in the greater economy, Shaker communal farms followed their own corn-hog cycle.

That hogs represent a production process amenable to economic analysis of the business cycle variety has been known for over a century. Agricultural writers as early as 1876 had noted that pork producers seemed to respond to input and output prices. Berry described the work of Samuel Benner, who in 1876 proposed 11 year cycles (sunspots?) of pork prices, corn prices, and the size of the annual commercial pack. Benner then decomposed the long cycles into two component cycles of five and six years each. In 1891 the U.S. Agriculture Department published a graph showing the correlation of lagged pork prices and corn prices, and per capita pork

production as a mirror image of the pork price. Even today, the corn-hog cycle can be found in textbooks on business cycles.[19]

The hog is a living production function. It consumes inputs, some with virtually zero opportunity cost (i.e., slop), and others that require real resources to be produced, such as purchased or homegrown fodder. Just as in the proverbial black box, the hog's life is a continuous process of transforming these inputs into outputs that become available for use upon slaughter: pork, lard, bristles, and skins. Unlike crops or other livestock that are harvested upon reaching maturity at the end of a growth period, the hog grows throughout its lifetime. The decision to slaughter is determined entirely by the grower and not by biological necessity.

The theory of the corn-hog cycle arises from the question: when optimally to harvest the pork? A critical factor is the set of input and output prices that face the farmer, and his expectations about how they will change in the future. Given the difficulties of assessing how farmers form their expectations, let us just consider the relationships between current prices and the slaughter decision, given the hog's continuous growth. Higher pork prices mean greater revenue from slaughtering larger hogs. Higher corn prices cut into the farmer's income, and so would lead to slaughtering hogs sooner: that is, younger and hence smaller hogs. The size of the hog at slaughter, then, may be hypothesized to be greater the higher the price of pork and smaller the higher the price of corn.

Given the corn-hog cycle as a benchmark of market oriented behavior, we would like to determine if Shaker hog producers behaved according to this corn-hog hypothesis. The question addressed here is whether the Shakers varied pork production levels in response to factor and product price changes. If this behavior were confirmed, it would be circumstantial evidence of optimizing decisions made in light of market information. We do not claim that Eastern Shaker

[19]Thomas S. Berry, *Western Prices Before 1861: A Study of the Cincinnati Market* (Cambridge: Harvard University Press, 1943), p. 239; Fred A. Shannon, *The Farmer's Last Frontier: Agriculture, 1860-1897* (Armonk: M.E. Sharpe 1989 reprint of Holt, Rinehart, and Winston 1945 edition), p. 167; Lloyd M. Valentine and Dennis F. Ellis, *Business Cycles and Forecasting*, 8th edition (Cincinnati: South-Western Publishing, 1991), pp. 93-127.

hog producers participated extensively in markets for pork, since the evidence suggests that they did so in only the most limited fashion, but we do note that they were active in feed-corn markets. Our point is that changing the quantity of pork produced in response to price changes implies an awareness of the opportunity costs of home production versus market purchases. If the Shakers made production decisions under the influence of those markets, then the extent of the market in early America would not have been limited to its participants only.

A useful measure of the quantity of pork produced is given by the average weight of all hogs that were slaughtered in a given year. Total quantities of pork produced by the Shakers at the communities with available data would not be an appropriate measure of production because there are gaps in the records of weights in some years. Such omissions could have resulted from no slaughter having occurred that year or from failure to record an actual slaughter. Average weight of the hogs that were slaughtered, on the other hand, reflected both that year's decision to slaughter particular hogs, and the accumulation of past decisions not to slaughter them.[20]

We test for relationships between New York City corn and pork prices and New York Shaker hog production levels from 1788 to 1847. The quantity of pork produced was given by the average weight of hogs at slaughter. Prices for corn and mess pork in the December (a typical month for slaughtering) of each year with slaughter data were taken from Cole and deflated by the Warren Pearson index. All of the prices obtained in New York City markets, except for the years 1788-98, for which New York prices were not available, so Philadelphia prices were used. The two Shaker communities lay just a few miles from the Hudson River near Albany and the grain trade to New York City had long predated the Erie Canal, thereby effectively making this region a single market.[21]

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[20] Rothenberg, *From Market-Places*, pp. 103-108.

