AN ECONOMIC APPRAISAL OF THE
IMPACT OF PROPERTY TAXATION ON
NET CASH INCOME FOR DAIRY FARMS
IN A RURAL AND URBAN FRINGE AREA
IN MICHIGAN

Thesis for the Degree of M. S.
MICHIGAN STATE UNIVERSITY
WAYNE ALAN KNOBLAUCH
1972

ABSTRACT

AN ECONOMIC APPRAISAL OF THE IMPACT OF PROPERTY
TAXATION ON NET CASH INCOME FOR DAIRY FARMS IN
A RURAL AND URBAN FRINGE AREA IN MICHIGAN

By

Wayne A. Knoblauch

The purpose of this study was to appraise the current dairy farm situation in a rural and urban-fringe area of Michigan, and to evaluate the present and future economic impact of property taxation on dairy farm stability and income. The objectives of this study were to determine the impact of three differing property taxation methods on the net cash incomes of dairy farmers with two herd sizes, two milk production levels, and four land values.

Complete budgets were calculated for the dairy farms with two herd sizes and two production or management levels, and four land values as a base to determine the effect on net cash income of applying different property tax measures. The partial budgeting technique was used to assess the relationship and impact of differing property taxation methods on net cash incomes after taxes. Data for the budgets were obtained from the Telfarm Summary, an electronic record

record keeping system of Michigan State University, and a property tax and Dairy Adjustment Survey of the Agricultural Economics Department of Michigan State University.

The results of the study showed that all three methods: (1) preferential assessment, (2) removal of the school operating millage and increasing the state income tax to 6.2 percent, and (3) combining (1) and (2), yielded very similar patterns of percent and dollar increases in net cash incomes after taxes. Both preferential assessment and the removal of the school operating millage resulted in greater percentage increases in cash income for the farms with lower production levels and smaller herd sizes. Yet, increases in net cash incomes were greater in absolute terms for the larger herd size than for the smaller herd size.

With preferential assessment, net cash income was increased from 6.4 percent or $1,522 for the $600 per acre land value, 86 cow herd with 15,000 pounds of milk production per cow to 133.4 percent or $5,069 for the $1,500 per acre land value, 40 cow herd with 12,000 pounds of milk production per cow. The elimination of the school operating millage from the property tax and the increase in the state income tax to 6.2 percent, resulted in the same pattern of increases in net income, ranging from 2.3 percent or $585 to 110.6 percent or $4,201.

When (1) and (2) were combined, the same pattern of
increases in incomes held true. However, the impact of both
methods resulted in an additive effect. With this combina-
tion, increases in net incomes ranged from 2.3 percent to
148.8 percent, and in absolute dollar terms these increases
ranged from $585 to $8,378. In dollars gained, the 86 cow
herd on the urban fringe would benefit most from all three
alternatives.

The implications of this study are: (1) it is
generally more profitable to operate a dairy farm in a rural
area (2) if the tax systems studied were implemented, a more
stable dairy sector as far as number and location of farms
are concerned would result. Alternatives available to the
dairy farmer in a high rax area are enumerated with the
corresponding implications of the actions.

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A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE

Department of Agricultural Economics

1972

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION*

Michigan's Dairy Sector

In Michigan, the dairy industry is the largest single agricultural enterprise in terms of cash receipts. In 1971, dairy products accounted for 30 percent of Michigan's cash receipts from farm marketings, and when the sale of cull and surplus dairy animals is added, the total is 35 percent.[1] However, the structure of the dairy sector is changing, as are all the sectors of the agricultural economy. The total number of milk cows is decreasing, with a simultaneous increase in dairy cows per farm and in pounds of milk sold per cow and man annually. During the ten year span from 1960 to 1970, the number of milk cows on Michigan farms decreased from 641,000 to 466,000, while the average milk production per cow increased to 9,903 pounds per year, up 23 percent over 1960.[2] The number of cows per farm doubled in the ten years since 1960; 15 cows per farm in 1960 to 31 cows per farm in 1970.[3] The number of Michigan dairymen selling milk

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*All references and footnotes appear at the end of each chapter.

has also decreased. In 1958, there were 48,650 dairymen selling milk which declined to an estimated 13,500 in 1971.[4]

Even with all the increased expenses, gross and net returns to dairy farming are the highest in history. In 1958, the average value per farm of dairy products sold in Michigan was $3,842; while in 1971, the estimated value had risen to $20,667.[5] Sixty percent of this increase was due to a larger volume of business and 40 percent to a higher price for milk. The price dairy farmers received for milk has increased by $1.58 per hundred or 37 percent since 1960.[6] Milk production per man hour increased by 70 percent from 1950 to 1960, and by 100 percent from 1960 to 1970.[7] It has been estimated that by 1980 only 20 percent as much labor will be needed in the milking and caring for cows as was true in the 1957 to 1959 period.[8]

Population Characteristics

Not only is the dairy sector changing, but also the farm population and total population picture is changing in Michigan and the United States. Figure 1 shows the population measure of urbanization in the United States.[9] The great increases in population in the urban categories compared to the rural categories represents an ever increasing demand for land resources. The farm population as a percent of the United States total has declined from 34.8 percent
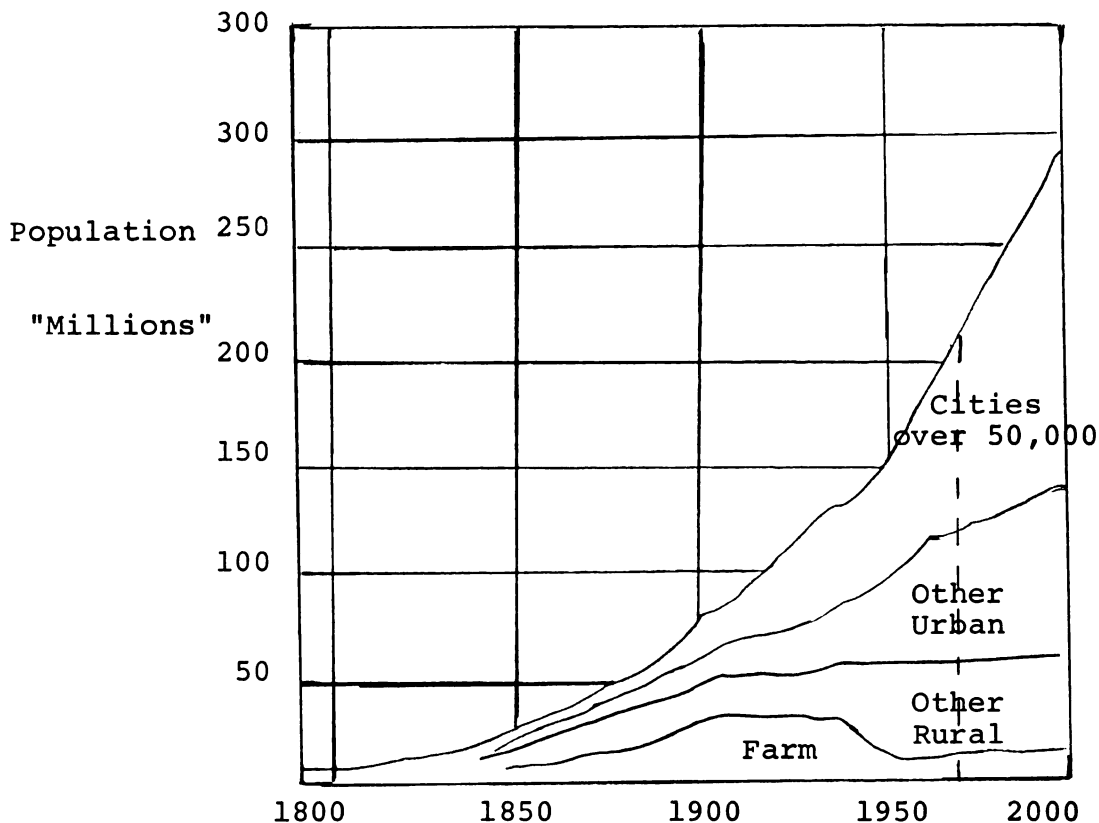
Figure 1. Population of the United States by urban and rural groupings, 1790-1970 and projections to 2000.

