



# Farm Property Taxes in Maine

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## INTRODUCTION

The property tax is one of the oldest and most prevalent methods of raising local revenues in the United States. The nature and scope of the tax have varied over the years in response to changing land uses, the emergence of other local revenue mechanisms, public-policy aims, and the evolving demands placed on local government for public services. In the agrarian society of the mid-nineteenth century, when land ownership was an accepted indicator of wealth and the ability to pay taxes, the property tax was viewed as the most equitable means of raising local revenues. Since then, the role of agriculture in the U.S. economy has changed substantially, and the structure of land ownership in rural areas has also changed. These changes and the financial stress that agriculture has been experiencing in recent years lead to questions about the effects of property taxes on the financial viability of farms.

In 1975, the Maine Legislature declared that "it is in the public interest to encourage the preservation of farmland ... in order to maintain a readily available source of food and farm products close to the metropolitan areas of the State ... and that it is in the public interest to prevent the forced conversion of farmland ... to more intensive (land) uses as the result of economic pressures caused by the assessment" of property taxes (M.R.S.A. 36 § 1101). Until that time, the Maine Constitution dictated that property taxes be assessed equally on property according to its just, or fair market, value. This view suggests that reductions in property taxes can be used as a mechanism to retain land in agricultural uses. Maine is not alone in its effort to reduce the property tax on agricultural lands. In fact, all 50 states have enacted some type of preferential treatment in the taxation of agricultural land (Wunderlich and Blackledge 1994).

The purpose of this report is to look at the effect of property taxes on agriculture in Maine using existing data sources. We investigate four specific issues:

- whether property taxes on agricultural lands in Maine differ from the property taxes on agricultural lands at a national level;
- whether property taxes on agricultural lands in Maine differ from the property taxes on land in nonagricultural uses in Maine;
- whether property taxes have increased as a percentage of production costs for Maine agriculture over the past fifty years;

- whether property taxes on agricultural lands differ for farms located in different regions of the state.

Each of the above issues is important. If agricultural land in Maine is taxed at a rate higher than the national average for agricultural lands, Maine's farmers could be placed at a competitive disadvantage to farms located in other states. It is relevant to examine real estate taxes as a production expense because property taxes, like most farm operating expenses, are usually paid out of current income. For this reason, concern is sometimes expressed that rising property taxes affect the financial viability of farm operations.

Agriculture varies across Maine, and we examine the magnitude of taxes in three disparate Maine counties. Aroostook County is the primary potato-producing region and is experiencing very low levels of development pressure. Kennebec County is the primary dairy-producing region and is experiencing moderate levels of development pressure. Cumberland County is characterized by a variety of agricultural enterprises and is experiencing perhaps the highest level of development pressure in the state. Thus, examining property taxation in each of these counties provides a picture of how property taxes on agricultural lands vary by region of the state.

We begin by reviewing the state's differential assessment program for agriculture through the Farm and Open Space Tax Law. This is followed by a summary of previous work that has been done to investigate the impact of property taxes on U.S. agriculture. The third section reports the findings for each of the four objectives stated above. The final section presents some general conclusions from the data reported in the third section.

## TAXATION OF AGRICULTURAL LANDS IN MAINE AND THE FARM AND OPEN SPACE TAX LAW

The largest sources of local and state revenues in Maine are the property, income and sales taxes. Of those, the property tax is the largest, generating approximately \$1.2 billion dollars to fund about 71% of local government services in 1997 (Maine Municipal Association 1998). From 1987 to 1997, while total population grew by less than 5%, the total property tax assessment in Maine increased by 33.7% after adjusting for inflation. With property taxes being the largest source of local revenues in Maine and agricultural enterprises being constituted of rela-

tively large land holdings, it is not surprising that farmers may feel the burden of communities raising taxes to fund schools and other local initiatives. The Maine Legislature, over the last 30 years, has enacted four tax relief programs: state-municipal revenue-sharing, the renter and homeowner circuit breaker program, the homestead exemption, and the Farm and Open Space Tax Law.

The Farm and Open Space Tax Law, enacted in 1975, requires that the valuation of farmland enrolled in the program be based on the current use for agricultural or horticultural purposes, and cannot reflect development values, or attributes such as road frontage or shore frontage. Rather, the value is based on such factors as farmland rentals, farmer-to-farmer sales, soil types and quality, the value of farm commodities produced, topography, and other considerations. Although suggested values for different types of farmland property values are provided by the Maine Department of Agriculture, no standardized formula is prescribed by the law for local assessors to make these assessments, and the farmland valuation, therefore, varies across municipalities. Moreover, it appears that there have been only sporadic sales of land between agricultural enterprises in recent years further limiting the base of information upon which assessors make valuation decisions.

Participation in the program is voluntary, requiring landowners to file an application for taxation under the provisions of the law. To be eligible, the farmland under consideration must consist of at least five contiguous acres on which agricultural activities have produced a gross income of at least \$2,000 per year in one of two, or three of five, calendar years preceding the date of the application. Gross income includes the value of the commodities produced for sale or consumed by the farm household. An owner may also file a provisional application if it is anticipated that the gross income requirements will be met within two years following the application.

The goal of the law is to encourage long-term preservation of farmland in agricultural use. To discourage short-term exploitation of the tax advantage afforded by the program, the law provides for recapture penalties if land is withdrawn from the program less than five years after its initial classification. For land classified as farmland less

than five years, the penalty is equal to the greater of 20% of its assessed fair market value, or the additional taxes plus interest, that would have been assessed on the property if it had not been enrolled under the Farm and Open Space Tax Law. For land that is withdrawn after five years, the penalty is the recapture of additional taxes, plus interest, that would have been paid on the land during the last five years if it had not been classified under the program.

To date, the law has resulted in limited, but growing, participation by farmers. Overall, 12% of the farmland in Maine was enrolled in the program in 1997 (Table 1). The statewide participation rate was 5.6% in 1987 and 9.4% in 1992 (Table 2). These figures include only farmland classifications; open space is assessed under a separate provision of the law. Farmland categories include cropland, woodland, pastureland, and other uses (house lot, roads, ponds). The distribution of land use on all farms in Maine in 1997 was nearly evenly split between cropland (45%) and woodland (47%) and has changed little during the past decade (Census of Agriculture 1997).

At the county level, participation rates in 1997 ranged from approximately 1% in Aroostook County to 32% in Knox County. The rate of participation increased in all but one county from 1987 to 1992, and from 1992 to 1997. Despite the steady increases, the generally low participation could be attributed to several factors, including the frequent changes that have been made to the law. Given the uncertain financial status of many farms and the average age of Maine farmers, the stiff recapture penalty for removing land within five years may also be a substantial impediment.<sup>1</sup> In addition, discussions with municipal tax officials indicate that some assessors value farmland at its use value regardless of enrollment, which effectively reduces the incentive to enroll farmland in the program. In addition, there may be little actual difference between the assessed value and use value of farmland in counties with low development pressure, thereby reducing any incentive to enroll farmland in the program. This, in fact, may be the case in Aroostook County where about 25% of the agricultural land is located.

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<sup>1</sup> According to *A Strategic Plan for Maine Agriculture* (Fogler 1998) only 43% of Maine farms had a net profit in 1997 and 35% operated at a net loss. The median age of Maine farmers is 52.

Table 1. Total farmland and farm acreage enrolled under the Maine Farm and Open Space Tax Law in 1997.

County	Total Farmland*	Enrolled Farmland**	Participation Rate
	----- Acres -----		%
Androscoggin	55,905	5,215	9.3
Aroostook	324,887	3,683	1.1
Cumberland	49,829	6,270	12.6
Franklin	40,091	2,663	6.6
Hancock	42,607	3,164	7.4
Kennebec	88,134	23,286	26.4
Knox	25,183	8,167	32.4
Lincoln	25,920	3,707	14.3
Oxford	63,959	5,062	7.9
Penobscot	116,593	29,696	25.5
Piscataquis	34,171	1,638	4.8
Sagadahoc	17,853	5,115	28.7
Somerset	101,270	23,315	23.0
Waldo	68,569	8,955	13.1
Washington	98,336	2,846	2.9
York	58,341	12,062	20.7
Total	1,211,648	144,485	12.0

\*Source: 1997 Census of Agriculture, USDA.

\*\*Source: 1997 Municipal Valuation Return Statistical Summary, Maine Revenue Services

Table 2. Percentage of farmland acreage enrolled under the Maine Farm and Open Space Tax Law.

County	1987	1992	1997
	----- % participation -----		
Androscoggin	3.7	7.6	9.3
Aroostook	0.5	1.4	1.1
Cumberland	6.5	10.2	12.6
Franklin	1.4	6.2	6.6
Hancock	3.8	6.6	7.4
Kennebec	16.5	23.7	26.4
Knox	3.9	22.9	32.4
Lincoln	5.4	12.0	14.3
Oxford	2.6	4.1	7.9
Penobscot	14.5	15.2	25.5
Piscataquis	0.9	3.1	4.8
Sagadahoc	4.2	14.5	28.7
Somerset	11.8	20.2	23.0
Waldo	2.2	9.7	13.1
Washington	0.0	2.7	2.9
York	9.6	17.7	20.7
Total	5.6	9.4	12.0

Source: Census of Agriculture, USDA and Municipal Valuation Return Statistical Summary, Maine Revenue Services.

## PROPERTY TAXATION OF U.S. AGRICULTURE

Concern for the impact of property taxes on farming is not new, nor is it unique to Maine. The effect on agriculture of America's transformation from its agrarian roots to an industrialized society to a mobile, service-based economy has been the focus of researchers for several decades. Previous research at the national level has examined the impact of taxes on farming from a variety of perspectives, e.g., the equity of property taxes as they affect agricultural versus nonagricultural enterprises and the role of tax policy in the ongoing changes in farm size and patterns of land ownership. We present a sampling of this research later in this report.

Stam and Sibold (1977) investigated property tax equity for agricultural and nonagricultural sectors of the U.S. economy. Tax equity generally exists where entities under similar economic circumstances are taxed equally. As a form of wealth taxation, the amount of property taxes paid can be compared to the market value of taxable property holdings (i.e., the effective tax rate). By this measure, Stam and Sibold found that the farm sector was paying proportionally lower taxes than the nonagricultural sector, and that this situation existed from 1935 until 1974. In 1974, the ratio of taxes to wealth was 0.6% for the farm sector and 1.4% for the non-farm sector. This differential might exist for several reasons including a slower turnover of farmland leading to a lag in assessed land values in markets with rapidly rising land values, state laws that permit differential assessment of farm property values, and differences in the quality and extent of municipal services in rural areas may be such that fewer tax dollars are needed.

It would be expected that property taxes are paid from current revenues. One way to measure their impact is to compare property taxes within a sector to the income that originates in that sector. By this measure, farmers have paid a disproportionately high level of property taxes. Stam and Sibold found that during the period from 1932 to 1975, property taxes took 7.9% of the income that originated from farming, but only 4.0% of the income in the nonagricultural sector. This situation is likely due to farming operations being land intensive while other business entities are not, i.e., nonfarm businesses generate substantially greater revenues per acre of land utilized. In other words, land is fundamental to the production of farms, but land is

only the location of offices, stores, and factories for most other businesses.

In 1993, Gaffney examined the relationship of property tax rates in U.S. agriculture to the size and distribution of farms. He found that lower property tax rates are associated with larger average farm sizes and lower ratios of the value of buildings and equipment to the value of land. Based on his findings, Gaffney argued that rather than providing a boon to small farmers and encouraging the use of farmland for productive enterprise, lower tax rates raise the investment grade of farmland and increase its attractiveness as a store for slack money. Using annual data from 1900 to 1987, Gaffney employed a Gini<sup>2</sup> ratio to examine the distribution of farms by size. The results showed that the decline in farm property tax rates after 1930 was directly related to the rise in inequality in the distribution of farmland. The Gini ratio in 1930 stood at 0.63, rising to 0.70 by 1950, and to 0.76 by 1987, indicating that farmland has become increasingly concentrated among fewer owners. When applied to real estate values of farms rather than acreage, the Gini ratio showed even greater increases, suggesting that farmland values are even more concentrated than farmland acreage.

Gaffney's analysis raised two other key points. First, that the value of farm buildings is much more evenly distributed than the value of farmland and that smaller farms have a relatively higher share of their total farm real estate value allocated to farm buildings. Gaffney used this fact to suggest that the property tax would be more progressive in terms of farm size if it were a pure land tax, exempting buildings. Second, having demonstrated the link between lower farm property tax rates and larger farm sizes, Gaffney examined whether farms in states with higher farm property tax rates have different characteristics than farms in states with lower farm property tax rates. Data from the 1987 *Census of Agriculture* was used to show that the nine states with the highest farm property tax rates (Maine is among those nine states) generally exhibited smaller average farm sizes, lower concentration of farm acres, higher ratios of machinery and equipment to real estate, and fuller land usage as measured by sales per dollar value of real estate.

One issue in interpreting the Gaffney results is that farms on the urban fringe, which tend to be smaller and have higher property taxes, may have been more likely to go out of business over this period of time. In addition, the correlation between lower property taxes and farm size may be purely

<sup>2</sup>The Gini ratio (or index of concentration) is a statistical measure of equality ranging from 0 to 1. A measure of 1 indicates perfect inequality; i.e., one farm has all of the farmland and the rest have none. A measure of 0 indicates perfect equality where all farms have equal shares of land.

coincidental with other market forces driving the increase in farm size, i.e., constant or declining product prices at the farm gate coupled with substantially increasing input costs.