[21] Arthur H. Cole, *Wholesale Commodity Prices in the United States, 1700-1861* (Cambridge: Harvard University Press, 1938); U.S. Bureau of the Census, *Historical Statistics of the United States* (Washington: GPO, 1975), pp. 186-201; Bidwell and Falconer, *History of Agriculture*, p. 140.

We analyze the relationships between quantity of pork produced and pork and corn prices by estimating ordinary least squares regression equations. Since Rothenberg found a change in market-oriented decisions in her sample of Massachusetts farmers around 1820, we divided our pool of 53 observations into two parts at 1820. Because 907 of the 1,667 hogs in this sample were slaughtered after 1820, this year represents a convenient midpoint for our sample as well as a potential turning point in terms of market orientation. The dependent variable is the same in both equations: the average live weight of slaughtered hogs at the New Lebanon and Watervliet Shaker communities in a given year. All variables are in logarithms, so that elasticities may be derived from the regression coefficients.

The estimated equation for the years before 1820 follows:

Weight = 3.15 + 0.83*Pork price +0.06*Corn price
(.006) (.009) (.793)

R^2 = .25; N = 25; DW = 1.25 (indeterminate)

The figures in parentheses are p-values that estimate the probability of incorrectly asserting that a price variable has an effect on the weight variable. Thus, we have roughly a 1 percent chance of being wrong when we claim that before 1820, higher pork prices were associated with larger hogs at slaughter, just as the corn-hog cycle would suggest. The best point estimate of this relationship is that a 10 percent increase in pork prices resulted in an 8.3 percent increase in the live weight of slaughtered hogs. However, because the p-value for the corn price coefficient is so large, in this earlier period we find no evidence of a relationship between corn prices and hog weights.

The estimated equation for the period of 1820 to 1847 follows:

Weight = 7.48 - 0.07*Pork price - 0.27*Corn price
(.001) (.598) (.053)

R^2 = .20; N = 28; DW = 2.24 (no serial correlation)

In the later years, we found no evidence of a pork price-hog weight relationship, but fairly strong evidence of a corn price-hog weight relationship. According to these results, a 10 percent increase in the price of corn was associated with a 2.7 percent decrease in the average weight of a

hog at slaughter. This relationship is consistent with the evidence that by the 1830s the New York Shakers were purchasing a large share of the grain that they consumed and used as feed. Overall, this is stronger evidence of a corn-hog cycle in early America than Rothenberg found in contemporary Massachusetts.[22]

Despite the evident pleasure that consuming pork provided to the Shakers, and the care with which they made pork production decisions, the Society as a whole grappled with the issue of banning pork consumption throughout the 1840s. The identification and assessment of the supernatural source of the ban, its promulgation and enforcement, and its ultimate failure, constitute a lesson on the balance that religious groups must maintain. For the Shakers, belief in continuing revelation through spiritual pronouncements was an imperative that dated from the Society's earliest days. But openness to divinely inspired commands can conflict with the necessity of maintaining order among believers.[23] While one spiritual command among many at that time, the order to end pork consumption was unusual in the extent of the conflicts that it induced.

The period from late 1837 to roughly 1845 became known as the Era of Manifestations due to the unusual level of spiritualist activity (visions, speaking in tongues, pronouncement of new rules, creation of new songs and pictures, and so on) among the Shakers. That is not to say that the Era represented a shift from no such activity prior to 1837 to a great deal of it; the Shakers had treasured their contacts with spirits from the otherworld since the group's beginning. The Era was, however, the most intense period of spiritualism and certainly the best documented such time in Shaker history. It began among a small group of girls at Watervliet, New York and spread throughout the Eastern Shaker communities in the winter of 1837-38. Although the

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[22] See Winifred B. Rothenberg, "The Market and Massachusetts Farmers, 1750-1855," *Journal of Economic History* 41 (1981), pp. 308-309.

[23] On the balance of spiritual inspiration and worldly organization, see Stephen J. Stein, "Shaker Gift and Shaker Order: A Study of Religious Tension in Nineteenth Century America," *Communal Societies* 10 (1990), 102-113.

