Agricultural productivity change and wealth distribution in Hampshire County, Massachusetts (1700-1779)
by Richard Gerard Fritz

A thesis submitted in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE in Applied Economics
Montana State University

Abstract:
This research is an investigation into the wealth concentration, and agricultural productivity change experienced by Hampshire County, Massachusetts for the years 1700-1779.

A discussion of colonial New England sets a backdrop for the study into Hampshire County. Such a historical inspection displays how land ownership progressed from strict church control to individual possession.

Breaking probate record contents down into fixed, working, and household capital allows for investigation of wealth composition. Land, on average, accounts for the major portion of the wealth held by an individual, followed by household capital, livestock, agricultural capital, and crops, respectively.

The richest ten percent of the society is shown to own 42 percent of the wealth, while one-half of the population owns 85.5 percent. All but approximately four ' percent of society's wealth for this period is owned by the richest 75 percent of the population.

Placing total wealth in real terms demonstrates that the real wealth of the society increased somewhere between 0.3 and 0.54 percent per year, on average. Real wealth is computed by two different standards. The first employes a Consumer Price Index while the second uses a composite value adjuster. This second method adjusts the value of each capital grouping according to the index of items which compose that group.

Through the use of regression analysis, agricultural productivity change over the eighty year period is found hot to be significantly different than zero. All economic indicators point to a general stagnation of the county's economy between 1700 and 1779. Such a conclusion is consistent with other research studies conducted on New England for this time period.

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Date May 16, 1979

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by

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A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Applied Economics

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ABSTRACT

This research is an investigation into the wealth concentration and agricultural productivity change experienced by Hampshire County, Massachusetts for the years 1700-1779.

A discussion of colonial New England sets a backdrop for the study into Hampshire County. Such a historical inspection displays how land ownership progressed from strict church control to individual possession.

Breaking probate record contents down into fixed, working, and household capital allows for investigation of wealth composition. Land, on average, accounts for the major portion of the wealth held by an individual, followed by household capital, livestock, agricultural capital, and crops, respectively.

The richest ten percent of the society is shown to own 42 percent of the wealth, while one-half of the population owns 85.5 percent. All but approximately four percent of society's wealth for this period is owned by the richest 75 percent of the population.

Placing total wealth in real terms demonstrates that the real wealth of the society increased somewhere between 0.3 and 0.54 percent per year, on average. Real wealth is computed by two different standards. The first employes a Consumer Price Index while the second uses a composite value adjuster. This second method adjusts the value of each capital grouping according to the index of items which compose that group.

Through the use of regression analysis, agricultural productivity change over the eighty year period is found not to be significantly different than zero. All economic indicators point to a general stagnation of the county's economy between 1700 and 1779. Such a conclusion is consistent with other research studies conducted on New England for this time period.

CHAPTER 1

INTRODUCTION

Harvest time in New England is characterized by entire families cutting and storing grain slowly, and hoarding the kernels which will supply nourishment to themselves and their animals in the year to come. They bank on the weather holding, hoping that the wind, rain, and hail will not lodge the grain in the yet unharvested fields. All available members of the family engage in the work of harvest. These are common sights in the late months of each year. Yet, absent from this scenario are the mechanized tools grinding through the fields performing the many varied tasks.

It is the eighteenth century. Skilled hands hold the scythe and stroke a clear and sharp ark into the unfallen stand. Raked manually and placed upon a cart, the grain journeys to the barn. No member is idle, for time is of the essence. And, hopefully, the farmer will again have reason to be thankful for a bountiful harvest. The grain will remain in the barn until milled by the family, for family use. Little of the grain will go into the market-place, especially from the farms distant from any popula-

tion centers.

Objectives

The objective of this thesis is to determine the level of wealth and its distribution within Hampshire County, Massachusetts, for the years 1700 to 1779, and to derive a mathematical regression equation that estimates the agricultural productivity change over this period. Unlike today, facts and figures on acres planted, hours worked, yields, seed varieties and countless other statistics are rare or nonexistant for these early American farms. Even with the amount of information available today, measurement of recent agricultural productivity change is difficult. However, such measures are attempted for their importance is vital if the economy is to be understood in its entirety.

Determination of historical productivity figures and wealth distribution are just as important if the history of the nation is to be fully comprehended. Productivity figures give insight into how the nation developed, the direction it moved and why. This thesis is an attempt to further increase understanding of eighteenth-century agricultural productivity figures and their ramifications.

Before embarking upon measurement of productivity changes and wealth distribution in Hampshire County for the years 1700 to 1779, it is advantageous to briefly review the history of the land, the crops grown upon it, and the livestock of the New England area.[1] This background allows greater insight into the data base, the models designed to measure these changes, and the conclusions drawn from these models. The broad discussion of New England history places a perspective upon the study, and gives the reader a greater understanding of what is to follow. Such are the contents of the second chapter.

Moving forward, the focus of the thesis narrows upon the county selected for study. Selection of a particular county has its advantages by placing limits upon the size of the data base and the scope of the analysis. However, cross-county comparisons are sacrificed to some degree. Chapter three introduces the court records which are available for Hampshire County for the 1700's and from which the estate inventories of deceased individuals are selected. Such records supply information about the

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[1]The 80 year span (1700-1779) was chosen on the basis of probate record availability and relationship to studies previously conducted.

individual and the general living standard for the period. Once these personal inventories are organized into a general framework, the information they contain will be employed in the measurement of agricultural productivity change and wealth estimates.

Upon placing the estate inventories into this framework, the fourth chapter compiles the information around several themes. Of major importance is the construction of a Consumer Price Index and other price adjustments used to place the data in real terms. The wealth structure and distribution within Hampshire County will be determined and compared to that found for other regions during roughly the same time period.

Compilation of the previous material allows for an output/input analysis which estimates the agricultural productivity change experienced by Hampshire County over the years 1700-1779.[2] As an alternative means of estimating agricultural productivity change, regression analysis utilizing probate data is employed in chapter five. In addition to providing information on the rate of productivity change, this method allows a statistical

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[2]This method should not be confused with the input/output method as developed by Dr. Wassily Leontief.

test of the variables which explain economic growth. Suggestions are also made about the validity of regression analysis as a viable tool for use in analyzing probate data. The final chapter will summarize the thesis findings.

CHAPTER 2

NEW ENGLAND AGRICULTURAL HISTORY

Introduction

Before moving into the measurement of agricultural productivity change through employment of probate records, it is advantageous to briefly, and in general terms, review the early years of colonial New England. Such a discussion brings more clarity and understanding into the productivity figures developed later. The material in this chapter is by no means a complete history of New England, but acquaints the reader with the history of the basic commodities which will be encountered in dealing with the estate inventories.

Nature blessed the Eastern seaboard with a variety of edible plants and wild game. Ducks and geese found refuge in the coastal marshes while turkeys, partridge, deer and other game proliferated the dense forests. The rivers and ocean were steady suppliers of fish, oysters, and clams. A profusion of wild berries, including elderberries, strawberries, dewberries, raspberries, and blackberries supplemented the tubular roots of numerous

plants which were readily available.[3]

Amidst this natural abundance the Indians developed an effective agrarian base in addition to their hunting and gathering activities. Maize constituted a greater proportion of agricultural output than any other cultivated food source due to the fact that it was well adjusted to the level of agricultural development the Indians had attained. Maize was a hardy plant, suited for New England; it was ready for harvest four months after planting and less affected by nature's seasonal changes than European crops. Yields of up to 45 bushels per acre were attained.[4]

In many respects the Indian's knowledge and practice of agronomy was far more advanced than that of the European. The Indians selected seed grains from those strains which returned high yields and were relatively more resistant to climatic variability.[5] This seed selection was

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[3]Roger Williams, Key Into the Language of the Indians of New England (Boston: Collections of the Massachusetts Historical Society, 1974), pp. 220-221.

[4]Lymann Carrier, The Beginnings of Agriculture in America (New York: McGraw-Hill, 1923), pp. 45-46.

[5]Percy Bidwell and John Falconer, History of Agriculture in the Northern United States (Washington: Carnegie Institution, 1925), pp. 9-10.

accompanies by the practices of fertilization, land rotation, and seed placement rather than the broadcast method. Often intensive land use was practiced by planting a crop, usually beans, between the rows of maize.[6] Such intensive land use practices were due in part to the large physical task of land clearing. Rather than breaking new ground, the Indian realized the land's ability to produce more at a lower cost of labor when fertilization was used.

The first crops planted by the colonists were located in clearings provided by nature and fields abandoned by the Indians. Problems of land fertility and insufficient size for the agrarian based colonial society soon made it necessary to clear new, productive lands. The opening of these new land tracts followed the Indian practice of girdling the trees and leaving them to die. This permitted sunlight to filter through the standing dead timber to nurture the crops growing between the decaying trees. Eventually, timber not useful in home or fence construction was burned off leaving the labor intensive task of stump removal.

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[6]See Bidwell and Falconer; Lymann Carrier; and George Taylor, "American Economic Growth Before 1840: An Exploratory Essay," Journal of Economic History 32 (December, 1964).

Following the example and teachings of the Indians, early immigrants planted maize as their chief staple. "Plowing" was done by digging a hole with a stick, depositing a few seeds within, and covering them with soils in a pattern of equidistant rows of approximately five to six feet apart. As the plants began to grow, earth was piled about their base for support and weeds were removed periodically with a hoe. This weeding procedure continued until harvest.

Introduction of European Grains, Grasses and Livestock

After becoming acquainted with New World crops and the Indian's methods of agriculture, colonists began to experiment with European grains in the sandy rocky soils of New England. Although several crops new to the continent had been introduced by the Spanish as early as 1493, they were later reintroduced by the French and English.

Failure greeted the first attempt at wheat cultivation at Plymouth in 1621. Later tries along the Connecticut Valley proved successful with grain found in estate inventories as early as 1641. A dampening affect on wheat production, caused by the black stem-rust, or "blast,"

was felt about 1660 and extended for several years thereafter.

Rye was a heavy competitor of wheat mainly because of its better yield in the light and gravely soils of New England. Barley and oats also found their early niche on the farm and were valued for beer production and animal feed. (Oats were not used for human consumption until about 1800.) Flax, buckwheat, and other minor grains were also grown for their special taste or specialized use they provided.