Variations in property taxes across states depend upon several factors, including development pressures, level of reliance on the property tax for local revenues, and special treatment for various classes of land. Yet, there is a significant difference in the national share of farm real estate value and the farm property taxes paid across the states. In 1988, Texas held almost 12% of the nation's farm real estate value but paid only 8% of the real estate taxes nationwide (Wunderlich and Blackledge 1994). Iowa also paid 8% of the nation's farm property taxes but had only 5% of the farm real estate value. The difference here may be due, at least in part, to different patterns of land development. Texas has large expanses of land with very few, small towns, while Iowa has a much denser level of communities. Thus, farmland in rural areas of Iowa supports more municipal services through property taxes than does farmland in Texas.

In theory, an *ad valorem* property tax should be directly proportional to the value of the real estate being taxed. But at the national level, recent data shows that the taxes paid per \$100 value of farm real estate (the effective tax rate) declines as the total value of the land holdings increases (Wunderlich and Blackledge 1994). In 1988, farms valued at \$5 million or more paid \$0.47 per \$100 of real estate, while farms valued at less than \$700,000 were taxed at triple that rate—\$1.45 per \$100 of real estate. Viewed another way, farmers who valued their holdings at less than \$150,000 held 20% of the total farm real estate value but paid 27% of the taxes; farmers with holdings estimated at \$2 million or more held 18% of the farm real estate but paid 10% of the farm real estate property taxes. The regressivity could be explained by lower unit land values among the large farms, but in fact the opposite is true. The average value per acre of the large land holdings was \$830, while the per-acre value of the small land holdings was \$700. Wunderlich also explores whether differences in property tax rates between states might explain the apparent

regressivity at the national level, but finds that in every state the share of taxes paid by the smaller farms was greater than its share of farm real estate value when compared to large farms. This result is interesting for Maine, where it will be shown later in this report that small farms tend to be replacing large farms that go out of business.

## INVESTIGATING THE EFFECTS OF PROPERTY TAXES ON AGRICULTURE IN MAINE

Before turning specifically to the issue of the taxation of agricultural lands, it is helpful to consider some general trends in agriculture in Maine and in the U.S. These trend data are from the USDA's Economic Research Service where a farm is defined as any agricultural enterprise from which \$1,000 or more of agricultural products are produced and sold during the census year<sup>3</sup>. The long-term trend in Maine is toward fewer farms, declining in number from 35,600 to 7,600 (nearly an 80% reduction) between 1950 to 1995 (Figure 1). As one might suspect, the decline in the number of farms in Maine is greater than the decline in the number of farms in the U.S. During the same period, the number of farms in the United States dropped by 62% from 5.6 million in 1950 to 2.1 million in 1995. The surprising result is that the number of farms in Maine has been relatively constant from 1970 to 1996. Any casual observer of Maine's agriculture would realize that the broiler industry in the state closed, there has been a dramatic decline in the number of dairy farms in Maine that started with USDA's "dairy buy-out program" in 1985, and Maine's potato industry has also been struggling. However, while these substantial structural changes have been occurring in the 1980s and 1990s, Figure 1 shows that the number of farms in Maine has remained fairly constant.

In fact, USDA data suggests that the reduction in the numbers of large farms producing traditional commodities is being offset by an increase in the number of smaller farms. The average size of farms in Maine grew steadily from 1950 to about 1976,

<sup>3</sup>This report, and much of the previous work in this area, is based on secondary data sources. Most of the farm data is coordinated at the federal level by agencies of the U.S. Department of Agriculture (USDA) and, up until 1997, the U.S. Bureau of the Census. The use of federal data sources provides consistency of measures over time and across places. The data vary in the scope of information collected, geographic level of resolution, data collection procedures, primary data sources, and the definition used to measure property taxes. For simple, time-series comparisons of agriculture in Maine to the U.S. overall, this report relies on a data series called *Farm Real Estate Values* compiled by the USDA's Economic Research Service. Time series data detailing farm production expenses for Maine and the U.S. are taken from the Economic Research Service's *State Farm Income Data* series. County-level analyses of farm values and property taxes in Maine rely on data from the Maine State Planning Office and the *Census of Agriculture* conducted by the U.S. Bureau of the Census and the USDA.

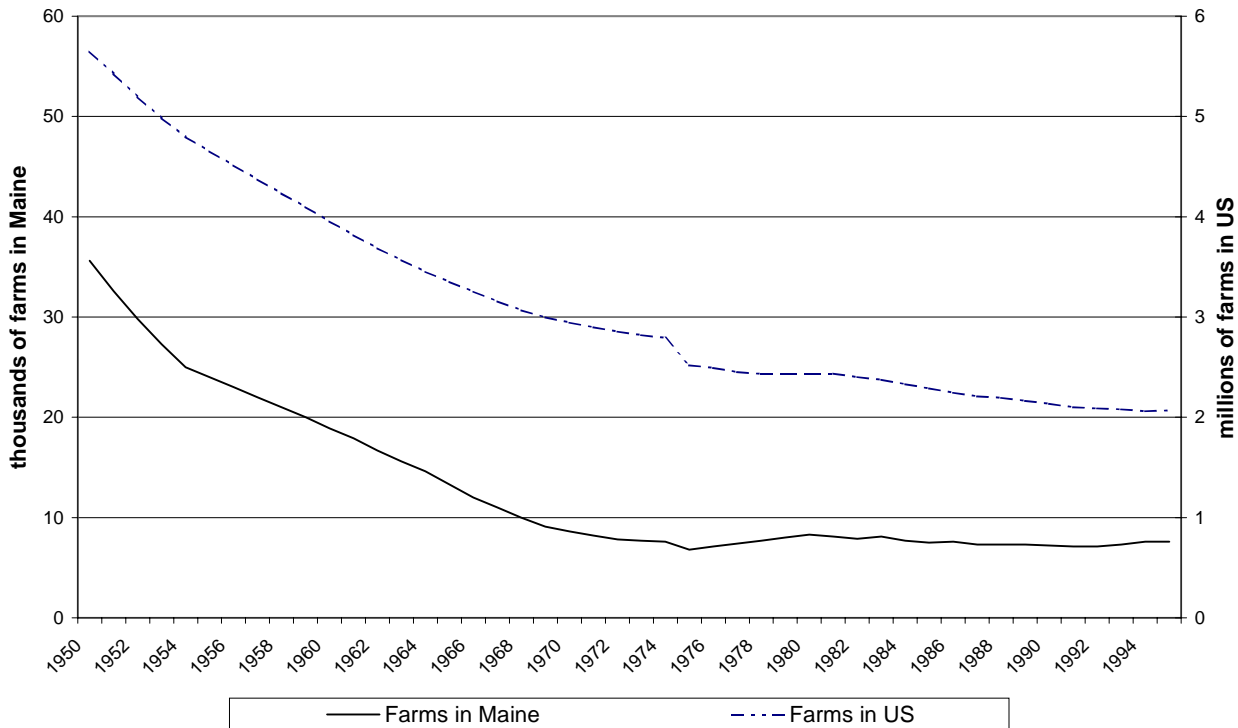


Figure 1. Numbers of farms in Maine and the United States.

when the average size began to decline (Figure 2). The average size then held steady during the decade of the 1980s before showing signs of further decline in recent years. The experience at the national level has been substantially different. Nationwide, the average size of farms has increased steadily from just over 200 acres per farm in 1950 to approximately 470 acres per farm in 1995. In 1950, Maine farms averaged 124 acres and were approximately 42% smaller than the national average. By 1995, Maine farms were 62% smaller than U.S. farms, on average.

We can only speculate why Maine may be going opposite of the national trend with stable numbers of farms and declining acreage per farm. Some conventional farmers who have gone out of business may continue farming on a part-time basis with fewer acres in production. Some conventional farmers may have adjusted their operations to include alternative crops with higher returns per acre and fewer acres in production. There also appear to be new entrants that produce vegetables for local markets and other specialty products. Finally, people who are buying rural lands for residential purposes may become hobby farmers and qualify for a farm by USDA standards as a farm with at least \$1,000 in annual sales. While these examples may explain the

situation in Maine, we do not know why similar conditions do not apply at the national level.

Not only has the average acreage per farm in Maine declined relative to the average acreage per farm nationally, but the amount of land in agricultural land in Maine has declined at a much greater rate than the national rate. Total land in farming nationwide in 1950 was approximately 1.2 billion acres. By 1995, the amount of farmland had shrunk by 19% to about 970 million acres. The land in farming in Maine in 1950 was 4.4 million acres, and declined 68% by 1995 to about 1.4 million acres, which is more than three times the national rate of reduction.

### A Comparison of Maine and National Property Taxes on Agricultural Lands

In Maine, farm property taxes on a per acre basis, when adjusted for inflation (1992 \$), increased at nearly the same rate (67%) as the national average (72%) from 1950 to 1993, although Maine's taxes have been higher than the national average throughout this period (Figure 3). In 1993, property taxes per acre were about \$12 per acre in Maine and about \$6 per acre nationally.

One factor that determines the level of property taxes per acre of farmland is the value of the farm-

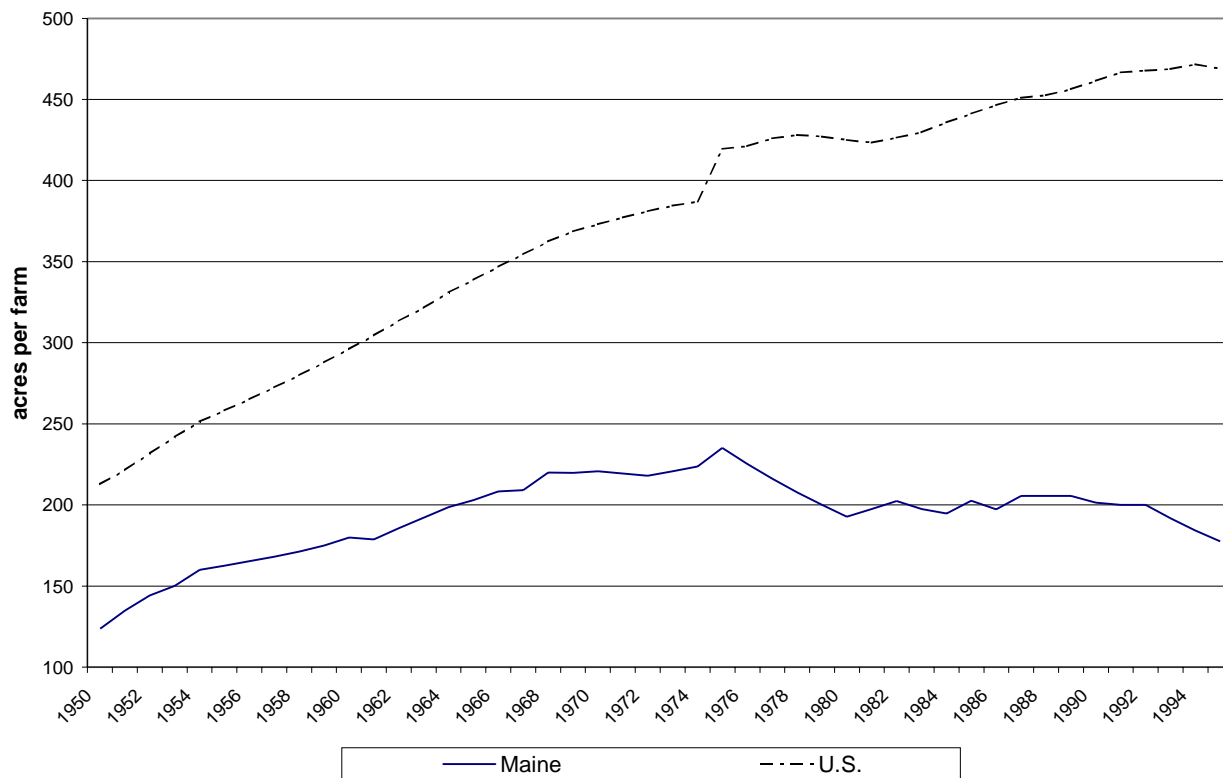


Figure 2. The changing size of farms in Maine and the U.S.

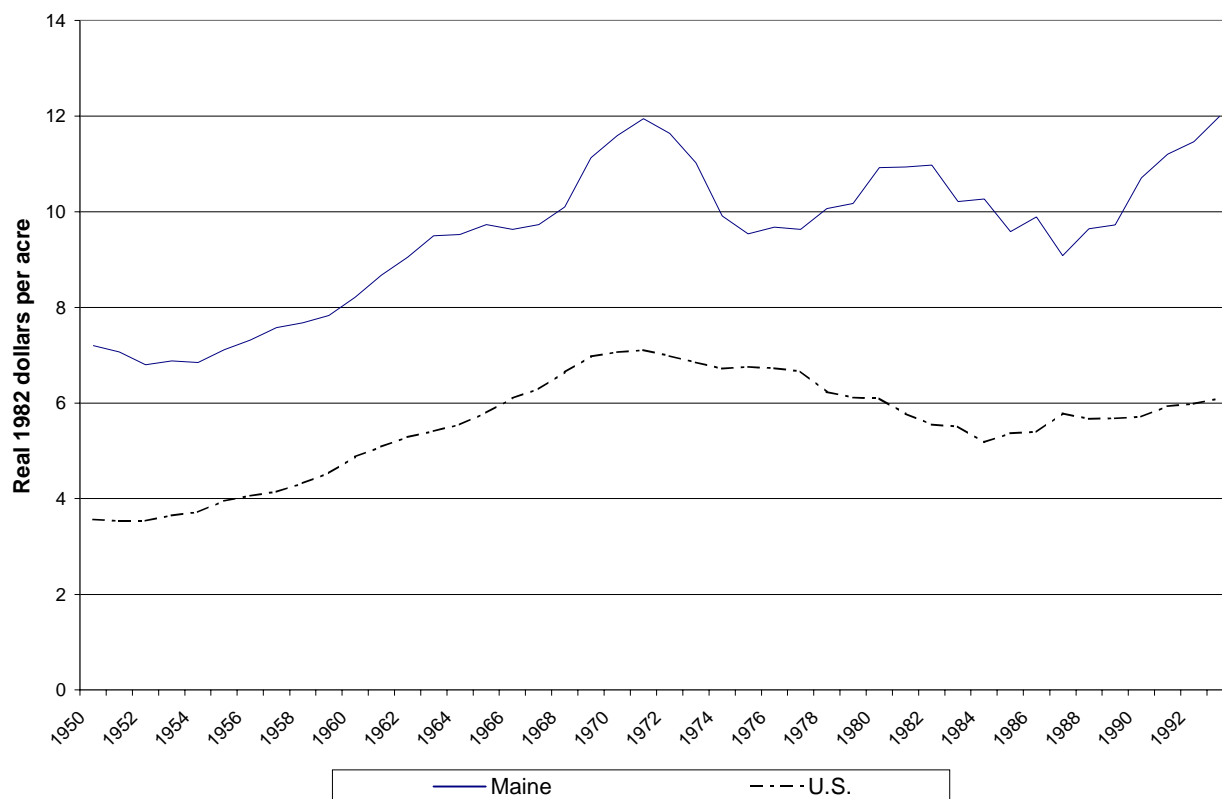


Figure 3. Farm property taxes per acre in Maine the U.S. (1992 \$).

land. In this regard, Maine's experience from 1950 to 1995 is different from the national average. In Maine, farm real estate values have generally increased since 1950, while national farm property values peaked in 1981 before dropping sharply in the early 1980s (Figure 4). Property taxes are based on the value of the land being taxed and are not fixed rates per acre. Thus, when the data reported in Figures 3 and 4 are converted to taxes per \$100 of valuation, a different picture arises. By this measure, the rate of taxation of farmland in Maine has declined by more than half since 1950, from about \$2.50 per \$100 of real estate value to slightly over \$1.00 per \$100 dollars of real estate value in 1993 (Figure 5). Nationwide, the effective property tax rate for agriculture has declined slightly such that it is now slightly below \$1.00 per \$100 of real estate value. The effective tax rate in Maine is now only slightly higher than the national average.