Source: Clawson, Marion. Suburban Land Conversion in the United States, Resources for the Future, p. 15.

in 1910 down to only 4.8 percent in 1970.[10] In Michigan, the same downward trend in percent rural population exists. The farm population of Michigan has decreased from 22.8 percent in 1920, to 4.5 percent in 1970.[11] There are many explanations for the off-farm migration, ranging from the "push" of scientific and technological advances in agriculture releasing many farm families to the "pull" of opportunities for highly paid jobs in the cities. However, this

trend may not be as strong as it once was, as more people
are moving to suburban areas. One reason for reduced migra-
tion to the central cities may be the discouragement produced
by high current rates of unemployment in the cities. This
trend of migration from the rural area and the city to the
suburban area has been prompted by a number of factors. The
factors are: expressways, widespread ownership of the auto-
mobile, high taxes in the cities, crime in the cities, and a
desire for more open space, privacy and nature on the part
of the city dweller. Yet, production and manufacturing are
still highly concentrated in central cities.

The rate of population growth is yet another factor
which is changing. The population growth rate in the United
States is about 0.9 percent annually, or approximately two
million people per year.[12] The urban population outside of
the United States central cities is increasing at the annual
rate of 3.3 percent or approximately 1.3 million people per
year.[13] Thus, some two-thirds of the annual increase in
population has occurred outside of central cities. Of that,
a large portion settled in the rural-urban fringe, an area
where many farmers are affected.

But, what is this rural-urban fringe? Steve Smith
has defined the urban fringe as:

> . . . an ill defined zone. It is the zone where inter-
> acting influence of urban and rural land uses predominate
> rather than either one being exclusively dominant. It
> is a zone of transition, a border area in which the
> forces from different markets converge.[14]

Thus, an area or zone exists where two or more uses are in conflict over the use of the land. Here, agriculture, which does not return as great a land rent as does developed uses, is at a definite disadvantage in the struggle for the control of the land in the area. As a result, many problems arise in the allocation and use of this land, especially in the short-run period. Very often the land may be idle between the time of a viable farm operation and the time of development.

The Taxation Problem

Today, one of the more important questions concerning our land resource is what are the implications of shifting lands out of agriculture to the so-called more intensive uses? Several factors must be considered in this regard. They are: the need for additional urban space, concern over future food supplies, possibilities for effective land use planning, local property taxation, the fiscal situation, and concern for open space and recreational lands. This thesis focuses primarily on the effects of the property tax and its alternatives on the net cash income of dairy farms.

Cities were originally located near productive agricultural areas. Michigan was mainly an agricultural economy during the 1800's and food was produced near its market to avoid spoilage in the slow and inefficient transportation system. As technology advanced with increased transportation,

processing and refrigeration, the reliance on nearby food
production declined. Increasing farm mechanization and im-
proved agricultural technology reduced the need for labor
on farms, resulting in fewer but larger farms. Many people
migrated to urban areas where jobs were concentrated. As
a result, the urban areas have expanded covering much of our
better farmland.

The Relationship of Land Use and Development Patterns

Figures 2, 3 and 4 present the problem as it involves
the relationship between property taxes and land use.[15]
Figure 2 assumes a central city (A) which is shown as occu-
pying a circular shaded area surrounded by a circumferential
band into which the city could easily expand. A profile of
land rents or of land values for the city can be shown as a
cone (BCD), the highest point (C) represents the city's
100 percent spot. The sloping sides represent the declining
rents and values as the boundaries are approached, and the
land is used for rural rather than urban uses. Triangle
CAB or CAD depict a cross section of the land rents and
values associated with the different uses, rural and urban,
and at which approximate point a higher use might be expected
to supplant a lower use.
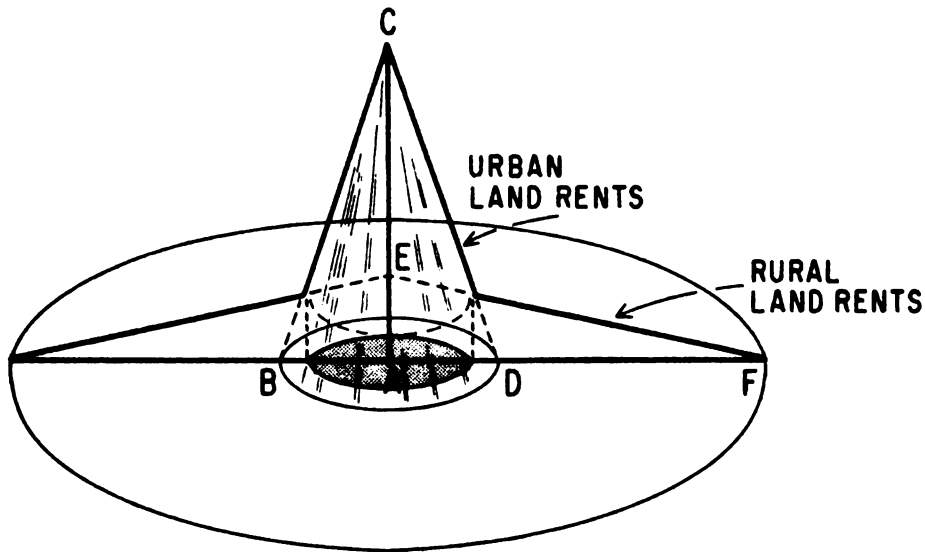
Figure 2. Use of a land rent cone and of land rent triangles
to show the relationship between urban and rural
land uses on land rents and values in and around
a central city (land values are correlated to
property taxes.)

Without transportation, the city would not reach out
as rapidly and might discourage the expansion of the city.
Population growth would call for shifting more land around
the city's borders to an urban use; however, the areas taken
would be expected to be those adjacent to the city and would
be associated with very intensive land use and, therefore,
higher rents.