Native grasses found along the coast were thick and lush, but their nutritional value to cattle was negligible. As a result, colonists began to import seeds for forage crops of which English grass or hay was most common. English hay, as it was commonly called in New England, was a combination of blue grass, rye grass, white clover and bent grass. Many of the common grasses of today, such as timothy, bluegrass, and crabgrass found their way to America through such importation. The English grasses grew well, thrived, and readily spread through the New World.

In addition to grasses the colonists presented the New World with European garden vegetables and fruits. New

England farmers favored parsnips, turnips, cabbage and carrots. "To this list the Dutch added beets, endive, succory, finkel, sorrel, dill, spinach, parsley, cresses, and leeks."[7] Apples also soon became a favorite crop of the colonists.

With the arrival of John Winthrop and his followers in 1630 came one of the first concentrated efforts at livestock production in New England. Transatlantic shipment of livestock was the major barrier to importation. On July 1, 1630, Governor Winthrop wrote, "The Mayflower and Whale arrived safe in Charleston harbor. Their passengers were all in good health, but most of the cattle dead. (Whereof a mare and a horse of mine.) Some stone horses came over in good plight."[8] Oxen, beef cattle, and dairy cows were the major types of stock shipped to the New England farms. These cattle had their ancestrial roots in the Devonshire breed in conjunction with mixed breeds introduced by the Dutch, English, Swedes, and those from the Spanish West Indies.

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[7]Bidwell and Falconer, History of Agriculture, p. 5.

[8]James Hosmer, ed., Winthrop's Journal of New England 1630-1649 (New York: Scribner's Sons, 1908), p. 112.

In addition, sheep, swine and goats also found their way to the New World. Due to numerous factors including the lack of proper enclosures, little supervision, and general wilderness conditions, sheep and goats faired poorly. Swine on the other hand adapted well to their new environment, feeding on shellfish, plants and nuts in the woods, and, to many an individual's chagrin, crops. Hogs also had the ability to defend themselves against the bears, and wolves they frequently encountered.

Horses were introduced early into the colonies, but their survival rate varied according to their geographic location, owner, and breed. According to Van derDonck: "There are Curacoan and Arabian horses imported into the country, but those breeds are not very acceptable, because they do not endure the cold weather of the climate well, and sometimes die in winter. The whole of this breed require great care and attention in the winter."[9] Horses were occasionally used as draft animals although this task was generally delegated to the stronger, more enduring oxen.

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[9]Adrian Van derDonck, A Description of the New Netherlands, trans. and ed., Thomas F. O'Donnell (Syracuse: Syracuse University Press, 1968), p. 165.

For those animals who were lucky enough to survive the transatlantic voyage, their life was not to be one of comfort in the New World. Most cattle were without winter shelter and fed only a light diet of hay and wheat straw or corn husks. The anonymous author of American Husbandry was critical in his statement that the farmers of New England were

> the most negligent ignorant set of men in the World. Nor do I know of any country in which the animals are worse treated. Horses are in general, even valuable ones, worked hard and starved: they plough, cart, and ride them to death, at the same time that they give very little heed to their food, after the hardest day's work, all the nourishment they are likely to have is to be turned into a wood where the shoots and weeds form the chief of the pasture; unless it be after the hay is in, when they get a share of the aftergrass.[10]

Such mistreatment of livestock was characteristic of the early years. Although valuable assets, individuals found the care and maintenance required of livestock too labor intensive to permit proper management. Attempts to increase grain production and construction of suitable living quarters were deemed more important than giving proper attention to the needs of livestock.

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[10]American Husbandry, Vol. 1 (London: Pater-Nofter-Row, 1775), p. 80.

After a time, the problem of free roaming livestock was solved through the fencing of former open-field farms and designation of an official cowherder who collected the neat cattle in the morning and returned each to their respective farms at night. Laws were soon passed to establish brands and/or earmarks to designate owners; and by the late 1660's numerous towns selected men to choose and maintain a stud bull. The start of the 18th century thus saw better animal husbandry and a greater use of restrictive enclosures.

Tools

Agricultural implements used by the Indians corresponded roughly to those of the late Neolithic period of Europe.[11] Stones, antlers, shoulder blades, shells and sticks comprised the majority of their tools. The early parties of immigrants also relied on these basic tools in conjunction with the ax, mattock, hoe, and shovel. The first plow was not to arrive in New England until 1632, with the number mounting to 30 by 1636 and 150 by

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[11]John T. Schlebecker, Whereby We Thrive--A History of American Farming, 1607-1972 (Ames, Iowa: State University Press, 1975), p. 25.

1650.[12] So few were these instruments that, so long as it was shared, the town was willing to pay the owner to keep it in working order.

The few technological advances in farm implements during the eighteenth century were characterized by changes in shape and structure, the most radical of which was the introduction of the German wheeled plow in 1769. However, use of this plow did not become widespread prior to the American Revolution. About this same time a small minority of farmers experimented with cast iron for use as various plow parts, but on the belief that iron poisoned the soil, others shied away from metal plow shares. In addition, any labor saving developments spread slowly through the society due in part to the lack of trade fairs and journals.

The methods used in farming the land were also quite primitive. After plowing was completed, harrows and rolled logs were used to crush the earth in order to create a finer seed bed. Harvesting was carried out by hand using scythes or reaping hooks, or, just after the Revolution, with a cradle. Once cut, the crops were moved to the barn where threshing or husking took place. After threshing,

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[12]Bidwell and Falconer, History of Agriculture, p. 35.

wheat still had to be winnowed with baskets, sieves, or fans, ground, and sifted several times before the flour was fit for bread making.[13]

Early Settlement and the Puritan Church

Since many of the New England towns were religious foundations, knowledge of land settlement and ownership of these communities is helpful in understanding historical productivity figures. Land ownership advanced from strict religious control, through a period of ownership by both the individual and the Church, and, finally, to full individual title. People discovered that working their own land was more rewarding than being a single member in a large and centrally controlled farming community. Private ownership signified that a single individual no longer had to help support those with a family. In addition, he could now experiment with different crops and vary his time and type of planting. In sum, this

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[13]See Wayne Rasmussen, ed., Agriculture in the United States--A Documentary History (New York: Random House, 1975); Darrett Rutman, "Governor Winthrop's Garden Crop: The Significance of Agriculture in the Early Commerce of Massachusetts Bay," William and Mary Quarterly 20 (July, 1963); and Douglas Leach, The Northern Colonial Frontier, 1607-1763 (New York: Holt, Rinehart and Winston, 1966).

this gravitation toward individual ownership created a greater feeling of accomplishment by internalizing the benefits and costs of one's own labor.[14]

Early Settlement and Church Control

The settlement patterns of early New England was guided and regulated by the Puritan Church. New territories were only approved for settlement by the General Court after being petitioned by twenty or more men and selected by a viewers committee as an appropriate site. Since the Puritans believed the frontier was a breeding ground for dissent, and thus frowned upon the evils that came about through isolation, the land so delegated had to border the existing settlement.

Once the town's petition was approved, the proprietors (the original petitioners) received title of the land from the General Court. The title transfer carried several definite rules regarding the land's future use.

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[14]See Terry Anderson and Peter Hill, "The Role of Private Property in the History of American Agriculture," American Journal of Agricultural Economics 58 (December, 1976); Lymann Carrier, The Beginnings of Agriculture in America; and William Sachs, "Agricultural Conditions in the Northern Colonies Before the Revolution," Journal of Economic History 13 (Summer, 1953).

Although the original petitioners owned the land, they had to dispose of it as newcomers arrived. Each of the original proprietors was allowed one town lot and several out lots while the church, the minister, and a school received one town lot apiece. Every town lot was of equal value, thus creating unequal size distributions. The remaining land was disposed of on the basis of the settlers contribution to the original cost of the township, the size of his family, and his wealth holdings.

That land not portioned out was retained by the town for the express purpose of the village green, the common field, and other undivided lands. The village green served as a practice field for the militia and a park for the citizens' enjoyment. The common was a land tract where an individual, depending upon the extent of his wealth holdings, might be allowed to graze specified numbers and kinds of animals. In addition, many towns allowed individuals, by predetermined rights, to cultivate the common area. All remaining undivided lands were held in reserve and distributed as the town population increased.

Large expanses near the town were divided into long narrow strips and served as planting fields and meadows. The drawing of lots determined the distribution of these

outlands between families and each family farmed its own strips in accordance with a single pattern determined seasonally by the town. The common fencing of crop land provided the need for a communal agreement as to what crops were planted and when. This also allowed for grazing of cattle once the harvest was completed.

Transition Period

The dicotomy of holding town lots for living purposes and outlands for farming eventually helped lead to the breakdown of the Puritan hold on westward expansion. New immigrants entered the town whereupon, if they were considered worthy, land was allotted to them. The desirable meadows and cropland near the town soon became scarce making it necessary for the new arrivals to construct temporary or permanent housing close to their agricultural land in order to avoid the long daily travel from town and back. These outlying settlements began to form a town structure and soon divorced themselves from the parent settlement. Retension of church control on westward expansion was attempted by granting, with reluctance, a separate town charter to these outlying inhabitants. With increasing population and its accompanying sprawl, the

grip of the Puritan Church on community settlement patterns and westward expansion began to loosen.

Private Land Ownership

In conjunction with the disintegration of church power, consolidation of the separate designated agricultural lands began to take place. Neighbors began to sell land in order to acquire a compactness that facilitated management and production practices. Eventually, even many of the communities divided and sold the town common.

In the advent of private land ownership agricultural pursuits became not only a means of subsistance, but a source of profit as well.

> This shift in agricultural activity brought with it a change in perception and behavior. Land and labor came increasingly to be seen not as the source of livelihood, but as commodities which could be bought and sold in the pursuit of wealth and status. Considerations of profit, of possessions, of economic calculations came to figure prominently in the lives of men, inhibiting the development of moribund farming communities with fixed social norms and precapitalistic values.[15]

By the start of the eighteenth century most of New

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[15]James Henretta, The Evolution of American Society, 1700-1815 (Lexington: D.C. Heath and Co., 1973), p. 7.