The data portrayed in Figure 4 also indicate that the Farm and Open Space Tax Law, enacted in 1975, has done little to reduce the assessed value of agricultural land. We can only speculate why this program has had little effect. First, with an overall rate of participation in 1997 of 12%, the amount of

land enrolled may not be sufficient to make a substantial reduction on a statewide basis. In addition, the counties with the highest participation rates are generally in central Maine where moderate levels of development are occurring. This may mean that farmers with high-valued land, who may be considering selling their land for development, may avoid participating to avoid the monetary penalty for withdrawal. Alternatively, farmers in areas where their opportunities to sell for development are less may plan to stay in farming and may be more likely to enroll. Finally, Aroostook County with the largest amount of agricultural land in the state (about 25% of the total) has the lowest enrollment (1%) while Knox County in central Maine, with an enrollment rate of 32%, only has 2% of the agricultural land in the state. Thus, high participation in counties with high-valued land but a small amount of the total acreage does not affect the overall number substantially.

Regardless of the impact of the Farm and Open Space law, the data suggest that Maine farmers historically have paid higher property taxes than the national average, but that the reason for Maine farmers paying more property taxes has changed



Figure 4. Farm property values per acre in Maine and the U.S. (1992 \$).

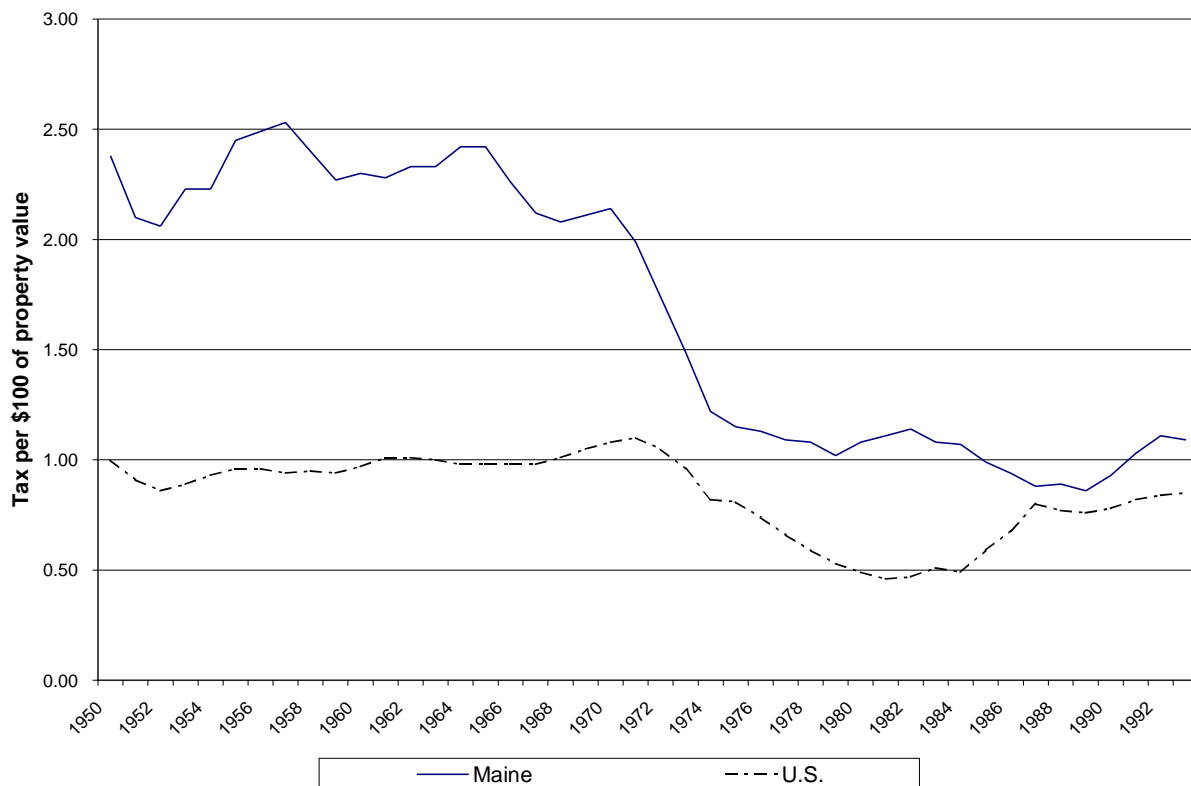


Figure 5. The effective property tax rate for farmland in Maine and the U.S.

over time. Prior to 1970 it was due to a much higher effective tax rate and now it is due to higher land values. However, the disparity in taxes paid in Maine versus the national average is decreasing.

### Property Taxes Relative to Total Farm Production Expenses

Property taxes have remained a relatively stable proportion of total production expenses in Maine over the last four decades (Figure 6). Property taxes accounted for 4.8% of production expenses in 1950 and were 4.5% of expenses in 1997. Other, more substantial costs of production have shown greater variation over time (see Appendix B for greater detail). Farm-origin inputs, which include purchased feed, purchased livestock, and purchased seed increased almost steadily in importance as a production expense until 1982 when they declined from 41% to 24% of total expenses over a span of four years. This time period coincides with USDA's dairy herd buy-out program and the demise of the broiler industry, both of which may have contributed to the reduction in farm origin inputs. A detailed picture of farm expenses is given in Table 3 for 1950 and 1997. The changing cost structure shown in Figure 6 reflects Maine farming in the aggregate, but may

obscure differences in cost structures exhibited by different types of farms. However, production expenses, by primary farm commodity or farm type, are not available in the data series used to generate Figure 6.

These results reveal that property taxes have not been increasing as a percentage of production costs over time and that property taxes represent a very small share of production expenses. Thus, small changes in property taxes, vis-a-vis equal percentage changes in other production costs, are not likely to substantially affect the economic viability of Maine's farms.

### Farm Property Taxes in Three Maine Counties

To examine how real estate taxes relate to farming in different regions of the state, we look more closely at data for three counties selected to represent different types of farming and the varying levels of development pressure. Aroostook County represents the state's primary agricultural region with the largest number of farms, the largest average farm size, and the highest agricultural output (Table 4). Largely dominated by potato production, farming in Aroostook County has not been significantly affected by development pressures in recent

Table 3. Relative distribution of farm production expenses in Maine including operator dwellings.

Expense Category	1950	1997
	-----%-----	
Intermediate product expenses	59.9	64.1
Farm-origin	30.0	24.7
Purchased feed	23.3	18.0
Purchased livestock	4.1	0.9
Purchased seed	2.6	5.8
Manufactured inputs	15.8	14.2
Fertilizer and lime	9.2	4.2
Pesticides	2.2	4.0
Fuel and oil	4.1	3.7
Electricity	0.3	2.3
Other intermediate	14.2	25.2
Repair and maintenance	7.6	6.4
Machine hire and customwork	0.1	1.9
Marketing, storage, and trans.	4.2	4.7
Contract labor	1.0	1.1
Miscellaneous expenses	2.9	11.1
Vehicle registration	0.5	0.3
Property taxes	4.8	4.5
Capital consumption	11.6	11.5
Factor payments	23.1	22.6
Hired labor	21.0	15.4
Net rent	0.2	1.4
Interest expenses	1.9	5.8
Total production expenses	100.0	100.0

years. Kennebec County leads the state in dairy production, and represents the statewide average with respect to size of farm and dollar output per farm. Portions of Kennebec County have experienced moderate economic growth in recent years. Cumberland is the state's most populous county and has experienced the greatest levels of population and economic growth. It has the smallest size farms in Maine, on average, and agricultural land uses have been subjected to development pressures as the urban population expands into outlying communities. (See Appendix C for depictions of farmland values and property taxes for all 16 Maine counties.)

The data in Table 4 present some interesting contrasts. The average value of an acre of farm land varies from \$640 in Aroostook County to \$2,325 in Cumberland County. However, the effective tax rate per \$100 of valuation is highest in Aroostook County and lowest in Cumberland County. Combined with the differential in farm sizes, these conditions result in the average farm in Aroostook County paying about the same total property taxes as the average farm in Cumberland County (\$3,268 versus \$3,285). The lower effective tax rate in Cumberland County may be due to communities in Cumberland County having a larger tax base due to the presence of other industries and elevated assessments of private homes.

It is interesting to note that the effective tax rate in Aroostook County has declined over the past decade while the effective tax rate in Cumberland

Table 4. Selected farm real estate statistics for Aroostook, Cumberland, and Kennebec counties, Maine, 1997.

	Aroostook	Kennebec	Cumberland	Statewide
Number of farms	889	455	455	5,810
Acres per farm	365	194	110	209
Real estate value per farm	\$248,309	\$230,859	\$287,967	\$224,514
Real estate value per acre	\$640	\$1,349	\$2,325	\$1,064
Real estate taxes per farm	\$3,268	\$2,717	\$3,285	\$2,579
Real estate taxes per acre	\$8.43	\$15.88	\$26.52	\$12.22
Real estate taxes per \$100 valuation	\$1.32	\$ 1.18	\$1.14	\$1.15
Real estate taxes percentage of production expenses	3.7%	4.2%	10.1%	4.8%

All dollar figures expressed as real 1992 dollars.

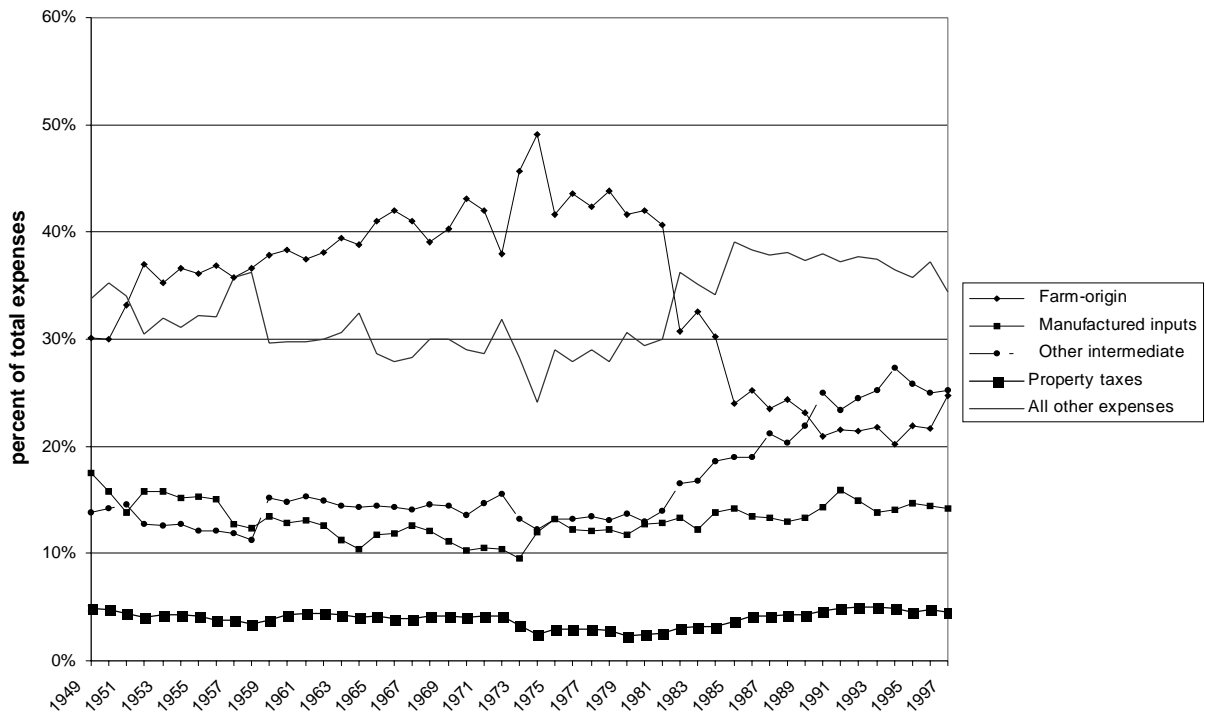


Figure 6. Property taxes as a cost of production relative to other costs of production in Maine.