Without the transportation constraint, people are
willing to move out and find it less difficult to live at a
point G in Figure 3 and commute to the central city, than it
would be to live at point C under a society which is in a

LEVEL OF LAND RENTS

URBAN

OUTWARD SHIFT WITH
TRANSPORTATION CONSTRAINTS

U U' U"

OUTWARD SHIFTS WITHOUT
TRANSPORTATION CONSTRAINTS

RURAL

B C G

ADDITIONAL AREA ELIGIBLE FOR URBAN AND SUBURBAN
USES WITHOUT TRANSPORTATION CONSTRAINTS

ADDITIONAL AREA ADDED BY EXPANSION
UNDER TRANSPORTATION CONSTRAINTS

AREA USED FOR URBAN PURPOSES
IN CENTRAL CITY

DISTANCE FROM CENTER OF CITY

Figure 3. Use of land rent triangles to illustrate expected
outward movement of urban and suburban land use
zones with and without transportation constraints.

transportation constrained condition. Also, important cri-

teria in the decision to move to point G would be such factors

as more open space, lower land costs, lower taxes, less

pollution, a more favorable neighborhood and less noise and

confusion.

Transportation innovations, such as those visualized

in Figure 3, have greatly expanded the areas around a city

which are suitable for development. The area needed for

expansion around a central city would require only the shaded

area in Figure 4. However, the opportunities for development
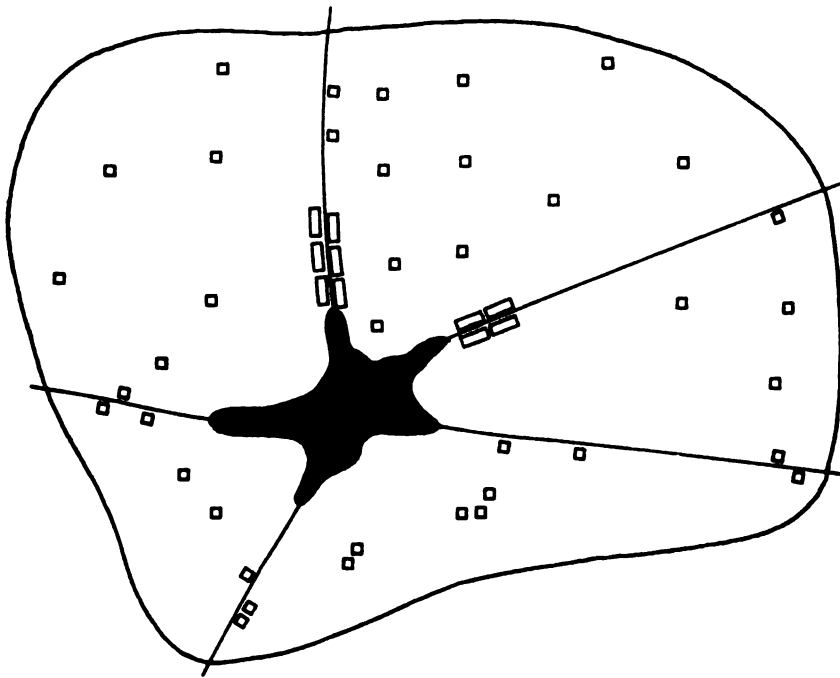
Figure 4. Scatteration of urban and suburban developments
around a growing city.

are often favorable in a much larger area. As a result,

subdividers and speculators acquire land in scattered sites

for urban uses. Many subdivisions are first laid out along

major highways, but new developments often follow a very

scattered pattern which involves a leap frog approach to

urban development.

The taxation effects of this scatteration are easily

visualized. Prospective suburbanites are enthralled by the

beautiful countryside, buy lots and build houses. Many others

soon follow and local taxes must rise to provide additional

school facilities and public services. It has been estimated

that the costs of providing services such as roads, school

sites, public services and school bus operations are 2.5

times as great for sprawled conditions as they are for a closely clustered development.[16] With property taxes being the major means of financing such projects, naturally the tax rate must increase. And, the tax assessors note the rising land values associated with the sale of building sites in a rural area and, therefore, associate these higher values with the remaining land in the area. Higher tax costs add to the farmers' fixed costs and lead to a lower net income, until the farmer who is interested in farming finds it advisable to sell to a speculator or subdivider who will then wait for the higher use to predominate or ripen.

The reasons given for movement to the urban fringe deserve closer inspection. The benefits and costs are often dissociated on the urban fringe. That is, rural-urban fringe residents often receive the same services that were available in the city, but their taxes are lower than if they lived in the city. Also, many people are leaving the city for the scenic beauty found on the rural-urban fringe and to escape the noise, confusion, violence, and pollution which are associated with city life. Thus, it would seem that the invaders reap benefits for which farmers bear a disproportionate burden. As the area develops, the local government requires more revenue to provide the services and to the local government the property tax represents the major method of obtaining the needed revenue. However, if the development becomes stable and permanent, farm land owners may benefit from increased land values.

The land on the urban fringe is often bought in erratic patterns. This scatteration and leapfrogging then causes land values to increase farther from the central city than if the development were on an organized and planned program. Taxes often increase until farmers can no longer pay them from their annual farm income. Farmers may hesitate to borrow to pay taxes, even on a good land investment. Many farmers avoid doing so and do sell their farms. Public planning and control could greatly reduce the areas involved in land speculative pressures and could provide, even within areas of speculation, for use value taxation.

Taxes rise as communities develop because of assessment based on the ad valorem principle and because at increased tax rates as public services are expanded. Article 9 of the Michigan Constitution states in Section 3, "The legislature shall provide for uniform general ad valorem taxation of real property." Originally the property tax was to reach all forms of wealth, but in Michigan it does not reach intangibles or many exempt classes of taxable property.

The ad valorem tax base is determined by the market value, i.e. the price at which property would change hands between a willing buyer and a willing seller in an "arm's length" transaction. Therefore, as the demand for land in a developing area forces higher prices on land, the tax assessor has no alternative but to increase the valuation with no regard to the owner's desire or interest in selling,

or the future effect on the area and community. The dependence on the property tax for local revenues, coupled with the high degree of geographic fragmentation associated with government on the local level, causes problems in land allocation through what has been called fiscal zoning. By using fiscal zoning in an effort to increase revenue, many units of government desire high tax-yield commercial and industrial land uses even where open space uses may be fully recognizable as more appropriate to the land characteristics and the needs of the citizens of the area. Also a reversal may be true. High valuations of land simply force land to be developed-- land which both the owner and land use planner might have preferred to keep open. The disappearance of many scenic, environmental,[17] and agricultural lands adjacent to growing urban and suburban areas can be attributed to these factors. The interaction between landowners and speculators or developers as they attempt to capture large appreciations in land values often places a great strain on land use planning and zoning efforts in their attempt for orderly land development and open land preservation.