England agricultural lands had passed from church control to private ownership. Private land holdings made it possible to concentrate production practices and management techniques. The social and economic problems associated with communal land ownership were eliminated by this land assimiliation.

Conclusion

Tracing the history of the area provides a framework in which to understand probate records and their contents. Such an understanding will shed more light upon the agricultural productivity figures developed later. Moving from the history of Hampshire County into examination of the area's probate records provides an insight into the development of the agricultural and economic base of the community. The following chapter is devoted to the study of court probate records and their contents.

CHAPTER 3

THE PROBATE RECORDS OF HAMPSHIRE COUNTY

Introduction

In reminiscing about the colonial era, the vision of the fiercely independent family, the trailblazer, and the tough coastal habitat of the seafarer comes into play. Often the thought of a well organized community striving for a single goal is overlooked along with the institutions which would record the lifestyle and living standard of the era.

While not the intent of the Crown court, records kept by the bench have yielded the basic data from which economic historians have estimated growth rates, productivity change, and wealth patterns in pre-Revolutionary America. This thesis will also use these records in an attempt to measure the agricultural productivity change of a single county in Massachusetts.

Chapter 3 presents the reader with an insight into the probate records of Hampshire County, the wealth of information they contain, and the means by which they were sampled from the probate population. A brief review of the current literature is also contained within

this chapter.

Hampshire County

Hampshire County, Massachusetts, offered several advantages of study over other New England counties, the most important of which was the availability and clarity of the court records which supply the data base for this thesis. Other counties contained more volumnous court registries, but these were blemished by periods of missing and/or unreadable material.

Geographic location of this west-central Massachusetts county is presented in Figure I. The reader will note that the county is bisected by the Connecticut River. Since this waterway is present, one may question how representative the selection of this county is. However, for the time period under study, a case can be made that the river did not create a unique situation. In the seventeenth century, the Connecticut did provide a means of transportation for small crafts which led to the heart of the area being settled by 1660. From this base, people spread to the interior and by 1700 much of the county was settled. The river again came into prominence after the American Revolution when agricultural products were

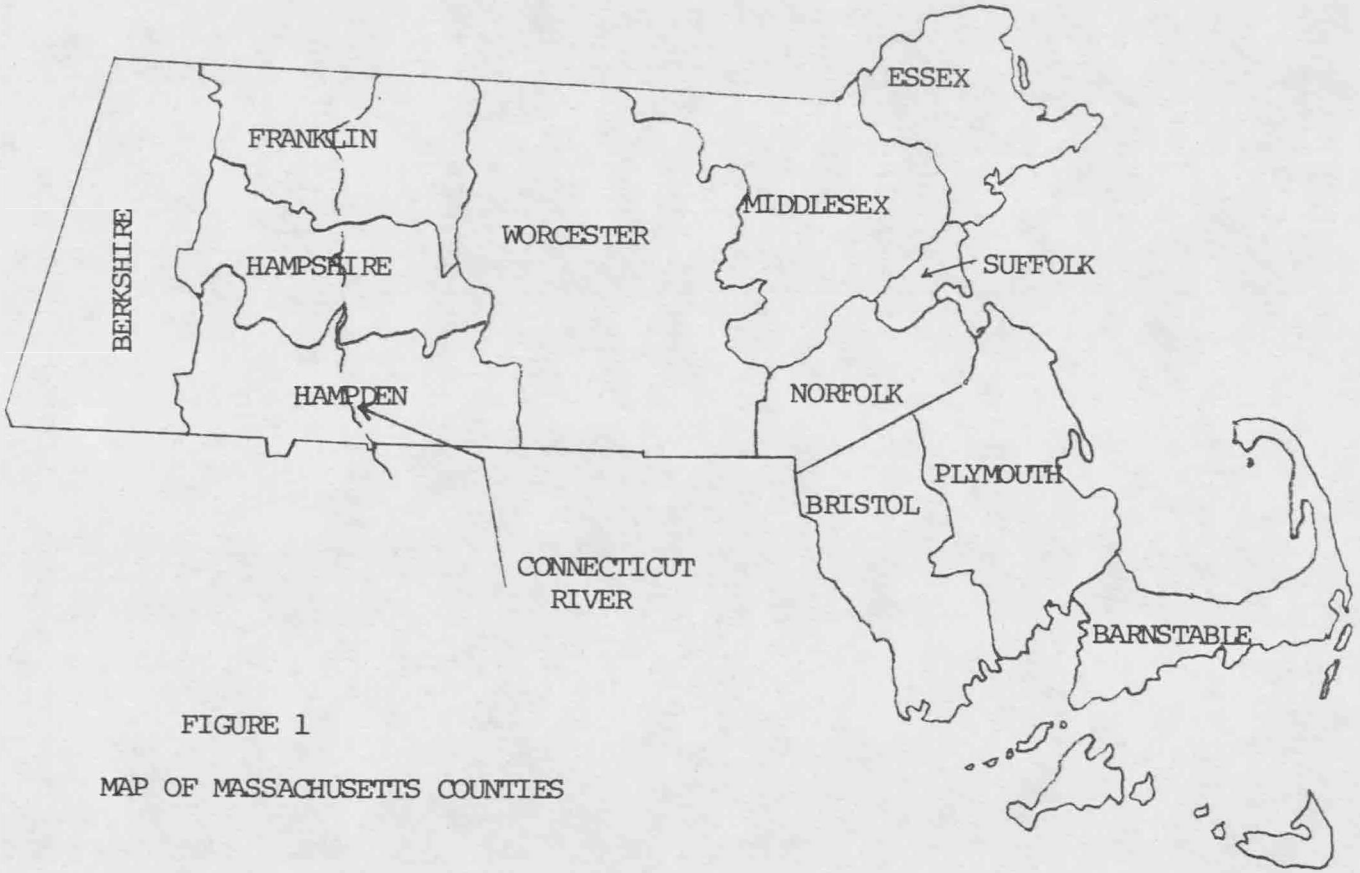

FIGURE 1

MAP OF MASSACHUSETTS COUNTIES

traded in volume and transportation facilities were expanded.

During the interim, the Connecticut River did supply a means of transportation and communication. However, due to the self-sustaining nature of the farm it was unlikely that the farmer traded his products far from their point of origin. This is underscored by the fact that before 1790, the river was commercially navigable only as far as Enfield in Connecticut, 65 miles from the Sound.[16] Thus, even with the presence of the Connecticut River, Hampshire County can be viewed as representative of the settled surrounding area for the time period under study.

Probate Records

Some of the best and most complete court records of the eighteenth century Massachusetts are those of Hampshire County. These records are composed of wills, deeds, notes concerning debtor-creditor relationships, wages paid to individuals, and estate inventories. Such records provide an insight into the standards of living and social structure of the pre-revolutionary society. (The terms

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[16]Bidwell and Falconer, History of Agriculture, p. 141.

estate inventory and probate record will be used interchangeably throughout the remainder of the thesis.)

Estate inventories are comprised of the input and output factors held by an individual at the time of death or the time at which the inventory was taken. Court appointed administrators were required to construct a complete list of everything the deceased had owned including land, buildings, slaves, livestock, tools, crops on hand, currency, and household goods. Many estate records went so far as to catalogue each differing form of kitchen utensil and often times even items which were broken and unusable were recorded. Each item is valued in the English system of pounds, shillings and pence. Administrators of the estate, usually two neighbors plus the wife or a son of the deceased, valued the inventory according to estimates of what the items would command at a forced sale. The accuracy of the inventory values is indicated by their close agreement with the amounts received at public vendue sales.[17] In addition, since the

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[17]Alice Hanson Jones, "Wealth Estimates for New England Colonies About 1770," Journal of Economic History 32 (March, 1972), p. 100.

appraisal comprised the individual's total credit, it was in the interest of the major creditors to see that the inventory was not seriously under-valued.

While almost all of these records were extremely detailed and complete, others assembled items into a few large heterogeneous categories. For example, some probates indexed items according to such general headings as livestock, crops, capital, land and buildings, and clothes and household goods. Each such grouping was then assigned a value.

Besides those items mentioned, probate records supplied the name of the individual, his or her place of residence, the date of death or the date which the estate was probated, debts due to or from the estate, and very rarely, the age and occupation of the individual. However, in most cases the occupation of the deceased could be determined through the contents of the estate.

Sampling Technique

After deciding on Hampshire County as the area for study, the large number of probate records had to be sampled in a way which would supply the best information concerning agricultural inputs and outputs. All estate

inventories between the years 1700 and 1779 were surveyed. Since the main focus of this thesis is to determine the change in agricultural productivity over the time period in question, those records providing the best information on agricultural output (that being the major factor contained within the records) were deemed the most desirable. Thus, inventories taken during the harvest months would be more likely to contain the desired information due to the consumption, barter, or selling of goods during the remainder of the year. The months of harvest were considered July through November, inclusive.

All probates dated between and including July first and November thirtieth were transposed onto worksheets. Appendix A contains an example of the worksheet used. The name of the deceased, the town and date of probate, and the number and value of all livestock, crops, slaves, land, buildings and capital equipment was recorded. In addition, all cash on hand at the time of death, all debts due to or from the estate, and the individual's total wealth was registered. Any additional information giving insight into the agricultural practices or standard of living of an individual was documented.

Although input and output items are listed in a single block on the worksheet, each separate item (i.e., horse, cow, etc.) within that category was recorded individually.

In viewing the sample worksheet the reader will note that capital goods have been broken down into groupings as to general usage as fixed or working capital. Fixed capital consists of items used for further production of market goods. This subdivision contains plows, harrows, rakes, carts, wagons, hogsheads, troughs, traps and hunting needs, lumber, iron, and sundry hand tools.

Working capital included all livestock, commercial crops, (hay, wheat, barley, corn, etc.) furs and wool. All grains on hand at the time of probate, either growing, harvested but not gathered, or stored within the barn were measured in bushels and valued. However, only five probates went so far as to state yields per acre. Hay and wool were assessed according to the number of loads or tons, and weight in pounds, respectively. Such items entailed the output of the farm and were likely to be consumed or bartered away in a period of time. Cash has also been included in this category. Livestock on each farm varied in number and value. Sex of the animal was

usually stated but rarely was it further described unless very young, old, or physically handicapped.