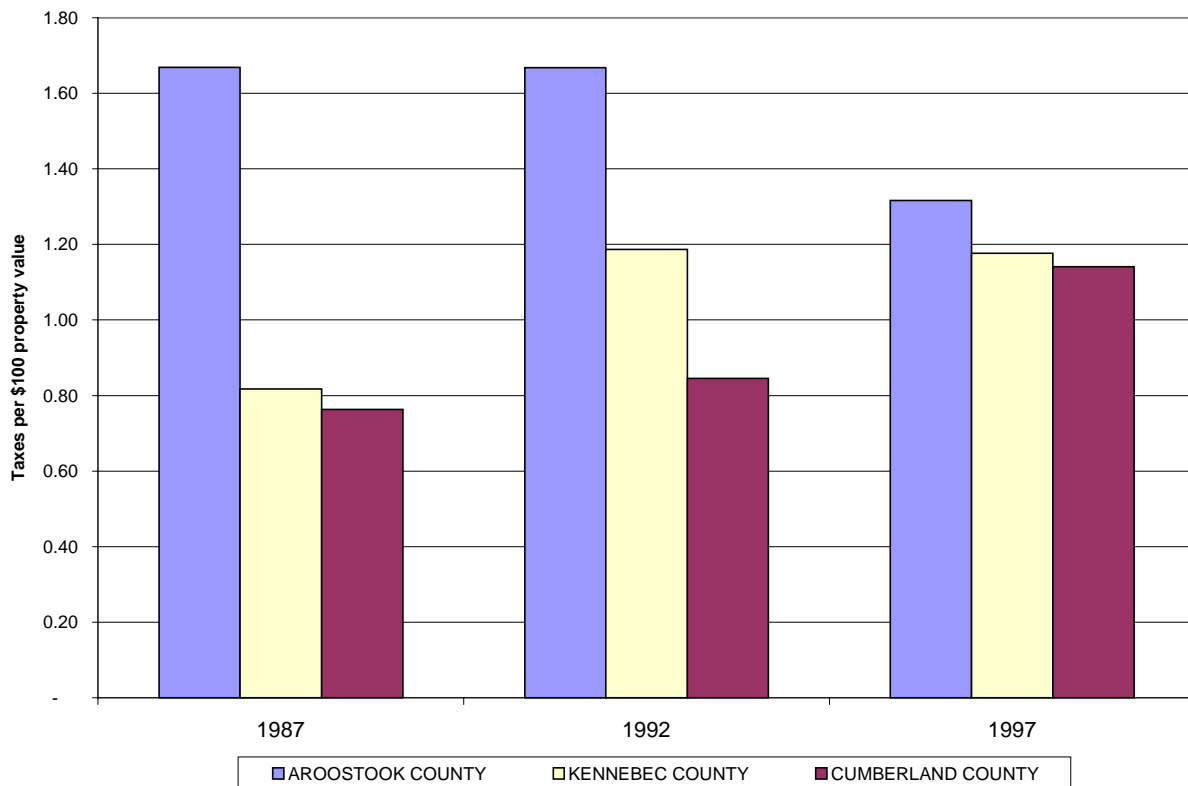


Figure 7. The average rate of real estate taxation in three Maine counties.



Figure 8. Average farm real estate values in three Maine counties.

County has increase over this same period of time (Figure 7). The rate in Aroostook County was double that of the both Cumberland and Kennebec counties in 1987, but effective rates in all three counties are now quite comparable.

Real estate values exhibit substantial differences between counties (Figure 8). Average farm real estate values in Aroostook County are among the lowest of all sixteen counties in Maine, while Cumberland County typically has the highest average farm property values (Appendix A). In real terms, the changes in property values are mixed. Farm real estate values in Cumberland County declined almost 19% between 1987 and 1997 when adjusted for inflation. In Aroostook County, real estate values fell by approximately 7%, while farm real estate values in Kennebec County rose by 6%.

An obvious question is why farm values declined in Cumberland County over the past decade while this did not occur in Kennebec County or Aroostook County. We do not know the answer, but we can provide some intuition. First, it is worth noting that on a statewide basis, real farmland values per acre declined by 8%, from \$1,160 per acre in 1987 to \$1,064 per acre in 1997 (see data in Appendix A). In this sense, the decline in farm property values in Cumberland is not unusual on a

statewide basis. One explanation for these declines is that the farms that have gone out of business over the last decade may have been those located on higher valued land, which would serve to reduce the average value of the remaining farm land. Following this logic, farmland in Cumberland County that is located closer to Portland may have higher values due to greater opportunities for development. The opportunity cost of leaving land in agriculture vis-a-vis selling the land for development may have been sufficient to entice producers with higher valued land to go out of business. In addition, those who hold lower valued land that is on the fringe of where development is occurring may hold their land to take advantage of appreciation in land values as development spreads to where their farms are located. More important, perhaps, is that the sampling error for county-level data on farmland values at a county level is  $\pm 20\%$ , which is greater than any of the percentage changes for Maine counties. Thus, we cannot say that there is a statistically significant change in property values for any of Maine's counties over the 10-year period from 1987 through 1997.

In a previous section, it was shown that farm property taxes, statewide, have been a relatively stable portion of overall farm production expenses

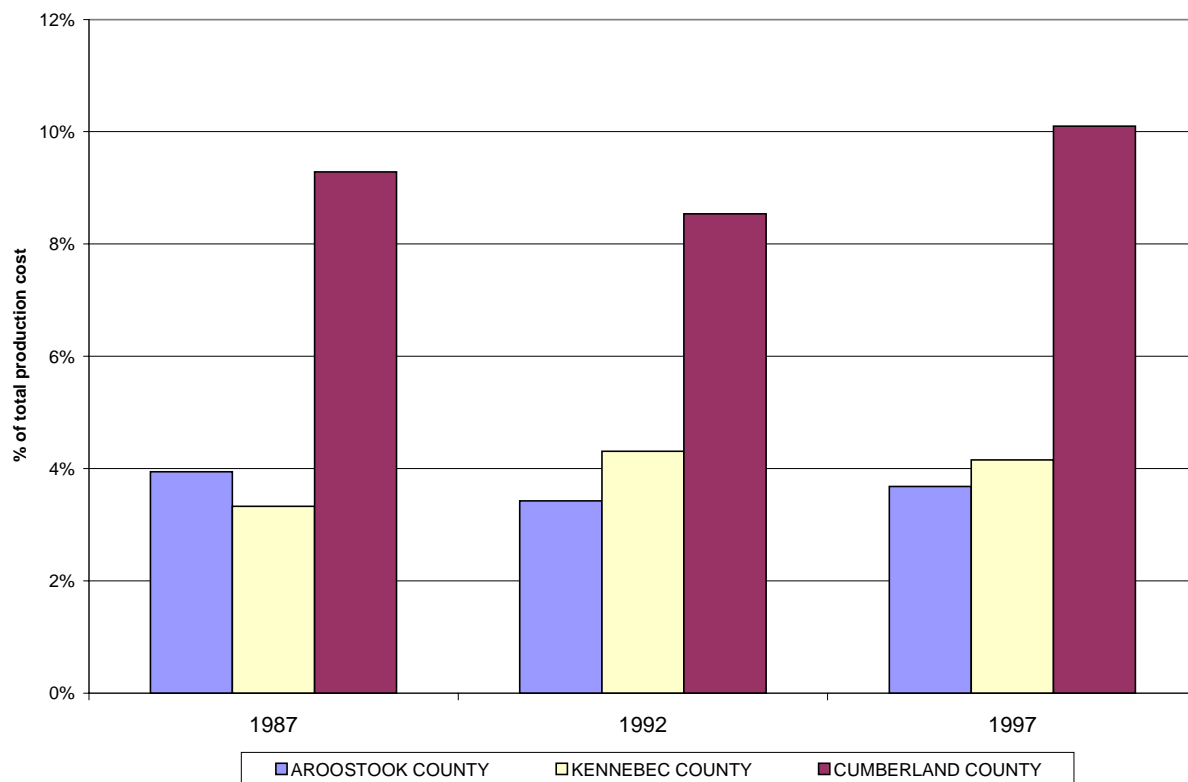


Figure 9. Real estate taxes as a farm production expense in three Maine counties.

from 1949 through 1997. The statewide view, however, obscures important differences between counties. While property taxes have accounted for 3% to 4% of farm operating expenses in both Aroostook and Kennebec counties, their impact on farm operations in Cumberland County are much greater (Figure 9). In Cumberland County, farm real estate taxes comprised more than 10% of operating expenses in 1997. Thus while property taxes as a percentage of production costs have not increased substantially over the past decade, the percentages vary substantially by county. Cumberland, with the highest land values, has the highest taxes as a percentage of operating costs. It should be noted that Cumberland County has the smallest farms with an average of 110 acres in 1997, while the state average was 209 acres. As will be shown shortly, farms ranging in size from 50 to 139 acres have the highest property taxes as a percentage of production expenses (>8%). This relationship could be the result of taxes on the operators dwelling and farm buildings playing a much larger role in farm production expenses on smaller farms such as occur in Cumberland County.

### Property Taxes And Farm Size

Previous work at the national level has found that higher property taxes are associated generally with smaller farm size (Gaffney 1993; Wunderlich and Blackledge 1994) and supports the relationship that exists for the three Maine counties discussed previously. Northern and eastern Maine generally have the largest farms and the lowest taxes per acre. Counties in southern and mid-coastal Maine have the smallest farms and higher taxes (Figures 10 and 11). As shown by the data in Figure 12, property taxes constitute a smaller share of farm operating expenses among large farms than they do for smaller farms. Larger farms may have lower taxes as a percentage of production costs because the tax on farm structures can be averaged over the larger acreage.

### Property Tax Equity between the Farm and Non-Farm Sectors in Maine

The relevant question for this study is whether the farm sector is taxed at the same rate as the non-farm sector. The answer varies depending upon the basis on which the tax burden is measured. Data from the Maine State Planning Office and the U.S. Census of Agriculture show that farmers paid 1.4%

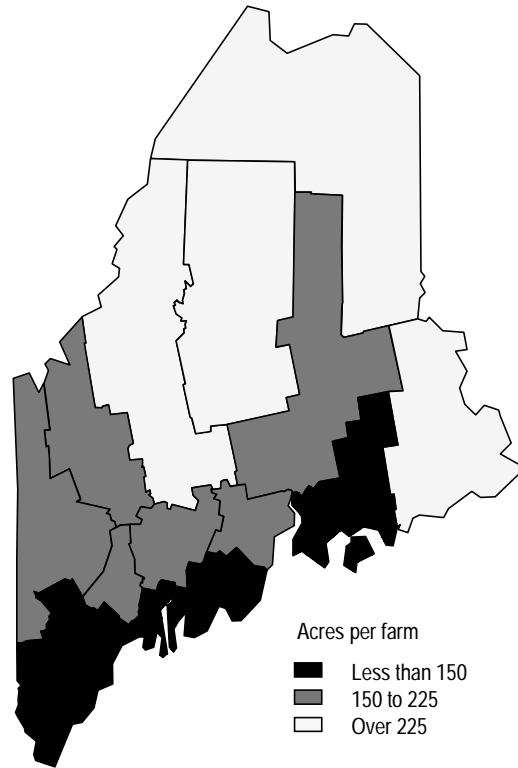


Figure 10. Average size of farm, by county, Maine 1997.

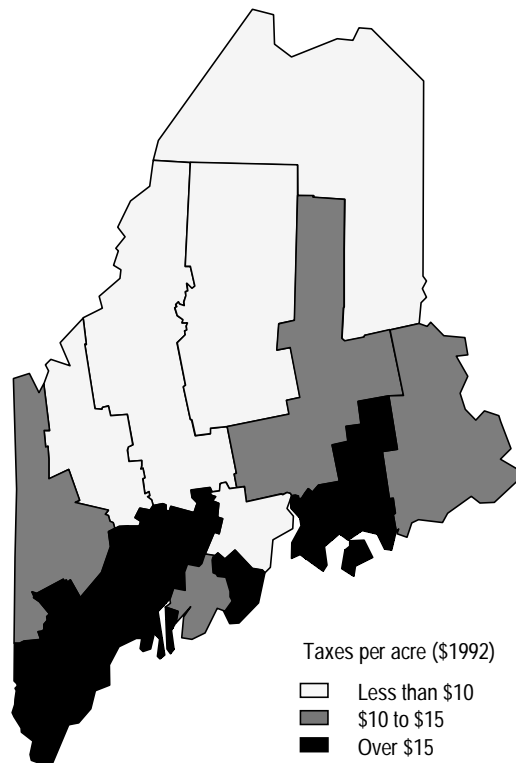


Figure 11. Average property tax per acre of farmland, by county, Maine 1997.