A study conducted in the Lake States Dairy Region has shown that land was sold for subdivisions at five times as great a price per acre as the farm value, at six times as much for rural residences, and at nine times as much for commercial and industrial sites.[18] Those who are buying farm real estate are obviously not entirely farmers. In the

year ending March 1, 1971, farmers in the United States
composed of tenant operators, owner operators, and retired
farmers accounted for 62 percent of the buyers of farm real
estate, while 38 percent of the buyers were non-farmer,
local or absentee.[19] It has been estimated that the acreage
in urbanized areas will increase from the 16.6 million acres
of 1950 to 30.3 million in 1980 and to 41 million in 2000.[20]
Not all of this acreage will be developed for residential
lots, but the figures give a rough idea of the acreage di-
rectly affected by the price appreciation that reflects
urban demands.

Tax Trends and Levels

Taxes on farm real estate in the United States have
been increasing steadily in recent years. Taxes on agri-
cultural land increased by 8.4 percent between 1966 and 1967,
by 14.8 percent between 1968 and 1969, and by 9 percent by
1970, which was the 28th annual increase in property taxes.[21]
During the 1970 period, taxes in 14 states increased by more
than 10 percent, and in 2 states by more than 15 percent.[22]
Farm real estate taxes absorbed 19.6 percent of total net
farm income in 1970 in the United States.[23] Michigan farm
property taxes have also increased dramatically during the
20-year period from 1950 to 1970. Total taxes on Michigan
farm property were 13.7 million dollars in 1950 and had in-
creased to 76.5 million dollars in 1970.[24] Taxes per acre

increased from $.80 in 1950 to $5.67 in 1970, and property

taxes as a percent of Michigan net farm income were 4.2

percent in 1950 and 23.4 percent in 1970.[25] The increase

in farm real estate taxes in Michigan and Michigan's net

farm income are shown in Figure 5. It is apparent that

property taxes are increasing steadily while net income is

lower in 1970 than it was in 1960. In 1966, net farm income

hit its peak, while property taxes have been increasing

steadily. Exact figures are given in Appendix A, Table A-1.

Thus, property taxes are taking a larger and larger share of

net farm income. These mounting property taxes have resulted

from increases in both tax rates and assessed values of farm

real estate. The United States Department of Agriculture

surveys from 1964 to 1968 show that per acre taxes on farm-

land in counties adjacent to large metropolitan areas averaged

more than three times those in adjacent counties which were

beyond any influence from metropolitan growth and pressure.

Inadequate controls may cause limited and valuable lands to

be used for purposes that may have a short-term gain to a

few, but result in a long-term loss to the income and growth

potential of the economy.

Impacts of Property Taxation

Rising property taxes have been the subject of much

controversy. As the population increases and cities and

suburbs continue to expand into rural areas, it is inevitable
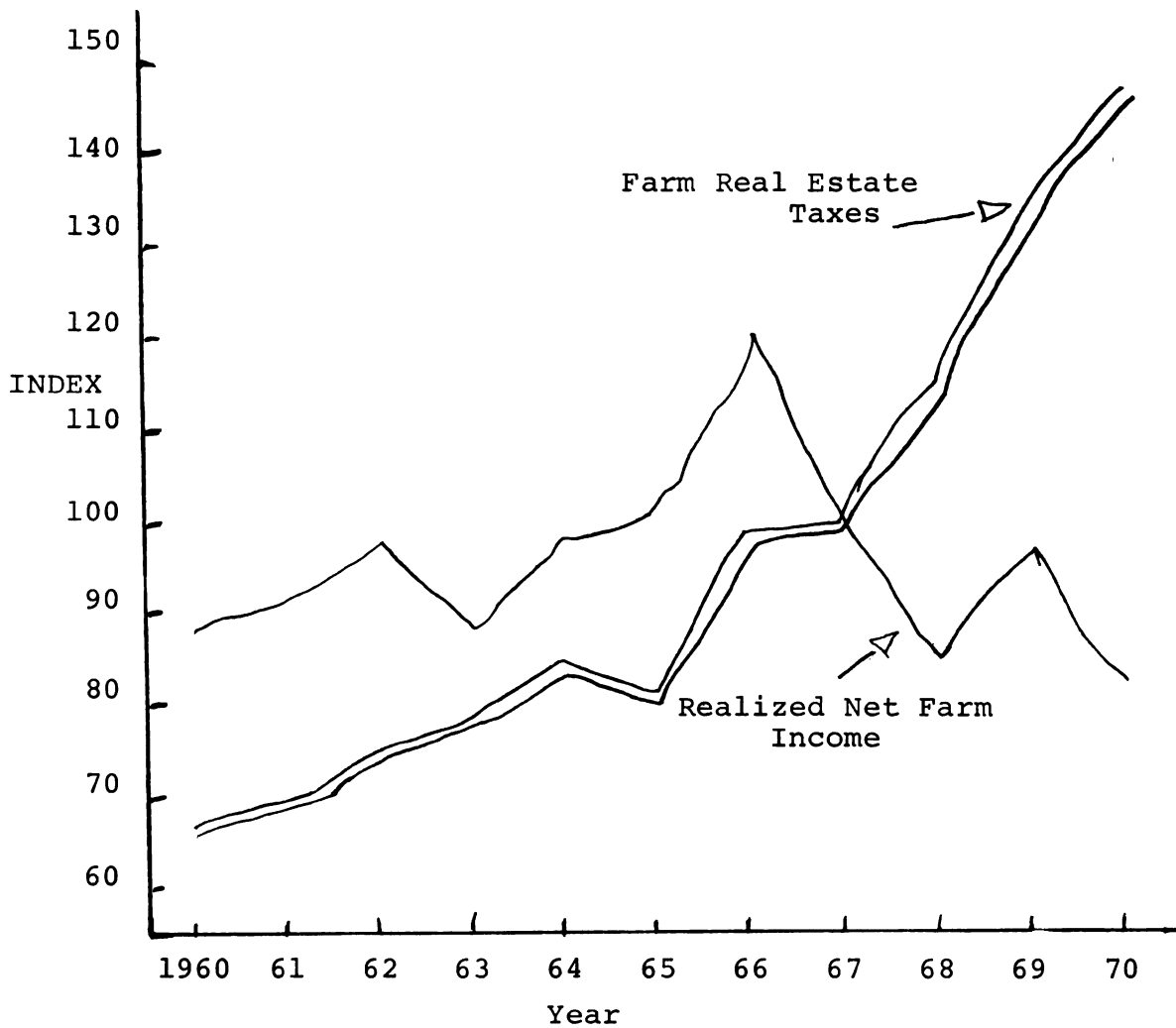
Figure 5.   Michigan farm real estate taxes vs. realized net
            farm income , Michigan 1960-1970. 1967 = 100

Source: Farm Real Estate Taxes, E.R.S., U.S.D.A., January 11,
         1972, pp. 7,8; and Farm Income Situation, E.R.S.,
         U.S.D.A., EIS-218, July 1971, p. 44. Actual figures
         are in Appendix A.

that additional farmers will be faced with higher land assessments and tax rates. A serious consideration is just how long producers will continue to bear the increased property tax load. It is expected that increased land values and tax rates will accelerate the migration of farmers off the farm or drastically reduce their net returns.