Nearly every individual's probate inventory listed land. Unfortunately, land was rarely classified as to its placement in crops, pasture, or lumber production. Land was recorded under the title "homelot" and was valued not only for the immediate grounds, but also for any barns, outbuildings or other improvements (i.e., bridges, fences, etc.) that were constructed. Numerous records listed such holdings in acres, but the use of divisions, lots and parcels was also common.

Slaves and miscellaneous items were recorded in an attempt to better understand the living standards and labor force of the area. Clothing, books, furniture, kitchen utensils and personal items fall under the heading of household capital. While not specifically recorded on the worksheet, this subdivision comprised those items not contained within working or fixed capital. The value of household capital is easily determined by adding all the contents of the worksheet and subtracting it from total net wealth.

Questions arise when an item may be placed in more

than one category. For example, pails and barrels could be classified as either fixed or working capital depending on its major function. Since items of this nature hold relatively low values, their affect upon the summed valuation of any capital subgrouping is minimal. So long as consistency is maintained in classifying these items, productivity measures are not affected.

People and Places of Probate

Table 1 gives the breakdown as to the number of probates falling within the designated harvest months and their location. The eighty year time span was broken down into twenty year periods strictly for organizational purposes. If a year for town settlement could be determined, it is given in column seven of the table.

Several towns supplied probate records of an early period but none afterward. This is due in part to the incorporation of a town into another existing settlement, the dying of the community, district gerrymandering, name changes, or other factors. Table 1 also indicates 369 total probates were sampled. Actually, 395 records exist between the dates designated as those of harvest. Twenty-six of the probates were removed on the basis that the

TABLE 1

Probate Records and Location

Town	Total Number of Probates Per Town	1700 to 1719	1720 to 1739	1740 to 1759	1760 to 1779	Year of Settlement
Amherst[a]	4				4	1739
Ashfield	1				1	1742
Blechertown	2				2	1727
Blandfurd	8			5	3	1741
Brimfield	16		1	10	5	1715
Brookfield	5	5				1660
Charlestown	1			1		1628
Chesterfield	4				4	1762
Cold Spring[b]	1			1		
Colrain[c]	2				2	
Deerfield	10	1	2	5	2	1670
Egremont	1	1				1730
Enfield[b]	11	4	6	1		
Grandby[d]	1				1	1762
Granville	9				9	1747
Greenfield	4			1	3	1753
Greenwich	6			1	5	1749
Hadley	23	1	10	9	3	1659
Hartford	2				1	
Hatfield	21	7	6	5	3	1670
Hausaton	1		1			
Houseatunnick[e]	1		1			
Huntsbury	1				1	
Kingston	1		1			1717
Monson[f]	2				2	1715
Montague	3				3	1753
New Marlboro[g]	4			4		1739
New Salem	6				6	1753
Northampton	24	6	3	13	2	1654
Northfield	2	1		1		1673
Number Five	1				1	1770
Number One	4			4		
Palmer	2			1	1	1728
Pelham	6			4	2	1742
Poontoosuck[h]	1			1		1786

TABLE 1
(continued)

Town	Total Number of Probates Per Town	1700 to 1719	1720 to 1739	1740 to 1759	1760 to 1779	Year of Settlement
Rodetown	2			1	1	
Sheffield[g]	11			1	3	1742
Somers	2		2			
South Brimfield[d]	2				2	
South Hadley[i]	8			2	6	1721
Southampton[j]	2				2	1732
Southwick	1				1	1734
Springfield	59	8	8	29	14	1636
Stockbridge[g]	3					
Suffield	12	2	7	3		
Sunderland	13		3	8	2	1718
The Elbows	2		2			
Wareriver[k]	4			1	3	1761
Warwick	2				2	1760
Westfield	32	5	5	13	9	1684
West Hoosuck[l]	1			1		
West Springfield	2	1			1	1696
Wilbrham[m]	7				7	1763
Worthington	3				3	1768
Other[n]	11	9	1		1	
TOTAL	369	51	59	136	123	

a -- second precinct of Hadley
b -- part of Belchertown
c -- moved from Massachusetts to New Hampshire in June of 1736
d -- second parish of South Hadley
e -- Indian name for Sheffield
f -- part of Brimfield
g -- located in Berkshire County
h -- Indian name for Plainfield
i -- second precinct of Hadley
j -- second precinct of Northampton
k -- also known as Ware and Ware River Parish
l -- Indian name for Williamstown
m -- located in Hampden County
n -- refers to town names that were not listed or not readable from the probate records.

individual held absolutely no agricultural output or means of production. Of these twenty six, fourteen were women, and twelve were men, all of whom owned only wearing apparel.

The question arises as to just how complete were the court records. Did 395 people die in the five months of harvest over an eighty year span, or is that the number the court could compile? Not all estates went through the probating process. Whose estate was probated was based on province law and the degree to which the law could be circumvented. When a town resident died intestate, the local court judges would be notified by the sheriff, who in turn had been informed by a local constable or neighbor. On the other hand, testators estates appeared in the court records when instructions contained in the will could not be carried out without the sale of some or all of the assets, or when creditors petitioned the court to examine a possible insolvent estate. It has been estimated that between 32 and 40 percent of the estates of adult white males in New England went through the probating process.[18]

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[18]Ibid.

Many of the decendants for whom no inventory was taken were probably of the lower existing wealth structure.[19] Few if anyone would benefit by having estates with little or no wealth go through the probating process. This would be true of drifters, the infirm, and the young who did not have sufficient time to accumulate a large number of assets. The elderly who saw fit to disperse of their worldly goods prior to death would also avoid the process of probate. Those of middle and upper income who wished to avoid an inventory of their estate could do so by distributing the wealth among heirs, under the conditions that there were no heirs or creditors demanding an accounting, and assets were not required to be sold in order to settle the estate. However, the remaining probate records provide economic historians with one of the few sources for estimating growth in the colonial era. Any bias associated with the probates is discussed in the following chapter.

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[19]Terry Anderson, "Wealth Estimates for the New England Colonies, 1650-1709," Explorations in Economic History 12 (1975), p. 152.

Literature Review

At this time it would be advantageous to review briefly the works of several historians and economic historians and view how they utilized probate records to increase our understanding of the pre-Revolutionary society. Scholarly works employing probates can be broken down roughly into three categories. Colonial court records have been used to study population growth and demography, wealth accumulation and concentration, and economic growth and stability. Each of these areas, of course, overlap and support each other.

Among those using probates to study demographic structure, Robert Higgs and Louis Stettler are an excellent example. In their work, "Colonial New England Demography: A Sampling Approach" they rely in part on early clerk records for the determination of age at marriage, average number of children per family, and the birth rate.[20] This article focused on numerous counties within Massachusetts and Connecticut during the

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[20]Robert Higgs and H. Louis Stettler, "Colonial New England Demography: A Sampling Approach," William and Mary Quarterly 28 (April, 1970).

period 1720 to 1760. Their findings which included that marriage did not occur at a relatively early age (women at about 21, men near age 24) and number of children per family averaged approximately seven, have alerted historians to examine closely certain theories earlier professed concerning the colonial era.

Wealth levels and concentration have been estimated by Gloria Main, James A. Henretta, Terry L. Anderson, Jackson Turner Main and Alice Hanson Jones.[21] In very broad terms, these researchers have applied tax and census records in an effort to determine the extent to which wealth was distributed among the inhabitants of a local colonial region. Each of these scholars has chosen a location in which extensive data records are available.

Gloria Main believes that the top ten percent of colonial wealth holders owned at least 50 percent of

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[21]See Terry Anderson, Explorations; James Henretta, "Economic Development and Social Structure in Colonial Boston," William and Mary Quarterly 22 (January, 1965), pp. 93-105; Alice Hanson Jones, "Wealth Estimates;" Gloria Lund Main, Explorations in Total Use of Probate Records (Ph.D. dissertation, Columbia University, 1972); and Jackson Turner Main, "Trends in Wealth Concentration Before 1860," Journal of Economic History 31 (June, 1971), pp. 445-447.

of society's wealth.[22] Alice Hanson Jones' estimates also approached the same 50 percent mark.[23] James Henretta examined Boston tax records and found that in 1687 the top ten percent of the taxpayers owned 42 percent of Boston's wealth while by 1771 they owned 57 percent.[24] Such studies give new insights into the structure of colonial society and have a marked influence upon new views being constructed concerning the country's early years.

Authors concerned with economic growth and stability have approached the subject from both the view of a single individual and the broader range of a social community. Aubrey C. Land, in his article, "The Planters of Colonial Maryland" presents several individual probate records to give insight into the life of the Maryland planter.[25] Researchers such as William Sachs and others

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[22]Gloria Main, Explorations, pp. 244-251.

[23]Alice Jones, "Wealth Estimates," p. 122

[24]James Henretta, Evolution of American Society, p. 87.

[25]Aubrey Land, "The Planters of Colonial Maryland," Maryland Historical Magazine 67 (Spring, 1972).

have used the values contained within the probate inventories to construct price indicies and chart fluctuations.[26]

Of particular interest to this thesis is the work concerned with determining agricultural productivity changes and economic growth of the colonial period. Studies of this nature have been carried out by Terry Anderson,[27] Duane Ball and Gary Walton,[28] George Rogers Taylor,[29] and James Shepard in conjunction with Gary Walton.[30]

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[26]See William Sachs, "Agricultural Conditions in the Northern Colonies Before the Revolution," Journal of Economic History 13 (Summer, 1953); Terry Anderson, "Economic Growth in Colonial New England: Statistical Renaissance," Journal of Economic History, Forthcoming; Gloria Main, Explorations; and Jackson Main, "Trends in Wealth Concentration."

[27]Terry Anderson, The Economic Growth of Seventeenth Century New England (Ph. D. dissertation, University of Washington, 1972).

[28]Duane Ball and Gary Walton, "Agricultural Productivity Changes in Eighteenth Century Pennsylvania," Journal of Economic History 36 (March, 1976).

[29]George Taylor, "American Economic Growth Before 1840: An Exploratory Essay," Journal of Economic History 24 (December, 1964).

[30]James Shepard and Gary Walton, "Trade, Distribution, and Economic Growth in Colonial America," Journal of Economic History 32 (March, 1972).