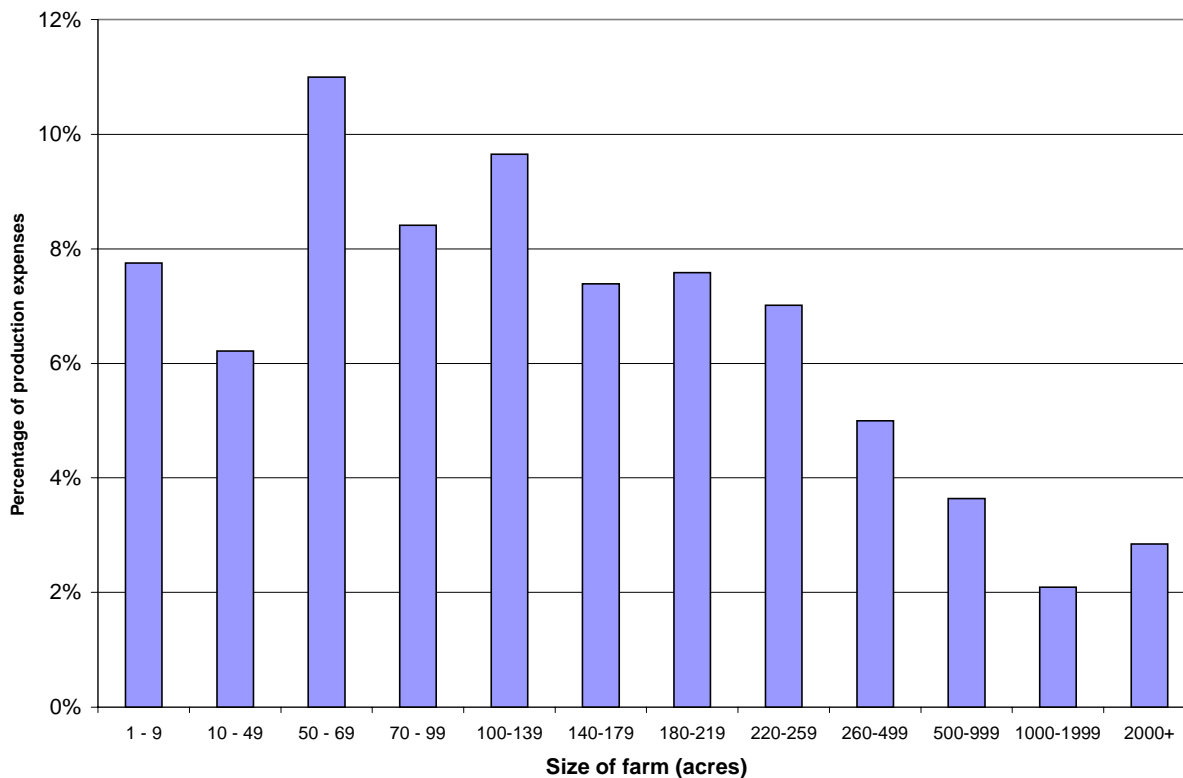


Figure 12. Property taxes as a percentage of farm production expenses, by size of farm in Maine.

of all property taxes in 1997, but held 2.1% of the real estate value in Maine. By this measure, Maine farmers are paying proportionally fewer property taxes than all other landowners. Assuming that tax rates are the same for agricultural and nonagricultural lands in the same community (given the low participation in the Farm and Open Space Program), these data suggest that most of the farms are located on land that is valued lower than land for other uses (retail, residential). However, U.S. Bureau of Economic Analysis figures for gross state product indicate that Maine farmers paid 1.4% of all property taxes in the state in 1997 while accounting for only 0.7% of total gross state product generated in 1996. By this measure, the farm sector has been paying proportionally more of the state's property taxes than the non-farm sector relative to value added. These figures indicate that tax relief for farmland is warranted if farms are to be taxed at the marginal productivity of their land. This would be akin to taxation of forest land enrolled in the Tree Growth program and emphasizes the need for a similar type of formula for determining tax rates for agricultural lands.

### Property Taxes and the Farm Financial Situation in Maine

Net farm income in Maine has been declining on an aggregate basis in Maine since 1949 (Figure 13). This trend includes reductions due to farms going out of business. When we consider net farm income per acre we find that while there is year-to-year variation, the historical average has been constant at slightly less than \$100 per acre (Figure 14). On the other hand, production expenses have increased an average of about \$3.90 per year, and property taxes have been increasing at about \$0.18 per year (Figure 15). Both production expenses and property taxes, however, have grown at nearly the same rate (approximately 2.4% per year) with the result that property taxes have remained a fairly constant share of production expenses, as was demonstrated previously in Figure 6.

The relatively constant trend in Figure 14 is disturbing in that there has been a dramatic reduction in the number of farms in Maine. If we assume that the less efficient and poorer financial managers have been forced out of business, then the net income per acre should be increasing over time. This is not the case and suggests that even the best farmers cannot avoid the financial squeeze that the agricultural sector has been experiencing.

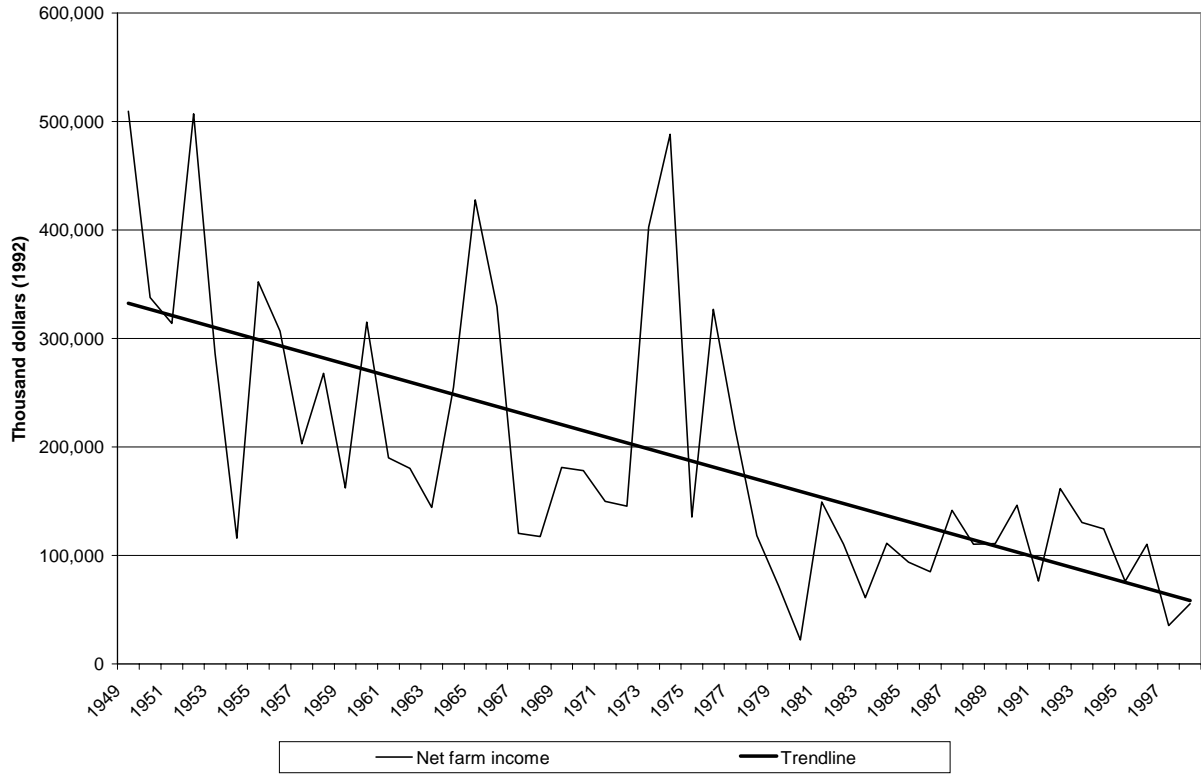


Figure 13. Total net farm income in Maine.

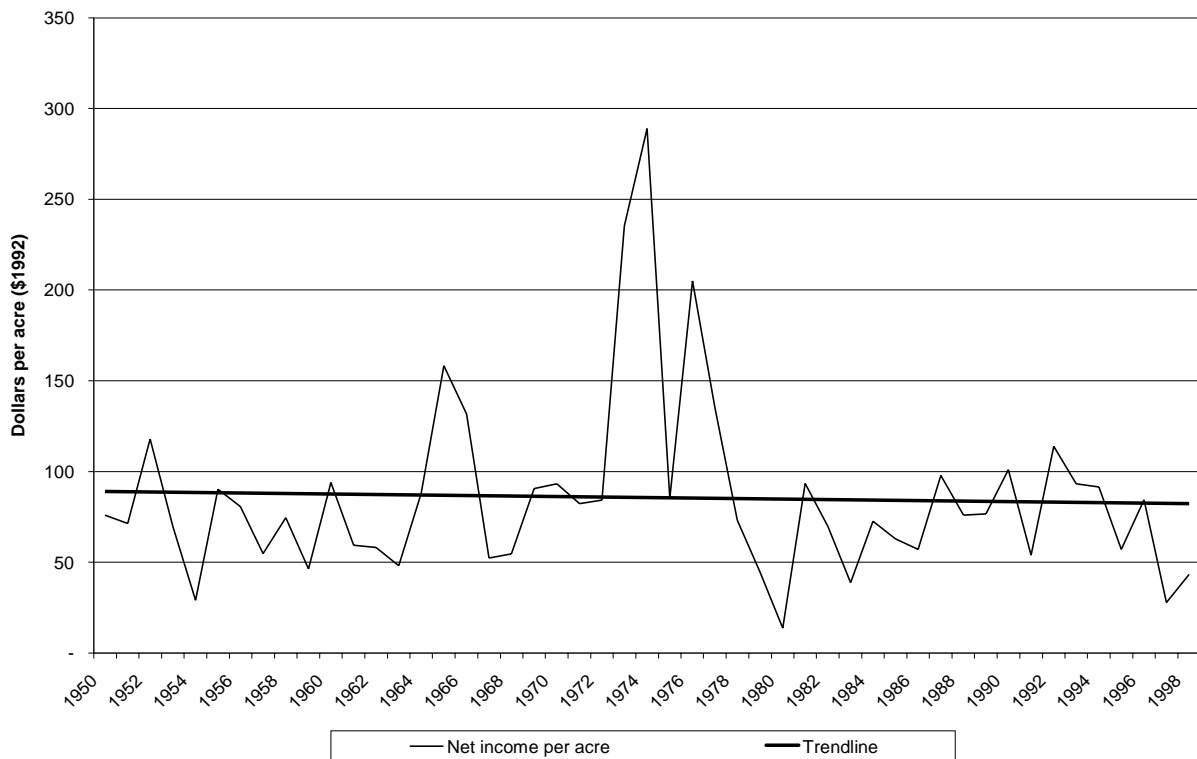


Figure 14. Net farm income per acre of farmland in Maine.

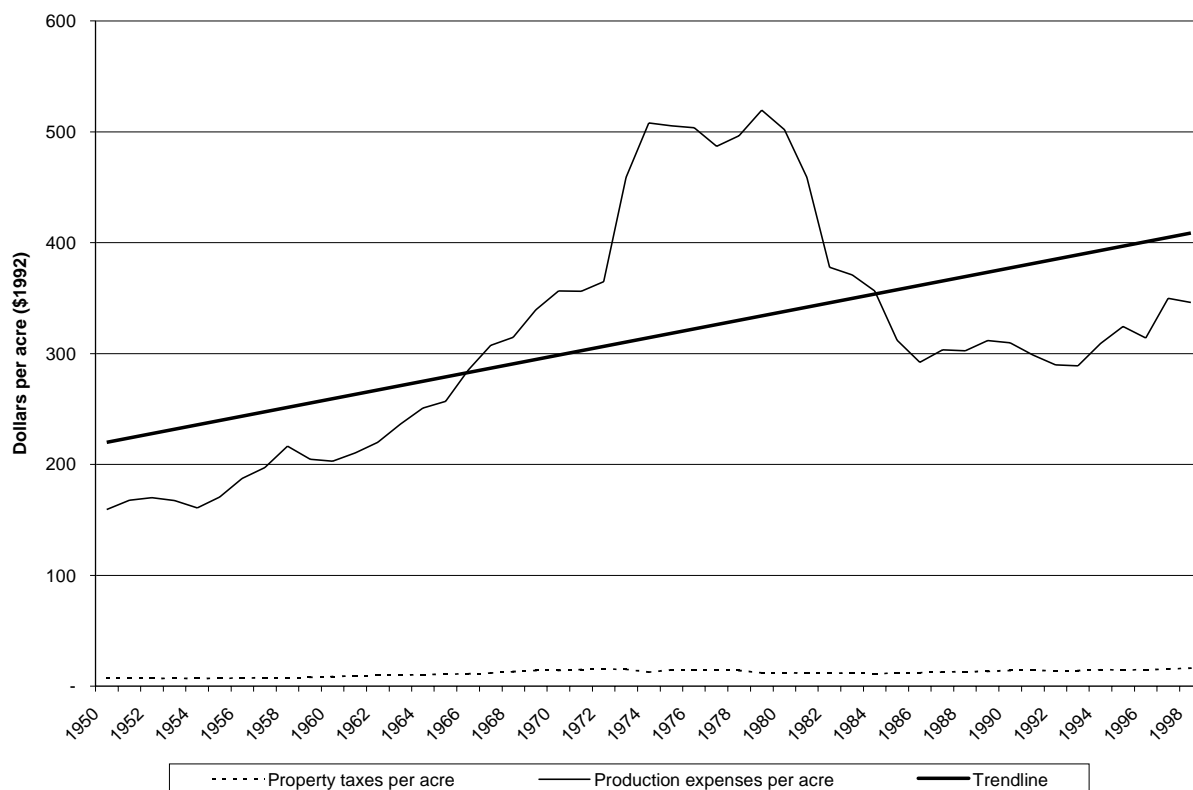


Figure 15. Total farm production expenses and property taxes per acre of farmland in Maine.

Given these data, it appears that the property tax is not the culprit that is threatening the viability of agriculture in Maine. Constant output prices and increasing input prices are the primary drivers. Output prices have been depressed due to high levels of production and the expanding globalization of markets for agricultural products. Input prices have been increasing due to the advanced technology being used in agriculture today. Most important, perhaps, is that this technology is being used by smaller and smaller numbers of producers. Thus, the substantial fixed costs of developing these technologies must be spread over the smaller numbers of producers thereby increasing the costs to each individual producer.

Growth in property taxes has roughly kept pace with the growth in other production costs in Maine for two reasons. First, the average value of farmland has been increasing (Figure 4), which leads to increased property taxes even with constant mill rates. Second, the declining farm size (Figure 2) has likely led to taxes on farm buildings increasing the taxes per acre. In this sense, increasing property taxes are a *symptom* of the problem, not the *cause*.