The present migration from cities to suburban areas, and from agricultural areas to the suburban areas, coupled with the lack of effective zoning ordinances or development plans for subdivisions and commercial areas, have often resulted in tremendously high property assessments and real estate taxes for farmers. Scattered subdivisions with expensive public services, the shifting of prime agricultural lands into residential uses when other lands are available that could adequately serve the urban needs, and a failure to utilize multiple purpose lands are evidences of the need for concern and action.

When much farmland in some areas of Michigan can be sold for close to $1,000 per acre and real estate taxes reach $20 to $25 per acre, a heavy pressure to sell is placed upon these farmers. If there is no ready market, no off-farm opportunity, or no desire to move or change occupations, the tax burden can become great.

Because one farm in an area is worth many thousands of dollars per acre when sold for the purpose of being subdivided, does not necessarily mean all land in the area

is worth an equal amount. Assessors should understand the market well enough to estimate the rate at which land will be demanded and the willingness of owners to sell.

For unlike other forces that cause farm land to increase in price, urban expansion ordinarily does not increase returns to farming. Nor is the farmer in most cases to borrow on the speculative value of his land to meet the taxes based on this same value. And if he is forced to move, it usually involves moving not only his place of business but his home as well; it involves severing ties in one community and building new ones in another. Especially for the farmer nearing retirement such a move may be very difficult to adjust to. The farmer who sells is compensated by the accumulated increase in land value. However, farmers who choose to remain will pay higher taxes as more land is sold at the speculative prices.

There are many benefits of open land that all people may enjoy. Among them are the ability to grow and cultivate food crops, the aesthetic beauty of the land, the oxygen produced by the green vegetation, and a means whereby water can be absorbed and filtered back to the water table and then on to lakes and streams rather than flowing down a street and through a sewer carrying refuse into lakes and streams. These are qualities on which a market related price cannot be determined, yet they are very important in considering the use of land resources.

Environmentalists and agriculturalists believe that high farm taxes will lead to a loss of open space and reduced agricultural land. An old doctrine states that property taxes on land on an ad valorem basis are neutral in their effects on land use. The reasoning being that if assessment is accurate and the value of the land is set by its productivity in its most profitable use, then taxes will be the same whatever use actually is made of the land. It follows that it is the opportunity of receiving a high price, rather than high taxes that causes land to be shifted to more profitable uses. This doctrine has been modified to read that land taxes are not neutral, but speed conversion of land from lower or less profitable uses to higher or more profitable uses. This is otherwise known as "taxing into use."[26]

The Thesis Problem

As a result of these facts and trends concerning taxation, and with increasing farm property taxation occurring in rural and in urban fringe areas of Michigan, an appraisal of the economic impact of property taxation upon net cash incomes of dairy farms in both rural and urban fringe areas is needed. New property tax proposals and new proposals for legislation concerning land use regulation require an analysis of the impact of existing and alternative tax systems on dairy farm income.

Thesis Objectives

The objectives of this study are as follows:

(1) To appraise the current dairy farm situation relative to property taxation in two areas of Michigan.

    a. An urban fringe area surrounding metropolitan Detroit.

    b. A rural five-county area in south central lower Michigan.

(2) To evaluate the economic effects of property taxation on costs and returns and the stability of dairy farms in urban fringe and rural areas.

(3) To analyze the possible future effects of present and proposed property tax legislation on dairy farm income in the rural and urban fringe areas.

Data Sources

Preliminary work on this study began in June 1970. At this time the author was employed by Professor C. Raymond Hoglund as an interviewer of dairy farmers. From the Hoglund Dairy Survey, such data as number of acres per farm, production per cow, number of cows in the milking herd, retirement and other plans of the dairymen, their attitudes about profitability of dairying and value of cropland were obtained. Thus, the physical setting of the dairy farms was obtained from the Hoglund Survey.

Information concerning the tax rates, assessments, total tax per acre, and any area planning or zoning information was obtained from the respective County Treasurer and Planning Commission offices.

Additional information needed for the budgets was obtained from the Telfarm Summary for Southern Michigan Specialized Dairy Farms, 1970, No. 205, August 1971.[27]

Method of Study

The methods of analyzing the data collected in this study are as follows:

1. Comparison of the rural and urban fringe area on 12 points of evaluation.

   a. Changes in land use in the area.

   b. Present and past tax rates.

   c. Present and past land values for agriculture.

   d. Present, past, and future herd size.

   e. Present and past number of dairy farms in the area.

   f. Number of acres per farm.

   g. Tax per acre.

   h. Income levels of the dairy farms.

   i. Levels of assessment and assessment per farm.

   j. Soil quality for agriculture.

   k. Number who have quit dairying and for what reason.

   l. Farmer opinion of dairying.

   m. Farmer estimates of his future operation.

2. Budgeting of representative farms in the 30-49 cow herd category and the 75-99 cow herd category to determine the impact of present and proposed property tax legislation on net cash incomes. Representative farms are those which have the same general internal and external characteristics as do the farms in the area. The internal characteristics which are assumed equal are soil type, size, and enterprise combinations. The external factors which are assumed similar are markets for products and inputs and institutional restraints.

3. The assessment and feasibility of solutions to the dairy farmer's problems regarding the property tax in rural and urban fringe areas.

    a. The assessment and feasibility of management alternatives available to the dairy farmer in a high tax area. Such management strategies as:

        (1) Increase in production, labor, and overall efficiency;

        (2) Minimize new investments and hope to sell at a high price later;

        (3) Push for zoning, preferential assessment, or the removal of the school operating millage and replace with an increased state income tax;

(4) Sell some land, and buy feed requirements;

(5) Relocate in a lower tax area;

(6) Sell out and retire or increase herd size and production per cow;

(7) Sell out and take off-farm job;

are possible solutions. An assessment of the applicability of these practices to the small and large dairy herds in both areas is done in this study.

b. Assess the feasibility of legislative actions, such as:

(1) Zoning, state planning, or Green Belt formulation;

(2) Preferential assessment;

(3) Deferred taxation;

(4) Restrictive agreements;

(5) Proposed legislation on conversion of the school operating millage to an increase in the state income tax;

on the small and large herd size categories in both the urban and rural areas. Determining the impact of legislative actions on the costs, returns, incomes, migration of farmers, loss of agricultural land, and effectiveness of the proposals in controling the loss of dairy farms and troublesome urban scatteration is also accomplished.

4. Assess the impact of present and proposed legislation on the dairy industry.

Organization of Thesis

Chapter II contains a history of property taxation in the United States, a review of the legislative situation in other states, and the present and proposed property tax legislation in the state of Michigan.

Chapter III presents the situation in a rural and an urban fringe area of Michigan, giving the changes in land use, dairy products sold, population, and the property tax situation. Also, dairy farmer opinions and reasons for changes in the operation are presented.