Among these researchers Ball and Walton concluded that productivity change in eighteenth century Pennsylvania ranged between 0.2 and 0.3 percent per year[31] while Menard places a higher value on the change--0.5 percent per annum.[32] Yet, this figure is one-half that proposed by George Rogers Taylor, who arrived at his conclusions through value judgments rather than statistical procedure.[33] While the figure is still in dispute, it is believed to lie somewhere below the one percent sponsored by Taylor.

Conclusion

In reviewing probate records and their contents, the amount of information they contain is substantial. This wealth of information is open to any who take the time and trouble to examine them closely. The colonial era is void of economic data due in part to the fact that the use of probate records in economic research is relatively new, but wider review and use by scholars

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[31]Ball and Walton, "Agricultural Productivity Changes," p. 114.

[32]Russell Menard, "Comment on Paper by Ball and Walton," Journal of Economic History 32 (March, 1972), p. 124.

[33]George Taylor, "American Economic Growth," p. 429.

will no doubt fill in many of the present gaps. The remainder of this thesis is but one example in employment of probate records. The approach taken in their use is relatively new, and hopefully will prove to be another tool for the economic historian to utilize in the quest for greater knowledge of America's early years.

CHAPTER 4

WEALTH IN COLONIAL HAMPSHIRE COUNTY 1700-1779

Schools of Thought

Recently there has been a large volume of literature published dealing with wealth distribution and inequality in the colonial era. By studying wealth inequality, a better understanding of the growth and direction taken by the pre-revolutionary society is provided. Specifically, Hampshire County wealth inequality trends will be examined in this chapter. While the results obtained in studying Hampshire County are not extrapolated to the remaining colonies, or even to the Colony of Massachusetts, they provide additional pieces of information to the economic historian. In addition to the study of the general trend in wealth inequality, the components of wealth will be examined.

Before examining wealth in Hampshire County, three basic schools of thought which have arisen to explain measured wealth inequality trends are discussed.[34] The

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[34]Jeffery G. Williamson and Peter H. Lindert, Long Term Trends in American Wealth Inequality (Institute for Research on Poverty, Madison: University of Wisconsin), pp. 8-10.

first believes that the highly concentrated wealth structure of England was exported to the colonies where it was slowly broken down by frontier existence. The second school believes that the frontier began with a relatively equal distribution of wealth, but that the accumulation of capital and other means of production caused inequalities to develop. Finally, the third school felt that wealth inequality trends have no single pattern, but vary according to region and social complexity. Therefore, each region should be viewed as a separate entity, and then combined to provide a total picture of colonial wealth patterns. Each of these schools are presented in turn.

Jackson Turner Main's publication of The Social Structure of Revolutionary America launched economic historians into a sustained and scientific study of wealth concentrations in pre-revolutionary America.[35] Until his work, the impressions of wealth distribution in the colonies were based primarily on the reflections

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[35]Jackson Turner Main, The Social Structure of Revolutionary America (Princeton: Princeton University Press, 1965).

of learned observers and sociologists such as de Tocqueville. In his work, Main concluded that about fifty percent of the society's wealth was held by ten percent of the population.[36] This wealth concentration, according to Main, was primarily created through accumulation of land by the rich, an economic elite composed of bankers, traders, and merchants, a large dependent labor force, and entrepreneurs with extensive economic power. The findings of Alice Hansen Jones and James Henretta lend support to the Main hypothesis. Jones, in "Wealth Estimates of the New England Colonies About 1770," concluded that fifty percent of all wealth was held by ten percent of the populace.[37] James Henretta in his work found that in 1687 the top ten percent of the taxpayers owned 42 percent of Boston's wealth, while by 1771 they owned 57 percent.[38] However, the tax records used by Henretta have been shown to undervaluate numerous items of individual estates and failed to record others

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[36]Ibid., p. 42.

[37]Alice Jones, "Wealth Estimates," pp. 98-127.

[38]James Henretta, "Economic Development and Social Structure in Revolutionary Boston," William and Mary Quarterly 22 (January, 1965), pp. 93-105.

altogether. In addition, the records are based only on two tax lists and apply only to centers of commerce.

While those who followed the basic Main hypothesis believed that the concentrated wealth distribution of England was exported to the colonies, other researchers hypothesised that the existence of the frontier created equality among the classes; that is, land was easily attainable and that an equal distribution of land would create equal wealth. Starting at this base, researchers like Kenneth Lockridge studied the changing values and size of land tracts held by an individual over time.[39] Lockridge concluded that the increasing wealth concentration he measured in the more urban areas was due to diminishing opportunities for land acquisition, thus creating a landlord and landless class system. Such land accumulation could not be attained, he reasoned, on the frontier where land was easily acquired. However, such a view contains two problems given only a cursory glance by Lockridge. First, his research focused upon eastern townships and assumed that young men would be reluctant

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[39]Kenneth Lockridge, "Land, Population and the Evolution of New England Society, 1630-1790," in S.N. Katz, ed., Colonial America: Essays in Politics and Social Development (Boston: Little, Brown and Co., 1972).

to journey from them to the frontier. Also missing is a discussion of non-agricultural pursuits within urban areas which may have drawn men away from the soil and/or employed the landless of the cities. Since Lockridge concentrated on the more populous and commercial centers of the east coast, his conclusions about the rate of wealth inequalities cannot be extrapolated to the colonies in total, but remain restricted to the coastal community. Also subscribing to the notion that the frontier created economic equality among the classes are Nash, Kulikoff, and Bridenbaugh.[40] They found general wealth inequality and poverty on the rise in American cities (Boston, Philadelphia, and New York) while relief roles were ballooning and job opportunities were declining. Yet they failed to view the economic performance of settled agrarian regions and the overall trend experienced by the colonies.

The third school, which is supported by Williamson and Lindert, adopt the view that wealth concentration

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[40]See Carl Bridenbaugh, Cities in Revolt: Urban Life in America, 1743-1776 (New York: Knopf, 1955); Allen Kulikoff, "The Progress of Inequality in Revolutionary Boston," William and Mary Quarterly 28 (July, 1971), pp. 375-412; and Gary Nash, "Poverty and Poor Relief in Pre-Revolutionary Philadelphia," William and Mary Quarterly 33 (January, 1976), pp. 3-30.

trends were mixed, but in the aggregate that concentration was stable at low levels.[41] Cities which have experienced rising inequality trends were the fast growing urban areas that attracted the young and/or landless. Other cities without such an influx had little or no rise in inequality, while agrarian regions experienced both growing and declining inequality.

Lindert and Williamson concluded that the colonial era exhibited a lack of consistent local behavior, a consistency which in itself is typical. In addition, they stated that if population shifted toward regions with both lower inequality and more rapid wealth accumulation per capita, rising inequality in all town and rural communities still fails to establish a case for aggregate colonial inequality trends.

Bias in Probate Records

All studies on colonial wealth inequality use probate inventories and/or tax records as a data base. Due to the fact that estate inventories were relatively easier to obtain, and some tax records have proved bias, the following analysis of Hampshire County uses probates

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[41] Williamson and Lindert, p. 9.

exclusively. Before discussing the trends in wealth concentration, a few reminders concerning the use of probate records should be made.

In examination of wealth inequality through the use of probates, questions arise as to how, or if, the unprobated individuals affect the results, and if the probated population accurately reflects the living population. As stated earlier, it has been estimated that between 32 and 40 percent of the adult white males had their estates inventoried.[42] However, these same studies show that the poor, as well as the rich, are represented in the court records. Since there is no evidence to indicate that the population mix varied over the 80 year period, relative relationships are not distorted by these unprobated individuals.

Previous studies have also shown that the same trend in wealth concentration applies to both the living and the probated colonial population.[43] Such research has established that adjusting wealth figures to reflect the living population only results in the levels of wealth

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[42]Alice Jones, "Wealth Estimates," p. 100.

[43]Williamson and Lindert, pp. 11-13.

being changed and does not affect inequality trends. This again assumes that the inventory coverage remains the same over time. Since this thesis deals in part with general trends in wealth concentration and inequity, one need not be concerned with the nonprobated individuals or with the adjustments necessary to reflect the living population.

Wealth Inequality

Total net wealth of an individual is measured by summing all values contained within that individual's probate record and adjusting for any outstanding debts. Table 2 contains the combined average net wealth of all individuals on a decade by decade basis. Total wealth climbs throughout the first 50 years of the decade and then drops sharply through the following 20 years to recover only slightly in the 1770's. The reason for the large jump occuring in the 1730-1739 decade and the continued high level through the 1740's has yet to be established. The same is true for the decline of the 1750's and 60's.

How this average total wealth is distributed among the population gives added insight into the structure of

the society. Table 3 presents the percentage of wealth held by the richest 10 percent, 25 percent, 50 percent, and 75 percent of the probated population. The figures in column two indicate a high degree of wealth concentration during the 1720's, an appreciable decline during the decade of the 30's, and a rebounding occuring in the 1740's. Wealth concentration continues to increase throughout the remainder of the century. The figures in column 2 correspond well to wealth concentration estimates by Williamson and Lindert for Hampshire and Suffolk Counties (Table 4). While staggered time periods make it difficult to compare and contrast the results from each study, their findings have a slightly higher degree of wealth concentration during the early years of the century. They conclude that Suffolk County does not reveal any wealth inequality trends while Hampshire followed a somewhat "cyclical" pattern.[44] These cyclical movements, which are characteristic of several counties studied, led Williamson and Lindert to conclude that the "long term stability (or decline) in Boston's wealth concentration seems the best characterization of

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[44]Ibid., pp. 23-24.