Manifestations had begun to appear in the West in June 1838, these developments seem not to have been received as warmly there as in the East. For example, the prominent Western Elder Richard McNemar resisted the promotion of spiritual events by Freegift Wells, an Easterner who had just been appointed leading Elder at Union Village. Wells succeeded in expelling McNemar, who retreated to New Lebanon and was allowed to return to Union Village a few short months before his death. Such East-West conflicts may have undergirded regional differences in reception of the ban on pork.[24]

Initially many of the spirit messages concerned the maintenance of various communal ideals, such as cleanliness and concern for fellow Believers' well-being. Gradually the disciplines enunciated by the spirits became ever more rigorous. At first, most Shakers accepted the greater demands in the name of spiritual purification. The sheer quantity of commands became too great to follow, however, and Shaker leaders began to rescind some directives shortly after they had been announced. Among the spiritual messages received at this time were commands to stop drinking coffee and tea. Then in 1841 at New Lebanon a ban had been placed on pork as "cursed and unclean," a foodstuff that was "positively unfit for the children of Zion." A ten year grace period was allowed for adjustment to the new rule, but ten years would hardly suffice.[25]

There may have been worldly reasons for renouncing the use of pork. Earlier Shakers believed that swine did not produce manure suitable for fertilizing. A 1796 farmer's manual written at New Lebanon hinted at such practical motivations: "In considering the means for recruiting the land, we consider that the raising and fatting of beef, agrees with the means of enriching the land, but the raising and fatting of pork, the contrary. And would it not be as much for the profit and comfort of the Church, in other respects considered, to make more beef and some less pork." The "other respects" may have referred to health considerations. Mid-

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[24]Stein, *Shaker Experience*, pp. 166-187; Ham, *Shakerism*, p. 202-204.

[25]Stein, *Shaker Experience*, p. 198; quote from New Lebanon *Church Order Journal*, 27 November 1841 in Brewer, *Shaker Communities*, p. 131.

nineteenth century observers who inquired about the ban were told by the Shakers that swine flesh was commonly "more or less diseased" so that "injury must follow the use of it as an article of human food." Years after the ban was imposed, some Shakers claimed that it led to a lower incidence of cancer, while other Shakers reported that the lack of pork consumption conferred immunity from measles. Unlike the eighteenth century concern about manure, health explanations for the ban may simply have been *ex post* rationalizations.[26]

Priscilla Brewer has emphasized the dissent engendered by the ban in conjunction with continuing efforts by some Shakers to impose the diet advocated by Sylvester Graham on the Society. Grahamism was a fad from the mid-1830s that promised a greater degree of sexual continence to those who followed a diet that virtually eliminated meat and dairy products in favor of brown bread made with a special unbolted flour. Several Shaker communities experimented with the Graham diet, but nowhere was it the unanimous choice. As a result, it was common for Shaker cooks to set several tables in each dining hall with foods chosen so as to conform with particular dietary theories. The scribe Isaac N. Youngs noted the extra effort that this required of kitchen workers was not appreciated.[27]

Into this divided outlook on diets came the command to abandon pork. Brewer notes that the *Confidential Journal* of the New Lebanon elders recorded as soon as August 1842 that "a great deal [had recently been] handed from the Heavens in respect to eating, which, in some cases, seems to be quite hard for all to get an understanding alike." The tension and confusion did not ease with time, because five years later the same document noted: "Positively decided by the Ministry never again to have pork admitted back into this family," a decision greeted with "division of sentiment and feeling" among the rank and file because “some wants Pork and some not.” Some Watervliet Believers who had hoped for supernatural reassurance were disappointed

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26 WRHS I:A-10; “Disuse of Pork among the Shakers,” *Boston Medical and Surgical Journal* 48 (6 July 1853), 463 (we thank Jerry Grant for this reference); Edward R. Horgan, *The Shaker Holy Land: A Community Portrait* (Harvard, MA: Harvard Common Press, 1987), p. 98.