Chapter IV contains the budgetary analysis and shows what impact herd size, production, level, land value and property and state tax rates have on dairy farm net cash incomes.

Chapter V contains the summary and conclusions from the study. Also, the alternatives available to dairy farmers and the implications of changes in management and legislative actions are examined.

CHAPTER I

Footnotes

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CHAPTER II

TAXATION OF AMERICAN AGRICULTURE

History of the Property Tax

Dairymen as well as many farmers and environmentalists are becoming increasingly concerned with property taxation. The ad valorem property tax as we know it in the United States today is the result of our laissez faire, agriculturally dominated history. The property tax began in the early post-Revolutionary War eta. In 1796 the constitution of Tennessee provided for "uniformity" in the taxation process by stating that all land "shall be taxed equal and uniform."[1] At this time, agriculture was the nation's dominant industry, with agricultural land and personalty providing most of the base for the general property tax and even today property taxes represent the major tax paid by most farmers.[2]

At its inception, the property tax concept was favored for three reasons: (1) tax levies were ordinarily quite low (2) most of the tax revenues were used for local government services and improvements, and (3) land ownership was highly correlated with the wealth of the individual and tax-paying ability. In most cases property taxes were only a few pennies per acre. But even at these very low rates, the property tax posed many problems to land owners. In

the 1800's they represented a burden much as they do today.
Tax levies, however low comparative to today's standards were
often high relative to the owners' incomes. Delinquencies
were common, with many properties being forfeited for non-
payment of taxes, especially in the depression periods of
1837, 1857, 1872, and 1893.[3]

Again in the 1920's and 1930's property tax delin-
quencies were a problem for many farmers. High taxes are
always a burden, but more so on low quality soil or loca-
tionally disadvantaged sites. These farmers on marginal or
near-marginal land for agricultural use were suffering even
more so due to their already reduced incomes.[4] From 1890
to 1920, rising farm incomes and land values were associated
with an upward trend in property taxes. However, farm in-
comes and farm values declined following the agricultural
depression of 1920, but the property taxes on farms continued
to increase. This lead to many tax delinquencies in both
marginal and productive areas. By the 1930's property tax
delinquency was a common occurrence in many areas and millions
of acres of land were foreclosed for nonpayment of taxes and
the inability of farmers to pay interest and principal pay-
ments on their properties.

Only recently has the concept developed and been
implemented of land taxation at something less than full
value. In the 1920's and 1930's interest in reducing the
tax burden on recreational areas produced several articles

which proposed the idea of preferential taxation.[5] It was
not until the 1950's that any state adopted a plan based on
land use considerations. In 1953 Minnesota passed a statute
that allowed for the preferential taxation of selected lands
in exchange for the "hunting and fishing rights" of those
lands.[6] And, in 1956 Maryland became the first state to
adopt a statute giving agricultural lands preferential tax
treatment.[7] Since 1956 many states have enacted various
derivations of preferential taxation with varying degrees of
success.

<u>The Trend in Farm Taxes</u>

The trend in farm real estate taxes from 1910 to
1970 expressed in terms of average tax levies per acre and
average levies per 100 dollars of farm real estate value
is shown in Figure 6.[8] This shows an increase in average
tax levies per acre during the World War I period, slower
increases during the 1920's, a decline in average tax levies
during the early 1930's followed by a steady upward trend
from 1944 to the present. In terms of land values, tax
rates went up from 1910 until 1933. The ratio of taxes to
land values then declined until 1944 when it has tended to
increase at a rapid pace.

In Michigan, the average tax per acre has increased
from $3.13 in 1965 to $5.67 in 1970.[9] The average tax per
100 dollars of full value has increased during the same
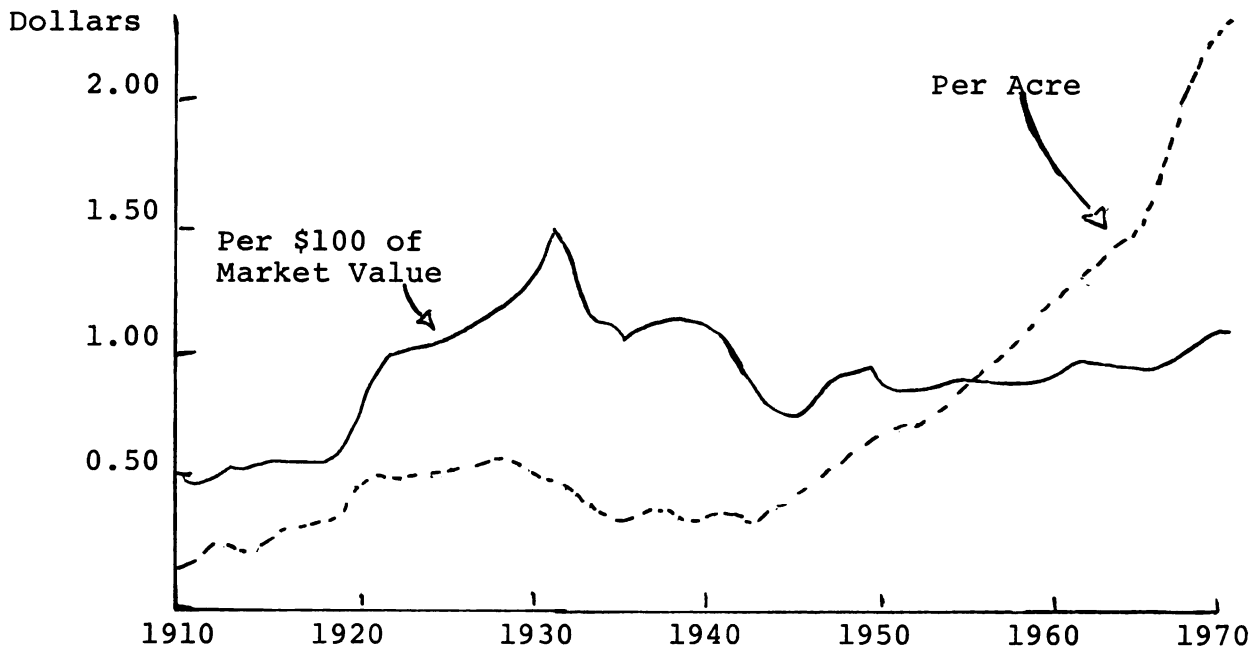
Figure 6. Farm real estate taxes, United States.

Soutce: Farm Real Estate Taxes, Table 1, U.S.D.A., ERS.
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period from \$1.40 to \$1.50.[10] The state average value of
land and buildings per acre has increased from \$232.82 in
1964 to \$326.31 in 1969.[11] There is an evident increase in
property taxes and land values occurring in Michigan.