TABLE 2

AVERAGE TOTAL WEALTH

PERIOD	NUMBER OF PROBATES	AVERAGE TOTAL WEALTH £
1700-1709	27	208.93
1710-1719	24	328.55
1720-1729	22	445.57
1730-1739	34	767.44
1740-1749	46	1282.76
1750-1759	82	453.21
1760-1769	58	378.40
1770-1779	47	385.68
TOTAL	340	

TABLE 3

PERCENTAGE OF NET WEALTH HOLDINGS
BY THE PROBATED POPULATION

YEARS	TOP 10% OF POPULATION	TOP 25% OF POPULATION	TOP 50% OF POPULATION	TOP 75% OF POPULATION
1700-1709	33	36	85	95
1710-1719	31	60	82	96
1720-1729	46	68	89	97
1730-1739	27	43	81	93
1740-1749	45	69	86	95
1750-1759	47	69	88	97
1760-1769	53	71	88	97
1770-1779	54	65	85	96
AVERAGE	42	60.1	85.5	95.75

TABLE 4

POPULATION OF WEALTH HELD BY TOP 10% OF POPULATION

		WILLIAMSON AND LINDERT			
	HAMPSHIRE		HAMPSHIRE		SUFFOLK
YEARS	TOP 10% OF WEALTH HOLDERS	YEARS	TOP 10% OF WEALTH HOLDERS	YEARS	TOP 10% OF WEALTH HOLDERS
1700-1709	33	1695-1704	35	1695-1704	36
1710-1719	31	1705-1714	38	1705-1714	33
1720-1729	46	1715-1719	52	1715-1719	31
1730-1739	27				
1740-1749	45				
1750-1759	47	1750-1754	41	1750-1754	31
1760-1769	53			1760-1769	38
1770-1779	54				

the whole colonial era."[45]

Wealth concentration in Hampshire County (as shown in Table 3) ranges somewhat below the figures estimated by Jackson Turner Main and Alice Hansen Jones. The research conducted into colonial wealth concentration by Main concluded that the top ten percent of colonial wealth holders owned at least 50 percent of society's wealth.[46] Alice Hansen Jones discovered that "the richest ten percent may have held about 47 percent of total physical wealth, the bottom 20 percent only one percent, and the bottom half or 50 percent only eight percent."[47] On average, 85.5 percent of Hampshire County wealth was in the hands of only half of the probated population. Such concentration continued to rise until 75 percent of the population controlled all but about four percent of the wealth. In addition, a survey of the inventories was made in order to determine if wealth tended to concentrate

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[45]Ibid., p. 21.

[46]Jackson Turner Main, "Trends in Wealth Concentration Before 1860," Journal of Economic History 31 (June, 1971), pp. 445-447.

[47]Alice Jones, "Wealth Estimates," p. 122.

around a particular town or towns within the county. No such concentration was found to exist.

Wealth Composition

In order to have a better understanding of wealth and its composition in colonial Hampshire County, the components of wealth are examined separately. Following the classification in the previous chapter, wealth is divided along fixed, working, and household capital (Table 5).

Working capital is composed chiefly of land, livestock and crops. One must be aware that the term "land" includes crop land, buildings and other improvements, as well as the ownership of underdeveloped, wooded and swamp areas. In the aggregate, working capital comprises 73 percent of the average total wealth. Of this, land's share is 55 percent. This figure is lower than the 70 percent value determined by Jones and the average 60 percent figure of Anderson for the seventeenth century.[48]

In his study of eighteenth century Hampshire, Anderson concluded that land was still available to accommodate

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[48]See Terry Anderson, "Economic Growth in Colonial New England: 'Statistical Renaissance'," Forthcoming; and Alice Jones, "Wealth Estimates," p. 107.

extensive growth during the period (1700-1779).[49] In support of this conclusion the average value of land per decade decreased during the latter time period of this study (Table 6). Such a conclusion does not lend credence to the conclusion of Kenneth Lockridge that, "A perusal of hundereds of inventories of estates for all of the rural towns of Suffolk County in the years 1660-1760 reveals that the land values easily doubled and often tripled over the century throughout the region."[50]

While land is the major component of total wealth, crops constitute four percent and livestock 14 percent (see Table 5). If these figures appear low to the reader, it must be remembered that they capture only one year of agricultural production while land, agricultural capital, and household capital can and do accumulate over a period of time. In essence, agricultural production becomes a medium of acquisition for the other wealth components measured.

Fixed capital is composed of those durable goods which are used in the production of market items. Examples

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[49]Anderson, "Economic Growth," p. 9.

[50]Lockridge, "Land, Population," p. 69.

TABLE 5*

COMPONENTS OF WEALTH BY PERCENT

PERIOD	LIVESTOCK	LAND	CROP	CAPITAL	HOUSEHOLD
1700-1709	16	54	03	05	22
1710-1719	15	55	035	04	23
1720-1729	12	48	03	03	35
1730-1739	12	57	05	05	20
1740-1749	16	40	05	05	34
1750-1759	16	57	03	06	18
1760-1769	13	64	03	06	14
1770-1779	13	68	03	04	12
AVERAGE	14	55	04	07	22

*The average figures do not total to 1 due to rounding error.

would be plows, scyths, flails and other tools used for the cultivation and harvesting of grains, and any implements needed in the use of livestock production. Such capital averages seven percent of the total wealth for the 80 year span studied. Little variation is seen in the contribution made by this factor to total wealth (Table 5).

The remainder of total wealth (22 percent) was held in the form of household capital. This entails such items as clothing, household furnishings, cooking utensils, books, and other miscellaneous capital.

A comparison of the components of wealth for Hampshire County with other studies is hampered by time period differences and the researchers perogative of asset classification. For the years 1714-1790, with several intervening years absent, Ball and Walton concluded that three major categories within the probates: capital, livestock, and crops comprised 66, 25, and 9 percent of total wealth, respectively.[51] The figures in Table 5 compare somewhat better to those developed by Alice Hansen Jones for the year 1774.[52] She found land

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[51]Ball and Walton, "Agricultural Productivity Change," pp. 106-110.

[52]Alice Jones, "Wealth Estimates," p. 102.

to comprise 70 percent, agricultural capital 14.4 percent, crops 2.7 percent, and household capital 12.2 percent of total wealth.

Total and Real Wealth Holdings

Viewing average real wealth, unlike total wealth, permits study of increases and decreases in the wealth of society after general price increases are accounted for. Table 6 presents the general value changes over time of livestock, crops, land, agricultural capital, household capital, and the average total wealth of Hampshire County. In general, total wealth of livestock, crops, and land have a sustained rise in the first 40 years of the eighteenth century, except for a slight lag during the second decade. A sharp drop occurs in the 1750's and continues for two periods until a slight recovery is made. However, the components of wealth are mixed in their rebounding from the drop, with crops and agricultural capital losing ground in the last decade. Household capital follows no general trend and varies considerably between decades. The large fluctuations in average total wealth appear to have much of their foundations in the variability of household capital.

TABLE 6

WEALTH AND ITS COMPONENTS

PERIOD	AVERAGE TOTAL WEALTH £	LIVESTOCK £	CROPS £	LAND £	AGRICULTURAL CAPITAL £	HOUSEHOLD CAPITAL £
1700-1709	208.93	33.93	6.59	120.58	7.42	40.41
1710-1719	328.55	27.55	10.03	93.24	16.19	181.54
1720-1729	445.57	40.95	15.41	337.82	18.14	33.25
1730-1739	767.44	71.79	24.56	458.74	27.91	184.44
1740-1749	1282.76	140.26	59.37	725.11	50.33	307.69
1750-1759	453.21	41.67	13.06	303.37	13.60	81.51
1760-1769	378.40	24.97	8.60	270.33	18.78	46.72
1770-1779	385.68	33.51	6.26	284.96	11.94	85.01

Source: See text

Establishment of real wealth removes the disrupting influence of price fluctuations but requires a Consumer Price Index (CPI). A CPI as constructed by Anderson is contained in Appendix B. Table 7 contains real wealth values as they were determined through that CPI. Of note within the CPI (Appendix B) is the period 1740-1749 characterized by a rather large "bulge" which has not been traced to any particular set of circumstances. To compensate for the one time jump in the CPI figures during the decade of the 1740's, another value adjustment was employed. This deflator was determined by taking the value of land and adjusting it by the weighted average (as contained in the probate records) of the combined value of crops and livestock. Land is adjusted in this manner on the premise that the imputed value of land is based upon its production capability.

Capital, crops and livestock are adjusted by taking the value of the particular item and adjusting by the price index of that item. Household capital is adjusted through the CPI as developed by Anderson. In this manner, each capital component contained within the probates is adjusted by the index which directly affects the value of that variable rather than through a much larger capital

grouping as in the CPI. In order to assertain an overall real wealth figure, a composite value adjuster was constructed by weighting each of the individual indexes according to their contribution to total wealth. The resultant real wealth figures are contained in column 4 of Table 7. In all cases these figures are lower in value than those adjusted through the use of the CPI. Both real wealth determinations increase steadily in conjunction with average total wealth until the 1740-1749 decade. At this point, both measures of real wealth show a decline while nominal wealth increases markedly. It appears that the 1730's through the 1740's was a time of rapidly increasing prices, but an actual reduction in real wealth was experienced by the society. Afterwards, the real wealth figures rebound only to turn down again in the last two decades of the study.

Conclusion

Hampshire County wealth composition and inequality trends for the first eighty years of the eighteenth century are similar to that found for other New England regions during roughly the same time period. Over 85 percent of the wealth was held by 50 percent of the popula-

TABLE 7

REAL WEALTH VALUES

PERIOD	AVERAGE TOTAL WEALTH	REAL WEALTH CPI ADJUSTED	REAL WEALTH VALUE ADJUSTER
1700-1709	208.93	208.93	208.93
1710-1719	328.55	269.30	247.03
1720-1729	445.57	301.06	273.36
1730-1739	767.44	391.55	322.45
1740-1749	1282.76	258.10	225.44
1750-1759	453.21	380.85	345.96
1760-1769	378.40	344.00	284.51
1770-1779	385.68	296.68	277.47

tion; a majority of it in the form of land. Real wealth, as measured by both a Consumer Price Index and a composite value adjuster, increased throughout the first 40 years of the decade. Afterwards a decline was measured during the 1740's to be followed by 10 years of rising real wealth. The last 20 years of the study, 1760-1779, was a period of decreasing real wealth.

CHAPTER 5

PRODUCTIVITY MEASUREMENT

Introduction

Measurement of productivity change for Hampshire County, Massachusetts during the years 1700-1779 will be discussed in this chapter. Productivity is attributed to that value of agricultural output not explained by the input factors of land, labor and capital. Three methods are discussed in this chapter which will be used to indicate productivity change. The first, output/input analysis, compares an index of output to an index of inputs with the resultant difference measuring productivity change. A second measure of economic activity is the percentage change in real wealth over time. The last method employs regression analysis and includes a trend variable in the equation to measure productivity change over time. This chapter closes with a summary and conclusions of the thesis.