27 27Youngs, “Concise View,” p. 300.

when their supply of pork did not go bad as a spirit message had predicted. Even so, some Shaker communities honored the ban. In late 1848 a journalist in the New Lebanon Church Family who was recording numbers of livestock there stated flatly that "Hogs are out of the question".[28]

However, hogs remained in favor at least among some Eastern Shakers at this time, even within the New Lebanon community. Beginning in 1839, the New York Shakers were required to report the value of all their assets, including livestock, to the state of New York. These asset listings tallied a herd of around 80 swine at New Lebanon from 1839 to as late as 1846, after which time a gradual decline led to virtual elimination by 1850. This gradual abandonment of hog raising proceeded unevenly among the community's six Families. By 1848, when the Church Family had gotten rid of all its swine, the Second Family still owned 26 hogs, although 19 of them were explicitly noted as headed for market. Presumably the Second Family intended to sell their swine and the $350 worth of pork that was also destined for market in order to comply with the ban. However, the next year the recorder impishly noted that they still kept "4 swine!!!!" In response, Elder Grove Wright of the Hancock, Massachusetts, community paid a visit to Second Family leaders to inquire about rumors of their continued use of pork. The North Family's ambiguous intentions regarding the ban can be seen in their reasoning for at least temporarily failing to have preserved any of their slaughter of 1848: they still had "old pork a plenty"--and did not claim that they would sell it off. The next year, they still had 17 head of swine. In 1850, the record of assets recorded no hogs at New Lebanon; the U.S. Census, however, recorded four.[29]

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[28]Brewer, *Shaker Communities*, pp. 131-134; WRHS V:B-70, 31 December 1848.

[29]State attention to Shaker wealth is examined in John E. Murray, "Henry George and the Shakers: Evolution of Communal Attitudes Toward Land Ownership," *American Journal of Economics and Sociology* **55**:245-256 (1996); the document is WRHS II:B-38; Grove Wright: Brewer, *Shaker Communities*, p. 133; 1850 swine: U.S. Census of Agriculture enumeration schedules, Columbia County, New York.

Numbers of hogs on Eastern Shaker farms probably never recovered from the ban, although a lack of surviving records on earlier herd sizes prohibits making this statement with certainty. At New Lebanon, the herd of just over 100 in 1841 numbered a mere 4 hogs in 1860 and 14 in 1880, according to the federal census. The Harvard, Massachusetts, Shakers continued to keep a small flock to process their garbage. At Tyringham, Massachusetts, where no hogs were reported in the 1850 census, five hogs were listed in the 1860 census and an 1862 inventory listed 200 pounds of preserved pork, compared to 6500 pounds of beef. Along with Youngs' description of pork in the Shaker diet at mid-century, noted above, this suggests that limited pork consumption among some Eastern Shakers had resumed by the time of the Civil War.[30]

Western Shakers, on the other hand, continued to raise swine and produce pork throughout the nineteenth century. Table 1 notes the number of swine recorded in each of the agricultural censuses between 1850 and 1880. Hogs remained important among the Western Shaker livestock holdings throughout the nineteenth century. The fullest accounting can be found in 1870, when four of the six Western communities reported owning 558 head of swine. The census may give a more accurate view of swine production than the Shakers' own records. In Kentucky, a diarist claimed that pork production had ended at Pleasant Hill by 1848, but less than two years later the federal census marshal found 30 hogs there. By 1880, the number of swine owned by the Kentucky Shakers had reached a third of that in the mid-1830s. By contrast, the number of Shakers had fallen by about half over this time.[31]

Western Shakers seem to have obeyed the prohibition on *eating* pork themselves, even while continuing to *produce* it for consumption by others. At South Union, which reported five

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[30]Horgan, *Shaker Holy Land*, p. 98; Deborah E. Burns, *Shaker Cities of Peace, Love, and Union: A History of the Hancock Bishopric* (Hanover: University Press of New England), p. 145; U.S. Census of Agriculture enumeration schedules, Columbia County, New York; Berkshire County, Massachusetts.