Having said this, changes in property taxes on farmland may still be warranted. Higher property

taxes on farms in Maine relative to the national average (Figure 5) contribute to Maine farmers being at a competitive disadvantage to similar producers located in other regions of the state. The declining farm size in Maine appears to have the effect that taxes on farm buildings increase total property taxes per acre. The harsh environment in Maine requires Maine's farmers to invest more in structures than their counterparts in other regions of the country. Reductions in assessments of farmland values, and consequently, property taxes would help to increase the equity of property taxes between farms and nonfarm businesses in terms of the respective contributions to gross state product. Finally, adjustments in the taxation of farmland could help to reduce the inequities in property taxes paid by farms located in different regions of the state. It is also important to recognize that agriculture produces services and not just products. One of the fundamental services is open space. Thus, farmland may warrant preferential treatment to compensate farmers for this public good for which they cannot receive a market return.

While property taxes comprise a relatively small, constant share of production expenses, it is possible to help the viability of Maine agriculture through

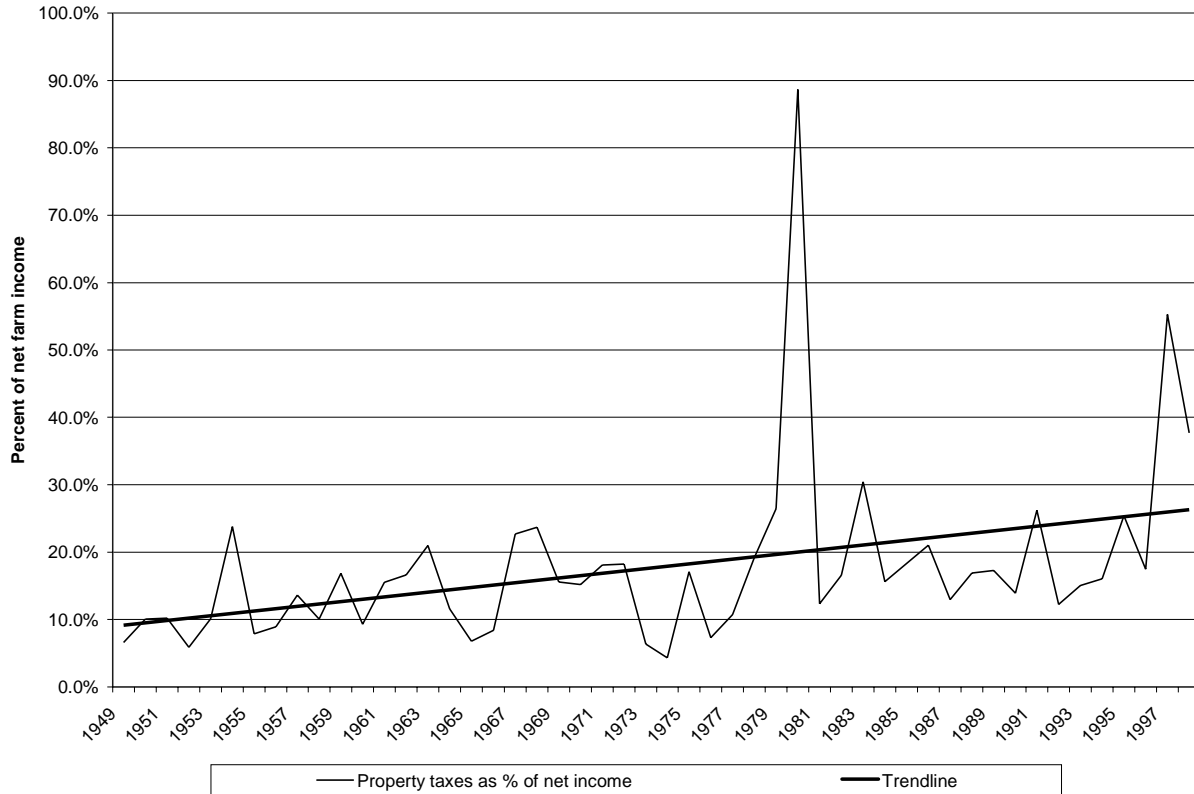


Figure 16. Farm property taxes relative to net farm income in Maine.

reductions in property taxes paid on farmland. As net farm income, on average, has been constant, property taxes have been increasing. In 1949, property taxes as a percentage of net farm income was just under 10% in 1949 and grew to over 25% in 1997 (Figure 16). Thus, a 25% reduction in property taxes would have increased net farm income by as much as 8% for the five-year period 1994 through 1998 (Table 5). It is also interesting to note that such a reduction would help farmers most in poor financial years. As shown in Figure 17, the greatest differences between property taxes as a percentage of net farm income would occur in years of low net farm income (e.g., 1964, 1971, 1984, etc.).

It is important to recognize that adjustments to property taxes paid by farmers in Maine are a treatment of the symptom of the problem and not a solution. This could also be phrased as a short-term fix versus a long-term solution. Maine farmers and policy makers can do little to affect global markets for agricultural products and the costs of inputs. Adjustments in property taxes will help to enhance the financial viability of existing farms in Maine, but will not facilitate the transfer of farms to the next generation of farmers because land values are reaching a level where the rate of return in agriculture is not sufficient to pay for the purchase of land. Thus, the long-term solution to maintaining the

Table 5. Effect of a 25% reduction in farm property taxes relative to net farm income in Maine, over a five-year period, 1994–1998.

	Existing levels of property taxation	25% reduction in property taxes
	<i>000s</i>	<i>000s</i>
Gross farm income	\$511,120	\$511,120
Production expenses	\$430,740	\$425,786
Property taxes	\$19,814	\$14,860
Net farm income	\$80,381	\$85,334
Taxes as % of net farm income	24.7%	17.4%
Net profit margin	15.7%	16.7%

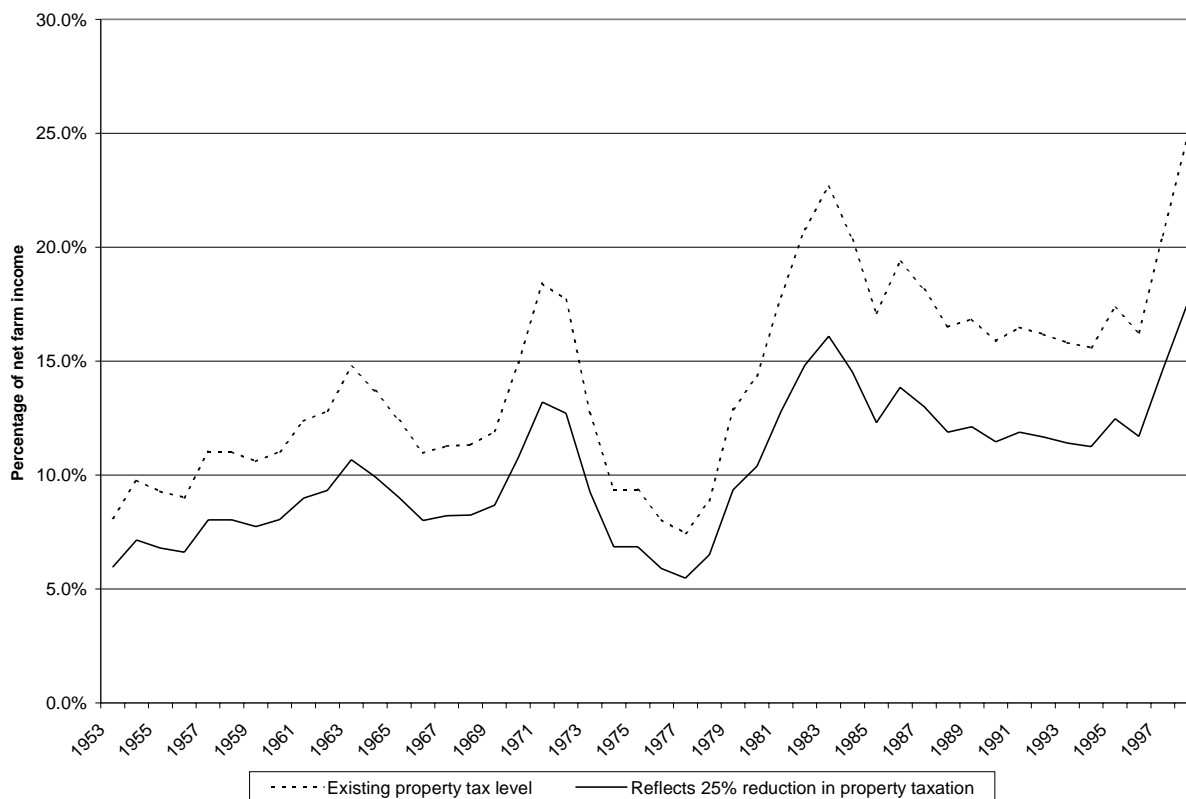


Figure 17. Effect of a 25% reduction in farm property taxes relative to net farm income in Maine.

viability of agriculture in Maine requires that the increasing values of agricultural lands be reversed.

## RECOMMENDATIONS

Our assessment of the effects of property taxes on agricultural lands in Maine lead us to make the following recommendations.

At a minimum, a clear formula needs to be established for assessing farmland enrolled in the Farmland and Open Space program similar to what is done for forestland enrolled in the Tree Growth program. Agricultural lands would be assessed at the marginal productivity of the land. Using agricultural lands to maintain open space would contribute to the quality of life of Maine residents and would contribute to Maine's tourism industry.

The declining farm size and the need for farm buildings in Maine suggest the need to also reconsider assessments of structures integral to the farming operation. As in Vermont, this may provide farmers with more of an incentive to maintain these structures. Such enhancements would contribute to the "pastoral" beauty of Maine and would also help contribute to Maine's tourism industry.

Expanding preferential tax treatment to rental land used in agriculture would help bridge the gap between the short-term fix and the long-term solution. While farmers may not be able to buy new land, there would be an incentive for others who could afford the land to maintain it in large contiguous units rather than subdividing and selling the land for development.

In addressing each of the above, we do not believe that it is advisable to remove the penalty for withdrawing land from the Farm and Open Space program. The reason for this recommendation is that public support for such a program is likely due to the long-term benefits of retaining farms and open space in Maine. If more of an incentive is needed to get farmers to enroll their lands, we suggest increasing the preference (tax reduction) for farmland valuation.

Finally, to maintain the long-term viability of agriculture in Maine and facilitate the transfers of farms to subsequent generations of farmers it is not sufficient to simply reduce property taxes. Rather, it is necessary to explore programs to stop and reverse the increasing values of agricultural lands in the state.

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## APPENDIX A: SELECTED MAINE STATISTICS FROM THE U.S. CENSUS OF AGRICULTURE

Table A1. Farm economic statistics from the U.S. Census of Agriculture 1987.

County	Farms	Acres per farm	Value per farm	Value per acre	Taxes per farm	Taxes per acre	Taxes per \$100 value	Taxes % total exp
Androscoggin	343	203	\$383,484	\$1,885	\$2,875	\$14.13	0.75	1.4%
Aroostook	1012	326	\$211,603	\$666	\$3,531	\$11.11	1.67	3.9%
Cumberland	456	127	\$380,562	\$2,773	\$2,904	\$21.16	0.76	9.3%
Franklin	229	193	\$182,272	\$855	\$1,338	\$6.28	0.73	4.5%
Hancock	290	173	\$271,038	\$1,893	\$3,314	\$23.15	1.22	6.6%
Kennebec	576	195	\$272,618	\$1,230	\$2,227	\$10.05	0.82	3.3%
Knox	221	156	\$294,246	\$1,829	\$1,913	\$11.89	0.65	4.3%
Lincoln	228	128	\$165,778	\$1,586	\$1,234	\$11.81	0.74	6.3%
Oxford	334	212	\$239,402	\$1,117	\$1,779	\$8.30	0.74	4.3%
Penobscot	572	232	\$193,624	\$872	\$1,742	\$7.84	0.90	3.9%
Piscataquis	138	278	\$163,041	\$644	\$1,799	\$7.11	1.10	5.4%
Sagadahoc	124	148	\$277,051	\$1,706	\$2,849	\$17.55	1.03	9.9%
Somerset	462	243	\$216,990	\$767	\$1,964	\$6.94	0.91	4.7%
Waldo	426	200	\$225,874	\$1,068	\$1,589	\$7.51	0.70	2.1%
Washington	337	254	\$267,821	\$922	\$1,376	\$4.74	0.51	3.9%
York	521	138	\$306,809	\$2,259	\$1,938	\$14.27	0.63	3.5%
Maine State	6269	214	\$254,163	\$1,160	\$2,279	\$10.40	0.90	3.7%

All dollar values expressed as real 1992 dollars.

Table A2. Farm economic statistics from the Census of Agriculture, 1992.

County	Farms	Acres per farm	Value per farm	Value per acre	Taxes per farm	Taxes per acre	Taxes per \$100 value	Taxes % total exp
Androscoggin	302	206	\$279,980	\$1,417	\$3,925	\$19.87	1.40	1.6%
Aroostook	884	378	\$223,796	\$592	\$3,732	\$9.87	1.67	3.4%
Cumberland	440	122	\$306,168	\$2,608	\$2,588	\$22.04	0.85	8.5%
Franklin	210	185	\$143,980	\$908	\$1,632	\$10.29	1.13	5.8%
Hancock	291	172	\$246,771	\$1,512	\$2,697	\$16.52	1.09	6.0%
Kennebec	494	193	\$226,983	\$1,232	\$2,692	\$14.61	1.19	4.3%
Knox	217	127	\$239,000	\$1,824	\$2,078	\$15.86	0.87	8.2%
Lincoln	202	121	\$317,804	\$2,093	\$1,823	\$12.01	0.57	8.4%
Oxford	346	183	\$236,509	\$1,212	\$2,072	\$10.62	0.88	6.5%
Penobscot	524	225	\$226,586	\$1,065	\$1,760	\$8.27	0.78	4.0%
Piscataquis	140	257	\$196,123	\$813	\$1,709	\$7.08	0.87	5.9%
Sagadahoc	120	157	\$202,279	\$1,293	\$2,452	\$15.67	1.21	12.0%
Somerset	413	259	\$245,420	\$931	\$1,836	\$6.96	0.75	4.6%
Waldo	339	212	\$258,191	\$1,218	\$1,931	\$9.11	0.75	4.7%
Washington	372	255	\$243,260	\$1,070	\$1,658	\$7.29	0.68	2.6%
York	482	128	\$244,656	\$1,869	\$2,458	\$18.78	1.00	9.3%
Maine State	5776	218	\$241,816	\$1,130	\$2,470	\$11.54	1.02	4.1%

All dollar values expressed as real 1992 dollars.