Anderson's Method

One proxy for measuring economic growth in the colonies is through changes in agricultural productivity. Terry Anderson's work, "Economic Growth in Colonial New England: 'Statistical Renaissance,'" attempted such a

measure for Hampshire County by estimating the change in total factor productivity over the years 1700-1779. In general, total factor productivity is measured by taking the percentage change (by decade) of the productivity index, which is a ratio of the output to the input index. Anderson used the Hampshire County probate data presented above to construct an index of total agricultural output per farm. The index was constructed by dividing aggregate values of crops and livestock by their respective average prices, decade by decade. Land and capital inputs were estimated in the same manner and the indexes are shown in Table 8.

Labor was the only input which could not be established from probate data. Therefore, it became necessary to estimate the number of individuals in the family labor force through other means. In order to establish family size, Anderson used the estimates of Daniel Scott Smith who reported that the average size of the completed family grew from 4.61 in 1691-1715 to 6.39 in 1761-1780.[53] A study by Ball and Walton concluded

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[53]Daniel Scott Smith, "The Demographic History of Colonial New England," Journal of Economic History 36 (March, 1976), pp. 108-109.

that 25 percent of the children along with two adults per household participated in the labor force.[54] Incorporating their findings with the estimates of Smith, and adding the average number of slaves per probate for the county (less than 0.1), gave the labor figures presented in Table 8. These same labor figures extrapolated to a yearly basis will be used in the regression analysis.

Assuming that the elasticity of output with respect to each input is given by each factor's share of total income, Anderson applied weights to the input indexes based upon average payments to land, capital and labor as determined for the years 1650-1709.[55] With an index of inputs and output established, a value for productivity change was computed by comparing the percentage change in output with the percentage change in inputs. The results shown in Table 8 indicate that total factor productivity declined by 0.8 percent per year. Thus, Hampshire County is shown to have averaged a negative growth rate for the greater part of the eighteenth century.

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[54]Ball and Walton, "Agricultural Productivity Change," pp. 108-109.

[55]Anderson, "Wealth Estimates, 1650-1709," pp.173-175.

Before comparing the -0.8 figure to values arrived at by other researchers, a second estimation of economic activity is presented. Another proxy for economic growth is the percentage change in real wealth over the given time period. Such percentage figures, and their average, are listed in Table 9. The +0.54 figure as determined by Anderson corresponds very well with the +0.5 value hypothesized by Menard in his discussion of a paper by Ball and Walton.[56] The +0.35 average determined through the value adjuster described in Chapter 4 is supported by Gallman's colonial growth estimates of between +0.3 and +0.5 percent per year for the eighteenth century.[57] Ball and Walton concluded in their work, which centered on eighteenth century Pennsylvania (1705-1774), that a growth rate of between +0.2 and +0.3 percent per year was experienced.[58]

While the conclusions drawn by these studies indicate

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[56]Russell Menard, "Commont on Paper By Ball and Walton," Journal of Economic History 36 (March, 1976),p.124.

[57]Robert Gallman, "The Pace and Pattern of American Economic Growth," in Lance Davis, ed., American Economic Growth (New York: Harper and Row, 1972), p. 22.

[58]Ball and Walton, p. 114.

a positive change in growth, this is not to say that the -0.8 productivity figure estimated by Anderson is incorrect. Changes in economic growth are not necessarily directly linked to changes in productivity. Growth relates to changes in the resource stock of a society, while productivity relates to the efficiency with which the resources are utilized. That is, real wealth could be increasing even with productivity remaining constant or declining, if inputs were on the rise. The data presented thus far suggests this was the case.

Regression Analysis

The employment of regression analysis upon estate inventory contents has the advantage of establishing a statistical relationship between the explanatory variables and the dependent variable. The output/input method attains a definitive numerical change in productivity while the regression analysis bases its conclusion on the statistical significance of the trend variable.

Economic theory states that the quantity of output depends upon, or is a function of, the quantities of land, labor, and capital employed in production. Such a production function is a mathematical equation showing

TABLE 8

TOTAL FACTOR PRODUCTIVITY
1700-1779

Base: 1700-1709 = 100

YEAR	ACRES OF LAND[a]	INDEX OF LAND	UNITS OF CAPITAL[b]	INDEX OF CAPITAL	UNITS OF LABOR[c]	INDEX OF LABOR	INDEX OF INPUTS[d]	INDEX OF OUTPUT[e]	8-7	PER-CENTAGE CHANGE
1700-1709	75.84	100	10.75	100	3.15	100	100	100	100	
1710-1719	61.54	81	33.75	314	3.19	101	112	116	104	+0.39
1720-1729	57.35	76	30.23	281	3.92	124	129	131	102	-0.19
1730-1739	48.75	64	60.67	564	3.93	125	146	149	102	0
1740-1749	181.73	240	39.63	369	3.86	123	148	131	89	-1.35
1750-1759	169.48	223	24.29	226	3.89	123	138	153	111	+2.23
1760-1769	188.74	249	43.67	406	3.67	117	146	108	74	-3.97
1770-1779	136.34	180	18.66	174	3.64	116	125	71	57	-2.58

Percentage Change 1700-1709 to 1700-1770 - 0.80

TABLE 9

PERCENTAGE CHANGE IN REAL WEALTH

PERIOD	REAL WEALTH CPI ADJUSTED	PERCENTAGE CHANGE	REAL WEALTH VALUE ADJUSTER	PERCENTAGE CHANGE
1700-1709	208.93		208.93	
		+2.57		+1.67
1710-1719	269.30		247.03	
		+1.12		+1.01
1720-1729	301.06		273.36	
		+2.66		+1.65
1730-1739	391.55		322.45	
		-4.08		-3.54
1740-1749	258.10		225.44	
		+3.97		+4.22
1750-1759	380.85		345.96	
		-1.01		-1.95
1760-1769	344.00		284.51	
		-1.47		- .25
1770-1779	296.68		277.47	
AVERAGE		+ .54		+ .35

the amount of output that can be produced from the specific set of inputs, given the existing technology. This functional relationship assumes that the inputs are optimally attainable from the specific inputs. Using these inputs, four regression equations are specified in an effort to approximate the production function which best describes Hampshire County.

Each of the four regression models and results will be presented in turn. For all regression results, an F-test at the .05 level is used in determining the significance of the explanatory variables. Those variables which are significant are designated by an asterisk in the regression tables. For each regression equation, the primary null hypothesis assumes that productivity change is equal to zero, which, within the context of the regression model implies an insignificant trend.

The regression analysis presented below relies on measuring productivity change as a residual effect imputed to trend. Such an analysis relies heavily upon the accuracy and completeness of the data, and the ability to specify correctly the production function. That is, the trend value may reflect specification error in the

production function and/or spurious relationships created by deficient data. Such data would indicate a productivity change when in fact one did not occur.

The first regression equation specifies the dependent variable agricultural output, as a linear function of the explanatory variables land, labor, capital, and (time) trend. This equation uses the Consumer Price Index (CPI) as a means of value adjustment (see Appendix B). The trend variable is placed on the right hand side of the equation to capture any changes in output not attributable to land, labor, and/or capital. In this manner, trend is a measure of productivity change.

The first regression equation specified in terms of the probate contents is:

$$Ot = B_1 + B_2(La)_t + B_3(Lb)_t + B_4(Ca)_t + B_{5t} \quad (1)$$

where

Ot = agricultural output

La = agricultural land

Lb = agricultural labor

Ca = agricultural fixed and working capital (excluding human capital), and

t = trend

TABLE 10

EQUATION: $O_t=B_1+B_2(La)_t+B_3(Lb)_t+B_4(Ca)_t+B_5t$

R squared .66

VARIABLE	B	STANDARD ERROR	F
La*	.1246	.008	242.6
Lb	2401390.	1755074.	1.87
Ca*	1.335	.1217	120.
t	-23001.	19955.	1.33

$$O_t=-7412286+.1246La+2401390Lb+1.335Ca-23001t$$
$$(.008)\ (1755074)\ (.1217)\ (19955)$$

The results from this regression, contained in Table 10, show that land and capital are the only significant explanatory variables. Labor and trend not only fall below the significant level, but each is associated with a relatively large standard error. In addition, trend has an associated negative coefficient.

Equation (2) takes the same functional form as equation (1), but employs the value adjuster as developed in the previous chapter.

$$O_t = B_1 + B_2(La)_t + B_3(Lb)_t + B_4(Ca)_t + B_{5t} \quad (2)$$

A review of residuals from the two equations indicated the appropriateness of this value adjuster rather than the CPI. The value adjuster has a smaller variation of residuals for the 80 year span than does the CPI. The results from equation (2) are contained in Table 11. As with equation (1), only land and capital are significant. However, both labor and trend have a negative coefficient but the associated standard error of each is considerably lower.

Both equation (1) and (2) assume that a linear relationship exists between the dependent and independent variables. Economic theory, however, tells us that the

TABLE 11

EQUATION: $O_t = B_1 + B_2(La)_t + B_3(Lb)_t + B_4(Ca)_t + B_{5t}$

R squared .47

VARIABLE	B	STANDARD ERROR	F
La*	.0712	.0072	98.86
Lb	-65.15	196.6221	.11
Ca*	.6229	.1115	31.22
t	-.284	2.2010	.02

$$O_t = 514.76 + \underset{(.0072)}{.0712La} - \underset{(196.62)}{65.15Lb} + \underset{(.115)}{6229Ca} - \underset{(2.201)}{.284t}$$

production function is not likely to be linear, although it might be approximated as such over a small region. The shape of the production function is determined by diminishing marginal productivity. As more and more of a specific input is used in the production process, other inputs will grow relatively scarce, and thus the addition of the specific input will be at a disadvantage in adding to production.