Taxes on farm property more than tripled between 1950
and 1969,[12] while operator's net cash incomes increased by
less than 30 percent.[13] Farmers find themselves the victims
of an unfortunate set of economic conditions. As Frederick
D. Stocker has observed:[14] property taxes are a fixed cost
of agricultural production. The owners' tax bill does not
vary with output or with the price of farm products. Even if

he allows his land to lie idle, his taxes are not affected
in the short run, at least. Moreover, the farmer is likely
to feel particularly helpless in the face of rising property
taxes because, unlike other costs that are subject to his
personal control, property taxes are governed by the will of
the community. Finally, opportunities for "shifting" the
property tax are limited. Because the farmer typically sells
his product in a market in which his individual influence is
negligible, he cannot pass the tax on to the consumer in the
form of higher prices.

The Tax Situation in Other States

In studying the statutes concerning differential
taxation, it is found that four general forms of use-value
assessment are in existence. These are 1) preferential
taxation and preferential treatment, 2) tax deferral, 3) tax
deferral with a contractural arrangement, and 4) classifi-
cation of taxable property.

When preferential assessment or plain use-value
assessment is used, property owners receive an assessment
based on use-value for tax purposes and normally have no ob-
ligation to the public. This enables a lower tax to be
realized without any compensatory agreement to maintain the
land in a specific use. Laws granting preferential assess-
ment generally provide that the farm land is to be assessed
on the basis of value for agricultural use and that other

potential uses shall be ignored. The amount of tax relin-
quished on a farm under this system is lost too and cannot
be recovered by the local government. Land owners pay a
lower tax, and the public recovers nothing when the use of
the land is changed. The preferential assessment system
usually allows a farmer to participate from year to year and
sell his property without restraint. Use-value taxation is
designed to prevent nearby changes in land use from having
an effect on the assessed value of the property. Ten states
have adopted plain use-value assessment for use on agricul-
tural or open space lands. These are: Arkansas, Colorado,
Connecticut, Delaware, Florida, Indiana, Iowa, Louisiana,
New Mexico, and South Dakota.

In Connecticut, the law was originally enacted in
1963 and has as a standard of the statute (1) farm land,
(2) open space land, and (3) forest land. These lands are
to be assessed on the value based on current use only. In
an evaluation of the effectiveness of Connecticut's Public
Act 490, Irविng F. Fellows believes that re-evaluation toward
the end of the decade has brought a high level of participa-
tion by farm and forestland owners.[15] He continues to say
that within and at the boundaries of the urban sprawl areas,
land under Public Act 490 appears to be holding the line
against encroachment. However, this could also be a result
of high interest rates, high building costs and uncertain

employment. Fellows adds that the forces which influence growth are so complex that amassing statistically valid evidence is difficult.

Land owners in Fairfield County (close to New York City) are convinced that large acreages of forestland are being regulated under this act and will continue to remain in forest use.[16] However, evidence is accumulating to support such observations, but is not complete as of yet. Couple this lack of data with the opinion of the framers of the Act that use-value assessment is not the only answer, but one part of an answer to the rational development of an area and it becomes difficult to view use-value assessment as an answer to the problem by itself.

The major problem with preferential assessment is simply that of devising an appropriate technique for determining use value.[17] The appraisal process used in assessment normally is dependent upon the use of sales value comparisons. With this basis for assessment no longer available, a method of determining the value of land for agricultural or other open space use complicates the assessment procedure. The technique accepted in several states involves advisory committees to provide guidelines on acceptable ranges of soil classifications, cropping patterns, and resource use programs.

A second flaw is that plain use value taxation bestows benefits on one class of taxpayers without giving them concomitant responsibilities.[18] It can be justified as an expression of public concern for an easily exploited citizen group. But more likely the best interests of local communities may be ignored and many acres of land may receive favorable tax treatment when the capital values are appreciating because of nearby suburban growth and the provision for additional government services may be deferred for lack of a sufficient tax base.

Also a problem of deciding whether preferential assessment really influences land use is a very crucial issue. Does the farmers' tax burden become less, or does it actually alter the pattern of land use. Preferential assessment also encourages speculative holding of farm land since it does keep taxes down.

The positive point for plain preferential assessment is that it has a goal of encouraging the continued use of agricultural lands and other open space lands by assuring owners that their assessments will be for the use of the land at its present level.

The next form of use-value assessment is deferred taxation. This method represents a type of taxing alternative in which two assessed values are placed upon each parcel of qualifying land. One is the market value, which applies when the property changes use and ceases to be eligible for

deferral and the other is a use-value assessment which applies
while the property is in agricultural, open sapce, conserva-
tion or other specified uses. When the property is sold the
amount equal to the difference between the market value and
the use value becomes taxable. The current tax rate for each
year that tax deferral applies to the property is used in
calculating the tax deferred, up to a time limit established
by the state, i.e., roll back period. The land owner bene-
fits by a lower tax due on an annual basis under the tax
deferral plan. If the land remains in an elegible use for
a longer period than the "roll back", the landowner gains
absolutely and the public pays the foregone taxes as a cost
of keeping the property in the eligible use. Thirteen states
currently have deferred taxation. They are: "Alaska, Arkan-
sas, Kentucky, Maryland, Minnesota, New Jersey, Oregon,
Pennsylvania, Rhode Island, Texas, Utah, Virginia, and
Washington.

New Jersey is a good example of deferred taxation.
New Jersey adopted their present legislation in 1964. The
standards of the statute specify that lands which qualify
are lands "actively devoted to agricultural or horticultural
use."[19] The criteria for qualification are that the parcel
be at least 5 acres; used for agriculture the predeeding two
years with gross sales to average $500 per year. With a
tax roll back for two preceeding years it contains a deterrent

to speculative uses. The owner must apply for the tax de-
ferral 90 days prior to the beginning of each calendar year.
When the land use changes the previous deferred taxes become
due.

In a New Jersey study 65 percent of 20 county agents
interviewed felt taxes of participating landowners had been
reduced by farm land assessment and 70 percent said the New
Jersey Act had been effective in their respective counties
in slowing the sales of agricultural lands for other uses.[20]
The other seven said the development demand and high land
prices were more important than reduced taxes.[21] The Act
was generally used by those for whom it was intended, bona
fide farmers. There was no evident purchase of land for
short term gain. Most participants had large investments in
machinery, buildings, livestock, and irrigation equipment.
Twenty-five percent of the program participants did receive
offers to buy their land, with forty-three percent saying
they would have sold for a higher price and fifty-seven per-
cent saying no, they desired to continue farming operations.[22]

Samuel Garrison, the Coordinator of the New Jersey
Division of Natural Resources, has stated that from a land
use policy point of view, the act has contributed substan-
tially to the retention of some of New Jersey's agricultural
land resources, but only for the short run. It was only one
of the steps that was needed to be taken.[23] It is true with

deferred taxation as with preferential taxation that either method alone is not capable of complete control or preservation of land in agriculture or other open land uses.

The problem with a tax deferral arrangement is that two assessments must be made where only one was required before.[24] There also may be some assessors who value properties higher in the "true" market than they otherwise would. Also how much of a penalty should be collected if the landowner changes use is a question of importance.