Table A3. Farm economic statistics from the U.S. Census of Agriculture 1997

County	Farms	Acres per farm	Value per farm	Value per acre	Taxes per farm	Taxes per acre	Taxes per \$100 value	Taxes % total exp
Androscoggin	288	194	\$271,734	\$1,534	\$4,492	\$25.35	1.65	2.5%
Aroostook	889	365	\$248,309	\$640	\$3,268	\$8.43	1.32	3.7%
Cumberland	455	110	\$287,967	\$2,325	\$3,285	\$26.52	1.14	10.1%
Franklin	223	180	\$173,366	\$1,105	\$1,543	\$9.83	0.89	6.9%
Hancock	310	137	\$237,502	\$1,545	\$2,938	\$19.12	1.24	5.9%
Kennebec	455	194	\$230,859	\$1,349	\$2,717	\$15.88	1.18	4.2%
Knox	194	130	\$194,002	\$1,713	\$1,935	\$17.09	1.00	8.8%
Lincoln	210	123	\$183,999	\$1,525	\$1,673	\$13.86	0.91	7.7%
Oxford	358	179	\$262,348	\$1,267	\$2,291	\$11.07	0.87	5.5%
Penobscot	525	222	\$202,393	\$946	\$2,268	\$10.60	1.12	5.4%
Piscataquis	141	242	\$191,341	\$771	\$1,716	\$6.91	0.90	5.5%
Sagadahoc	118	151	\$257,640	\$1,693	\$2,358	\$15.49	0.92	11.2%
Somerset	431	235	\$196,048	\$824	\$2,032	\$8.53	1.04	5.1%
Waldo	315	218	\$198,755	\$851	\$1,854	\$7.94	0.93	4.9%
Washington	399	246	\$192,319	\$791	\$2,475	\$10.19	1.29	4.0%
York	499	117	\$199,202	\$1,836	\$2,194	\$20.22	1.10	11.0%
Maine State	5810	209	\$224,514	\$1,064	\$2,579	\$2.22	1.15	4.8%

All dollar values expressed as real 1992 dollars.

### APPENDIX B: HISTORICAL FARM PRODUCTION EXPENSES IN MAINE

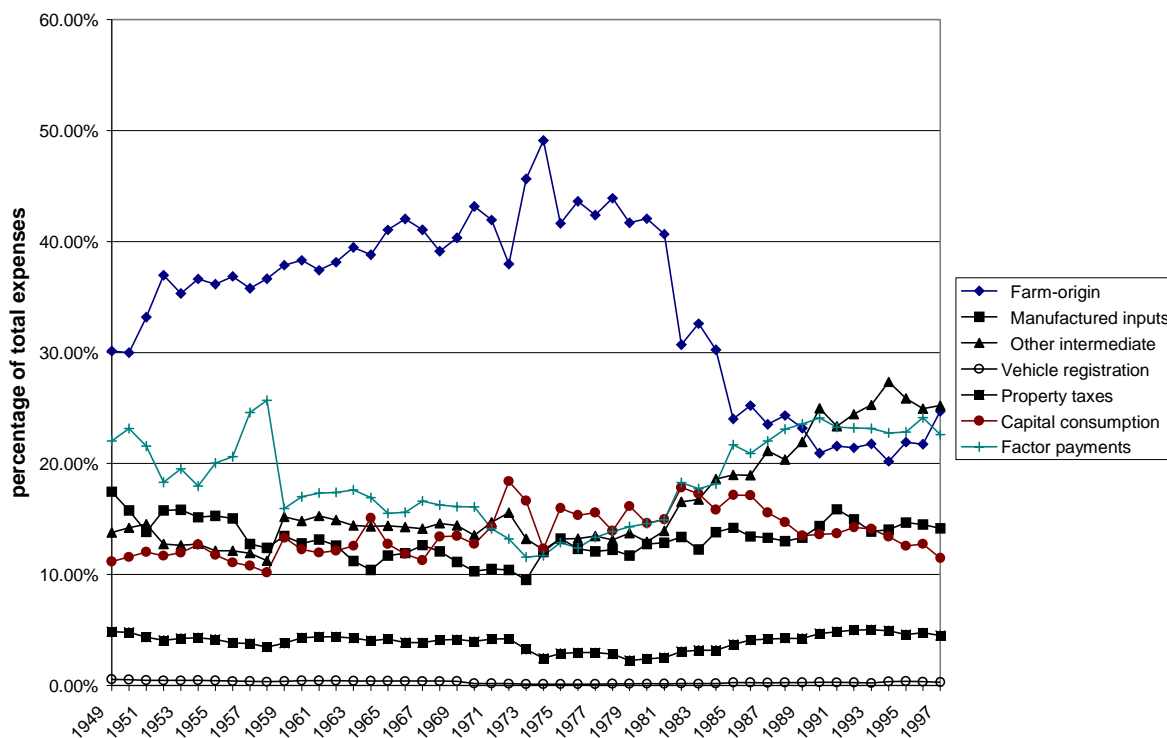


Figure B1. Farm production expenses in Maine, by type.

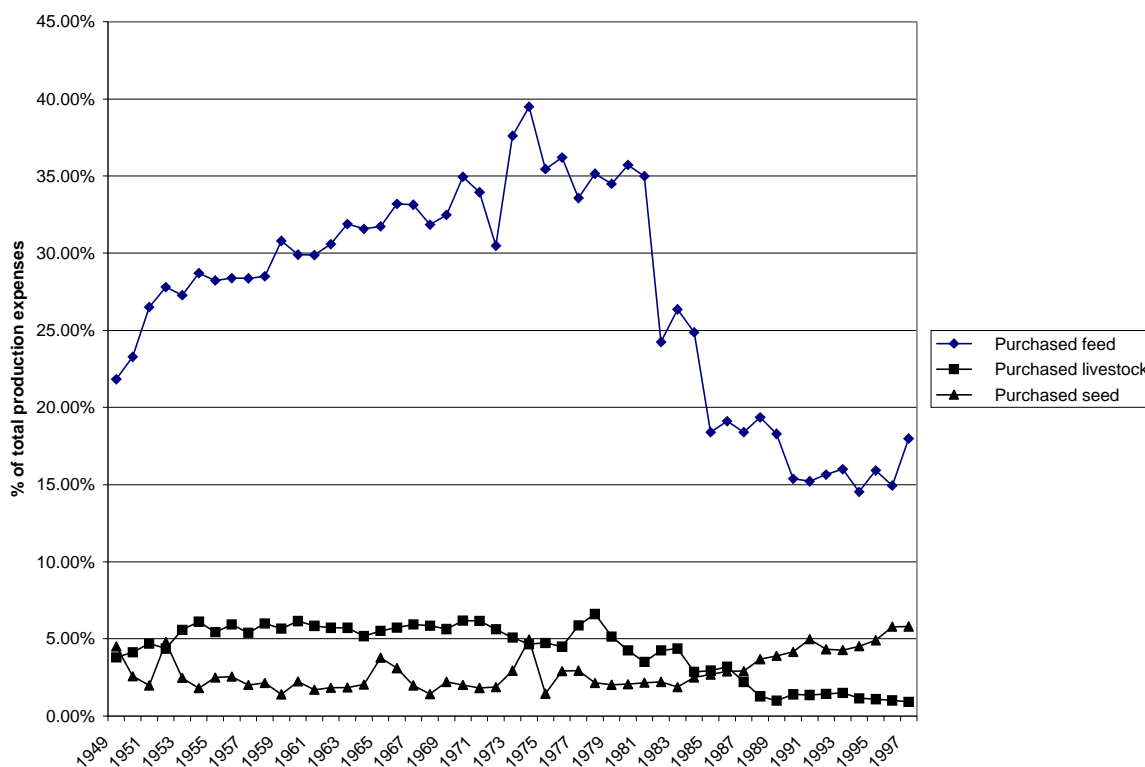


Figure B2. Expenses for farm origin inputs.

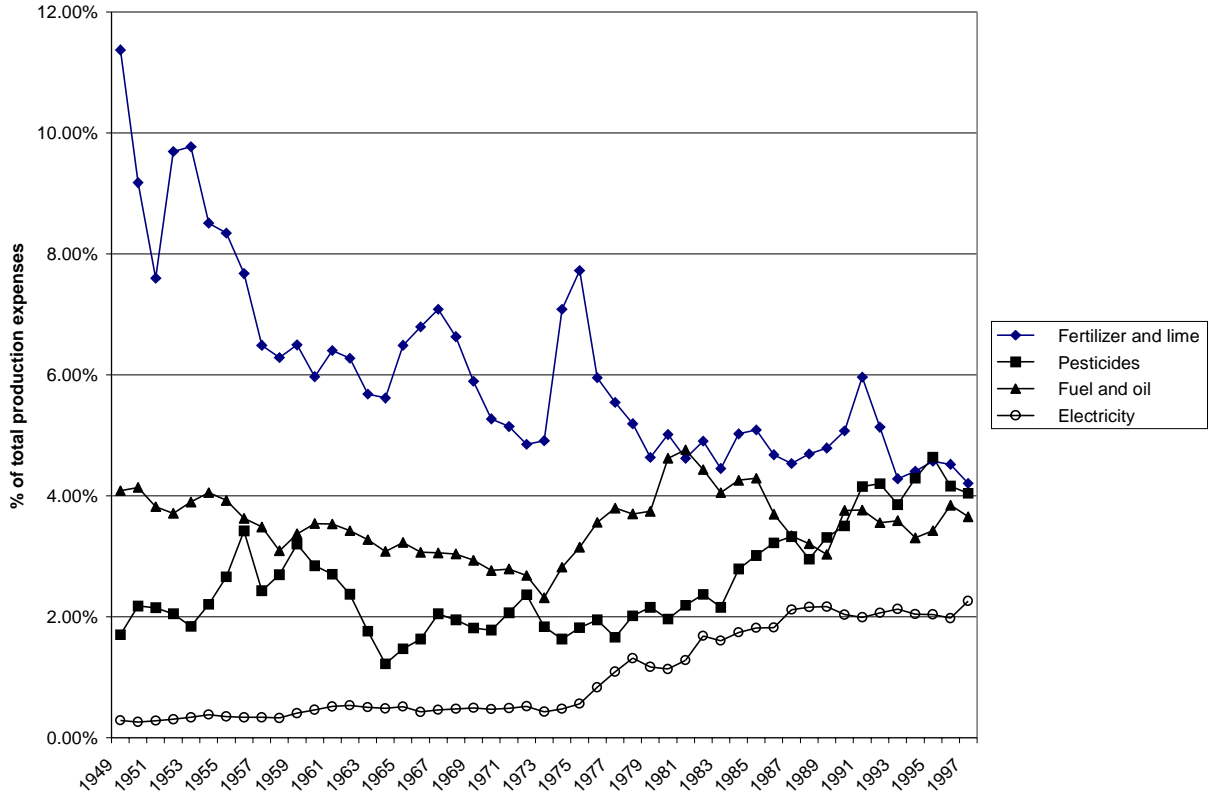


Figure B3. Expenses for manufactured inputs.

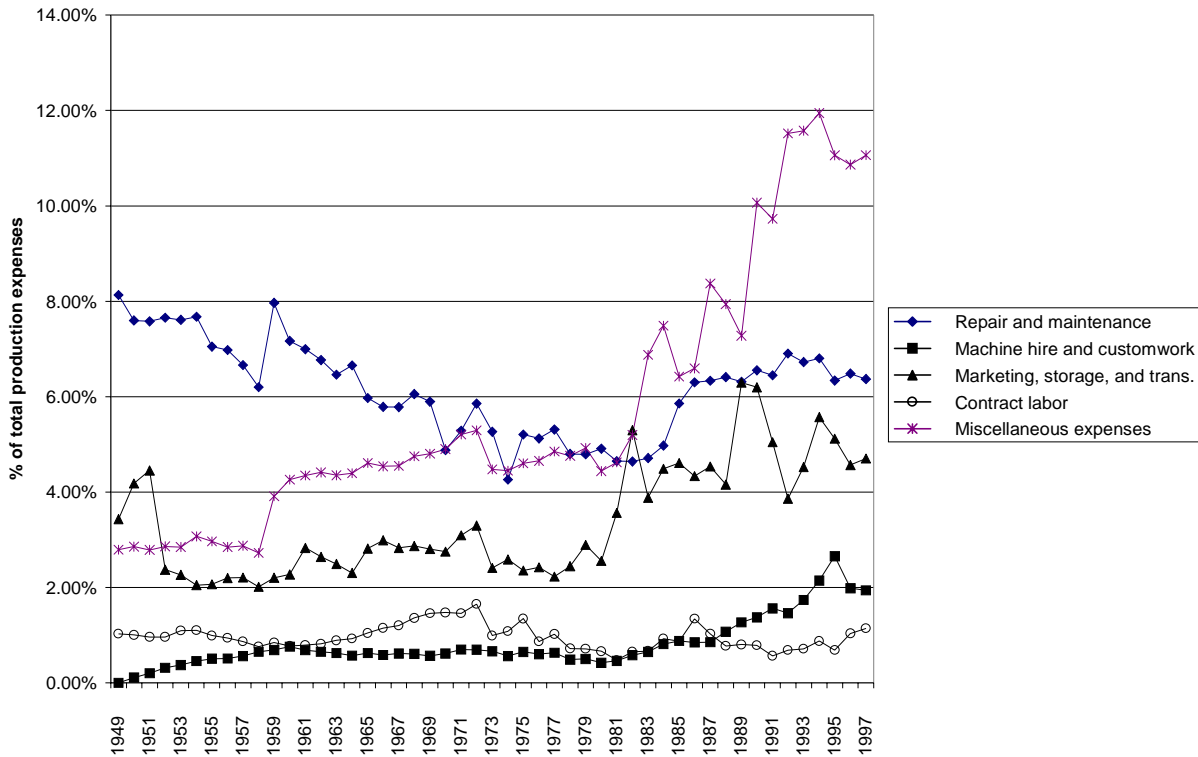


Figure B4. Expenses for other intermediate inputs.