Assuming that such a nonlinear multivariate relationship exists, the regression equation can be transformed to a functional form equation which is linear in the parameters by a logarithmic transformation. The equation can be defined in terms of the probate record data as:

$$\text{Log}O_t=B_0+B_1\log(La)_t+B_2\log(Lb)_t+B_3\log(Ca)_t+B_4\log t+\log U_t \quad (3)$$

Such a functional form will track a concave path with respect to the trend variable as long as the coefficient on the trend figure is positive and less than one. A gradually decreasing productivity is captured by this functional format. Table 12 contains the results from this equation. With equation (3), capital and labor are statistically significant and the standard error of each

is relatively small. As was true with the previous model, labor is associated with a negative coefficient.

The fourth functional form follows a convex path through time. Such a curve suggests that technological change was increasing at an increasing rate. This model specification is the same as (3) except that the trend factor enters exponentially. In accordance with the probate record contents:

$$\text{Log}O_t = B_0 + B_1 \log(La)_t + B_2 \log(Lb)_t + B_3 \log(Ca)_t + B_4 t \quad (4)$$

The results from this model are contained in Table 13 and as with equation (3), all the variables except trend are significant with labor having a negative coefficient. In all regression results the null hypothesis is not rejected.

Analysis of the Explanatory Variables

The trend variable is included in the regression models as a proxy estimate of growth in agricultural productivity experienced by the County not attributable to land, labor and/or capital. Trend, however, never becomes significant in the regression analysis and a negative sign is associated with two of the four trend values. This lack of statistical significance and

associated sign in equations (2) and (3) connote that no significant increase or decrease in productivity took place in Hampshire County during the 80 year period 1700-1779.

Those models which give a positive coefficient on trend present further evidence of the low economic growth during this period. The trend figure in Table 12 implies a growth rate of 0.18 percent annually.[59] Calculating an average rate of growth over an 80 year period for equation (4) points to a 0.88 percent annual growth rate.[60] Such conclusions are consistent with those research studies presented above.

While measurement of the trend value is of central importance, viewing the components of wealth provides insight into the degree each input contributes to output change. Both land and capital are shown to be highly significant and are associated with low standard error in each of the regression models. This indicates the important contribution these two inputs make to agricultural output.

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[59] Note that $O_t = \alpha e.0018t$.

[60] Note that $O_{80} = \alpha(80).16 = 2.02\alpha$;
$O_{80} = \alpha e^{80x} = 2.02\alpha$; thus
$x = .0088$ or 0.88 percent.

TABLE 12

EQUATION: $\text{Log}O_t = B_0 + B_1 \log(La)_t + B_2 \log(Lb)_t + B_3 \log(Ca)_t + B_4 \log t + \log U_t$

R squared .33

VARIABLE	B	STANDARD ERROR	F
Log La*	.0934	.0263	12.55
Log Lb*	-2.784	1.1979	5.40
Log Ca*	.61242	.0592	106.97
t	.0018	.0016	1.27

$$O_t = 2.456 + \underset{(.0263)}{.0934La} - \underset{(1.1979)}{2.784Lb} + \underset{(.0592)}{.61242Ca} + \underset{(0016)}{.0018t}$$

TABLE 13

EQUATION: $\text{Log}O_t = B_0 + B_1 \log(La)_t + B_2 \log(Lb)_t + B_3 \log(Ca)_t + B_4 t$

R squared .33

VARIABLE	B	STANDARD ERROR	F
Log La*	.0927	.0263	12.38
Log Lb*	-3.494	1.4743	5.62
Log Ca*	.6151	.0589	108.92
Log t	.1594	.1198	1.77

$$O_t + 2.689895 + \underset{(.0263)}{.0927La} - \underset{(1.4743)}{3.494Lb} + \underset{(.0589)}{.6151Ca} + \underset{(.1198)}{.1594t}$$

While land and capital are statistically significant in all of the regressions, labor reaches a significant level only in the two logarithmic functions. Although significant in these functions, labor is nonetheless associated with both relatively high standard error and a negative coefficient. It should again be pointed out that labor input is not contained within the probate records and had to be calculated by decade through interpolation to arrive at the annual estimates. This inability to measure the net affect of labor increases the likelihood of labor becoming confounded with the intercep as well as the trend value. In order to test for such an association, the same equations as (1) through (4) were specified omitting the labor variable. The trend value in each of these regressions remained below the significant level and the R-squared value for each equation remained virtually unchanged.

Conclusion

The last two chapters highlight the economic stagnation Hampshire County experienced during the first 80 years of the eighteenth century. Agricultural productivity over this period as measured through

regression analysis was not significantly different from zero. Other research on Hampshire County, using the same data, found total factor productivity to be negative. While exact figures on productivity change will probably never be established, it can be safely assumed that the average change per year over the 80 year span was small, if not negative.

Viewing real wealth of the society over time also points to economic stagnation. While real wealth was on the rise over the first 40 years, the following 20 years were mixed, with real wealth falling close to 1720-1729 levels in the last decade. Wealth was primarily held in the form of land which comprises 55 percent of an individual's total wealth holdings, on average. Of the remainder, household capital comprised 22 percent, livestock 14 percent, agricultural capital seven percent, and crops four percent. In addition to such composition, it was found that only ten percent of the probated population held 42 percent of the wealth. This figure rises to 85.5 percent when half the population is examined, while 75 percent of the population held approximately 96 percent of society's wealth.

For all indications, Hampshire County was stagnant

from an economic standpoint. Yet, this does not differ from other research conducted into the colonial New England economy. What has been accomplished in this thesis is the formation of additional pieces to the puzzle on colonial economic development. Additional information was forthcoming on wealth concentration, wealth composition, and general wealth trends. Introduction of two neoteric approaches were also made in the thesis. The first is a construction of a value adjuster for each capital group based on probate values and indexes for that specific capital grouping rather than using a general Consumer Price Index. The second was regression analysis, through use of a trend variable, to directly measure agricultural productivity change from colonial probate records.

APPENDIX A

TOTAL WEALTH
DEBTS DUE TO ESTATE
DEBTS DUE FROM ESTATE
NET WEALTH _____

TOWN
MONTH, YEAR
NAME
PROBATE INVENTORY #

CASH _____

LIVESTOCK	NUMBER	VALUE
CATTLE:		
Bulls		
Calfs		
Cows		
Heifers		
Steers		
HOGS:		
Boars		
Sows		
HORSES:		
SHEEP:		
OXEN:		
OTHER:		

LAND:	ACRES	VALUE	ACRES NOT FORESTED
Meadow			
Lots			
Town Lots			

LABOR:	NUMBER	VALUE
Hired		
Indentured		
Slave		
Agricultural		
Non-agricultural		

CROPS:	ACRES	YIELD	VALUE	IN GROUND	ON GROUND	IN BARN
Apples						
Barley						
Corn						
Feathers						
Flax						
Furs						
Hay						
Indian Corn						
Malt						
Meslin						
Oats						
Peas						
Rum						
Rye						
Salt						
Wheat						
Wool						
Others						

CAPITAL	NUMBER	VALUE
Auger		
Ax		
Adze		
Bands		
Barrels		
Bettle Rings & Wedges		
Cart		
Chains & Irons		
Chissel		
Cutting Box		
Drawing Kinfe		
Forks (general)		
Grind Stone		
Guns		
Gunpowder & Shot		
Hammer		
Harrow		
Hay Knife		
Hoe		
Iron		
Knife (general)		
Lumber		
Pails		

	NUMBER	VALUE
Plow		
Rake		
Reeping Hooks		
Saddles & Bridles		
Saws		
Scythe		
Shears		
Shovels		
Sickle		
Staves		
Wagons		
Wool Cards		
Yoke		
Other		

APPENDIX B

APPENDIX B

Consumer Price Index 1700-1779

Base: 1700-1709 = 100

Period	Livestock	Crops	Consumer Goods	CPI
1700-1709	100	100	100	100
1710-1719	119	130	105	122
1720-1729	154	170	96	148
1730-1739	233	230	90	196
1740-1749	604	640	95	497
1750-1759	123	130	93	119
1760-1769	127	110	98	110
1770-1779	136	140	104	130

Source: Terry Anderson, "Economic Growth in Colonial New England: Statistical Renaissance," Journal of Economic History, Forthcoming

APPENDIX C

APPENDIX C

Selected Commodity Prices 1700-1779

Period	Horses £/head	Oxen £/head	Swine £/head	Cattle £/head	Corn £/bu.	Wheat £/bu.	Oats £/bu.	Wool £/lbs.	Land £/acre
1700-09	2.39	4.69	.83	2.39	.08	.16	.05	.07	1.59
1710-19	4.03	5.25	.62	2.33	.14	.20	.05	.06	3.14
1720-29	5.48	5.78	1.53	3.33	.14	.30	.07	.08	5.89
1730-39	7.66	9.89	1.97	4.55	.20	.39	.10	.16	9.41
1740-49	23.99	24.31	5.11	8.92	.42	1.26	.25	.37	3.99
1750-59	5.01	4.53	.95	2.22	.12	.18	.09	.06	1.79
1760-69	5.13	5.12	.76	2.06	.10	.18	.05	.07	1.48
1770-79	5.24	5.39	.98	2.46	.11	.22	.08	.07	2.09

Source: Terry Anderson, "Economic Growth in Colonial New England: Statistical Renaissance," Journal of Economic History, Forthcoming

APPENDIX C

Selected Commodity Prices 1700-1779

Period	Axe ₶	Cart ₶	Barrell ₶	Hoe ₶	Plow ₶	Sickle ₶	Hammer ₶	Average Livestock	Average Crops	Average Capital
1700-09	.24	2.90	.07	.15	1.21	.10	.15	2.58	.09	.69
1710-19	.13	2.13	.09	.20	.68	.04	.06	3.06	.11	.48
1720-29	.18	2.31	.11	.16	1.12	.08	.22	3.97	.15	.60
1730-39	.25	2.43	.21	.21	1.24	.14	.12	6.02	.21	.46
1740-49	.56	4.93	.20	.35	2.48	.19	.20	15.58	.57	1.27
1750-59	.17	2.11	.10	.12	1.26	.06	.13	3.18	.11	.56
1760-69	.14	1.88	.09	.11	.68	.06	.06	3.27	.10	.43
1770-79	.16	3.36	.12	.08	.64	.04	.06	3.52	.12	.64

Source: Terry Anderson, "Economic Growth in Colonial New England: Statistical Renaissance," Journal of Economic History, Forthcoming

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