[31]U.S. Census of Agriculture, enumeration schedules; Filson Club volume 4, 7 September 1848; William Sims Bainbridge, "Shaker Demographics 1840-1900: An Example of the Use of U.S. Census Enumeration Schedules," *Journal for the Scientific Study of Religion* 21 (1982): 352-365.

dozen head of swine in the 1850 Census, slaughters continued through the 1850s and 1860s. South Union diarists carefully distinguished between slaughters of "beeves" for "family use" and slaughters of hogs that were intended for consumption by "hirelings," "Negroes," "strangers," and, during the Civil War, by soldiers of both the Union and Confederacy. In the case of pork, Kentucky Shaker attitudes evolved through stages of recognition: at first, a good for sale and for internal consumption, then a good for consumption alone, and finally one for consumption only by others.[32]

Regionally, then, Shaker pork production decisions closely resembled those of the surrounding external culture. Before the ban, Western Shaker specialization in production of pork (and Eastern specialization away from pork production) could be attributed to economic forces such as cheaper feed in the West than in the East. But even after the ban the Western Shakers found it necessary to continue producing pork to feed their workers. In terms of hog production patterns, the Eastern and Western Shakers were more like their neighbors than like each other, and these Shaker differences were likely the result of the same influences that induced regional specialization more generally.

A communal society needs to behave much like any profit maximizing firm when participating in external markets. For goods produced specifically for sale in external markets, some degree of market savvy was necessary on the part of the Shakers. But even for goods produced for their own internal distribution, in an allocation scheme that eschewed prices, the Shakers attended to information available in externally determined prices to make production decisions. This phenomenon can inform the debate on the viability of microsocialist efforts to live without (or to minimize) private property and wage labor, such as in *kibbutzim* or the Hutterite settlements. The Shakers represent such a microsocialist economy, making the factors in their longevity and their decline worthy subjects of study. One factor in their longevity, we believe,

[32]South Union Center Family Journals B (Shaker Museum at South Union, Kentucky) and C (Kentucky Library, Western Kentucky University), various entries.

was their careful attention to the opportunity cost of home production of goods, including food products.

Given the extent of Shaker activity in Western pork markets before the ban on pork consumption in the 1840s, it is reasonable to suppose the quality of their market decisions was quite good--at least as good as those hog raising farmers whose decisions set the opportunity costs of Shaker pork production. The Eastern Shakers were in a more delicate position. Once the Erie Canal had opened (1825), hog production in the Hudson Valley and New England began a steady decline, as the comparative advantage of the Midwest and South in pork production emerged. Eastern Shakers sold little of their pork production and so did not participate in an active sense in markets for pork. Local pork prices nonetheless offered information about opportunity costs of home production, on the basis of which the Shakers made decisions to discontinue or revive home production in the cases of sugar and flax. Our results indicate that the Shakers used such prices to make production decisions about the quantity of pork to produce as well.

That the Shakers varied pork production decisions in response to changes in pork prices (and to a lesser extent, changes in corn prices) should not be surprising. The longevity of their communes suggests that they tended to make decisions that reflected some degree of economic efficiency. Their decisions were also heavily influenced by religious considerations, as in the ban on pork consumption. Nor could they form production decisions in isolation from the culture in which each community was established. While Eastern Shakers largely honored the ban on pork and rid themselves of their herds of swine--not coincidentally, at a time of decline in the swine population elsewhere in Eastern America--Western Shakers maintained their herds and continued to produce pork in large quantities, as was common among Western farmers. Shaker synthesis of the competing interests of religion, culture and information available through markets played an

important role in maintaining their distinctive internal, non-market, non-hierarchical allocation system for over a century.

Table 1

Number of swine reported in U.S. agricultural census at Shaker communities

(number of Shaker communities reporting in parentheses)

State	number of Shaker communities	1850	1860	1870	1880
Maine	2	0 (2)	7 (2)	9 (1)	9 (2)
N.H.	2	0 (2)	10 (2)	11 (2)	48 (2)
Mass.	4*	3 (4)	16 (4)	22 (4)	3 (3*)
Conn.	1	0 (1)	30 (1)	30 (1)	0 (0)
N.Y.	4	4 (4)	8 (4)	50 (4)	48 (3)
East totals	13*	7 (13)	71 (13)	122 (12)	108 (10)
Ohio	4	0 (2)	16 (1)	418 (2)	0 (0)
Kentucky	2	90 (2)	0 (0)	140 (2)	277 (2)
West totals	6	90 (4)	16 (1)	558 (4)	277 (2)

Sources: U.S. agricultural census manuscript schedules.

* = The Tyringham, Mass., community closed in 1874 leaving Massachusetts with three Shaker communities to report in the 1880 Census.

Figure 1. Sources: Shaker manuscripts. See footnotes 16 and 17.