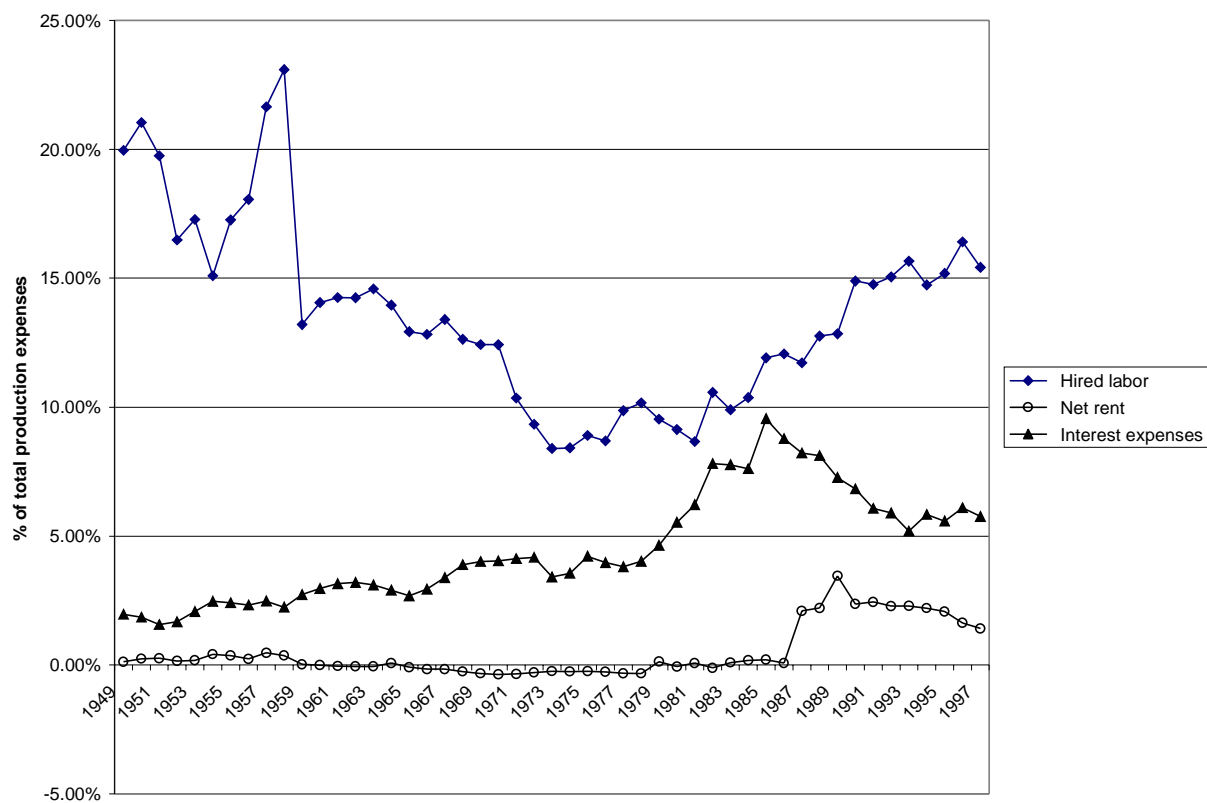


Figure B5. Expenses for payments to non-operators

APPENDIX C: FARMLAND VALUES AND PROPERTY TAXES IN MAINE, BY COUNTY.

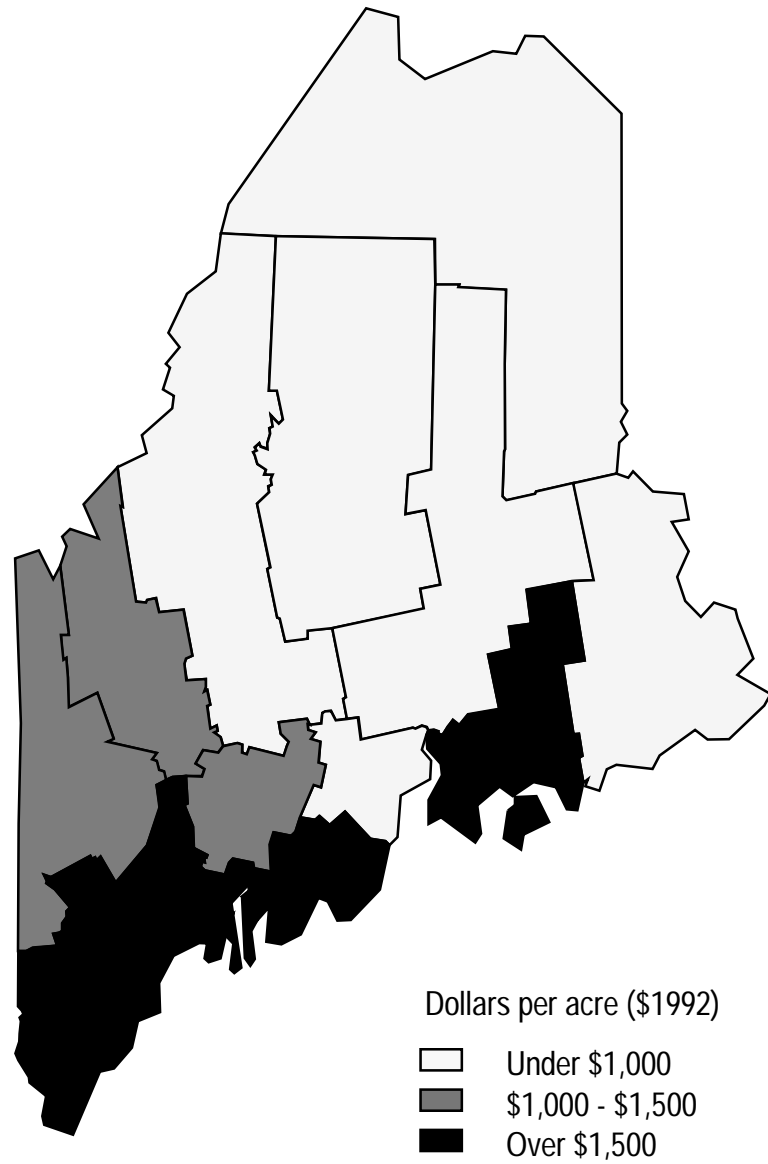


Figure C1. Average value per acre of farmland, 1997.

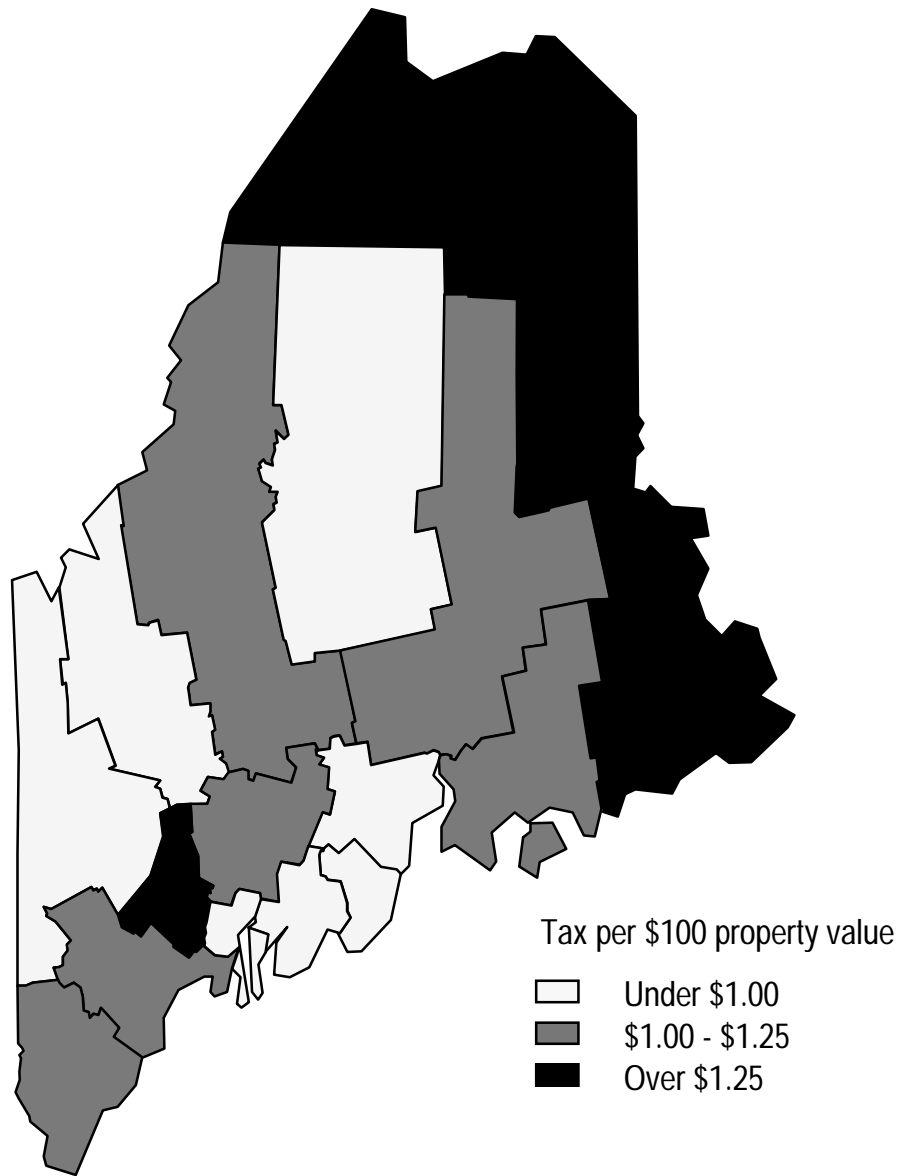


Figure C2. Property taxes per \$100 of farm value, 1997.

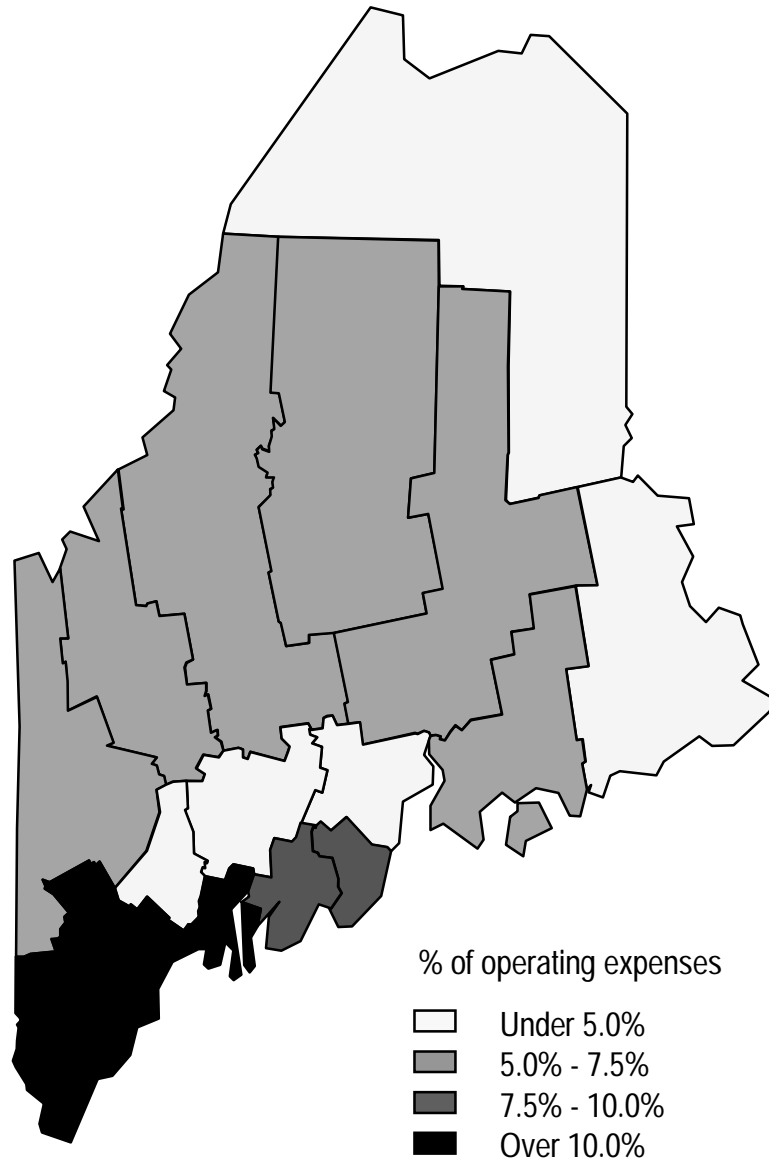


Figure C3. Average property tax percentage of total farm operating expenses, 1997.