Tax deferral can represent a penalty for shifting use, but when the roll back period is short only a slight deterrent exists for the speculator who holds his land at a low tax cost while waiting for a high price market to emerge. Also a long roll back period can conceivably discourage desirable shifts in land use.

The benefits of deferred taxation are that payments of the deferred tax out of the seller's capital gain simplifies the owners holding of the land. And the payment of the roll back tax will come at the time when added revenue is needed by local government.[25]

The tax deferral and a contractural arrangement is another alternative of use-value taxation. Under a contractural agreement, a qualifying landowner signs a contract agreeing to surrender the nonagricultural or nonopen space development rights of his land for the life of the contract. In return the land will be assessed only on the basis of its

value in the agricultural uses provided in the contract. A similar system would have the landowner sell an easement right to all nonagricultural development of his land for a specified number of years. In return, the assessor would consider the effect of the easement upon the value of the parcel when assessing for property tax purposes. Along with the contract or easement, in most states there is a penalty in the form of a fine or deferred taxes due if the landowner breaks the contract by selling or converting the land to a nonspecified use. Three states have adopted this alternative for agricultural lands. They are: California, Vermont and Washington.

California adopted the Land Conservation Act in 1965. Lands can qualify for inclusion if they are designated as an agricultural preserve, a scenic restriction, or an open space easement area. Under the California Act the landowner accepts the limitations of the Act for a designated period of time and the landowners rights to his land are thereby diminished. This is accomplished by easement or by contract, in which the landowner commits his land to open space uses for an initial fixed period of time. The minimum time limit is ten years, with some extending twenty years. Once there are only nine years remaining, both local government and the landowner must agree to keep the easement or contract at ten years. This is accomplished by adding a year to take the place of the year just expired, thus a running ten year period is achieved.

The easement or contract can be terminated by three methods; termination, cancellation, or nullification. If either party wishes to break the contract, then the contract or easement will have a fixed termination date. As the termination date nears the property becomes less restricted by the easement or contract, and it then becomes to be valued on an unrestricted basis. Cancellation is possible on an immediate basis also. It, however, is not without cost to the landowner, since 12 1/2 percent of the new unrestricted market value must be paid as deferred taxes. Nullification is a situation in which the land is freed of the restrictions but the landowner is not required to make any deferred payments. The two situations which qualify for nullification are annexation of the land by a city and condemnation.

It is the opinion of Don V. Collin, a consultant of the California Senate Committee on Revenue, that although the experience with the Act has been rather short, developments to date indicate that tax policy can be joined with other tools to carry out a public policy of assuring open-space use of land.[26] Thus California combines deferred taxation with an easement or contract to form a more complete land use program. However, the concept of land use planning is not contained in the previous examples.

Contracts or easements can introduce stability in a fluctuating land use area. They also can be used in combination with other governmental measures to channel developments

to other areas and to promote desired land use patterns.
The acquisition of easements can prove to be expensive, but
when coupled with use-value assessments can stabilize local
situations, and enable local governments to purchase perma-
nent easements.[27]

When contracts or easements are used in conjunction
with planning commissions they can be effective. Individual
owners by themselves are not always capable of determining
what is the best choice of action for the community. With
planning this over-all direction is provided.

Planning or zoning and tax classification are very
similar. The planning and zoning alternative combines the
features of plain use-value assessment with official planning
or zoning. A selective form of taxation exists in which
planning or zoning restrictions establish agricultural or
open-space zones where the provisions of plain use-value
assessment apply. Thus if lands are zoned agricultural they
are assessed on that basis. Areas outside these zones may
not receive all the benefits of the tax relief measure.
Three states have adopted this alternative. They are:
Florida, Hawaii, and Oregon.

Closely associated is the tax classification method,
by which all taxable property is classified into a scheme.
One of the classes usually applies to agricultural lands.
The land in each of the classes is then assessed at a dif-
ferent proportion of full cash value. Five states are

currently using this method. They are: Arizona, Minnesota, Montana, Ohio, and West Virginia.

Zoning has proven to be unreliable by itself. California tried exclusive agricultural zoning as a basis by which assessors could determine values of properties for agricultural purposes. However, it lacked reliability and stability. Three votes on a five man governing board and 30 days later, any properties zoned exclusively for agriculture could be rezoned for residential, commercial, or industrial use.[28]

Hawaii was the first of the fifty states to have a General Land Use Plan for the state. It was approved in January 1961, and established the State Land Use Commission, calling for classification of all lands in the State and authorizing the adoption of rules of practice and procedure and regulations for land use within the various districts. The law, as amended in 1963, provides for four districts: Urban, Rural, Agriculture and Conservation determined by a nine member Land Use Commission appointed by the Governor and confirmed by the Senate.[29]

Of the four districts provided, urban districts are generally defined as lands in urban use with sufficient reserve to accomodate foreseeable growth. Agricultural districts include lands with a high capacity for intensive cultivation, with a minimum lot size of one acre. Conservation districts are comprised primarily of lands in the

existing forest and water reserve zones. Rural districts
are defined as lands composed primarily of small farms mixed
with low density residential lots with a minimum lot size of
one-half acre.

The administration of the land use controls in Hawaii
is complex. In the agriculture and rural districts the Land
Use Commission established the regulations, and the counties
are responsible for their administration. The problems do
not end with the designation of lines on maps which repre-
sent land use district boundaries. Once established, dis-
trict boundaries can be changed by the Land Use Commission
through a petition and public hearing process.[30]

An important section of the law provides for the
dedication of land in any district for agricultural purposes,
whereby land dedicated for a specific agricultural use for
ten years may receive a reduction in assessment.

Contrary to the anticipations of the State, the
number of petitions for land use changes was not great. In
the six year period from 1962 through 1967 there were 123
petitions for non-conforming uses of which 74 were approved.[31]
In Oahu County, where the pressure for urbanization was
greatest, 25 petitions for special permits for non-conforming
uses were 397 acres of which 13 petitions or 331 acres were
approved.[32].

Farmers have dedicated their land to the program for reasons of security and tax savings. While the program does provide security and tax relief for farmers, doubts still exist as to its effectiveness in preserving land for agriculture and if the cost to the state is justified, and no assessment has been made of the effect of land dedication on land appreciation.[33]

There also exists many states in which there is no tax relief for agricultural or other open land. Such states as Alabama, Idaho, Montana, Nebraska, and Michigan have no preferential taxation legislation. Six arguments against preferential taxation have been enumerated by Larry Libby.[34]

First, critics of preferential taxation argue that land taxes are really insignificant in total farm costs. Also that the farmers' decision to sell his land is determined more by other farm costs, personal factors such as age, health, lucrative off-farm job opportunities, his son's interests, or by an attractive offer for his land rather than high taxes. The critics claim special tax treatment merely lowers the farms cost of speculation.

Secondly, the opposition to preferential taxation points out that as land prices around the landowner are bid up by a growing community, the landowner has done nothing to bring about this increase but he reaps all the benefits of land value appreciation. Many followers of the Henry George school of thought feel that the taxes should be higher on

the unearned increment, rather than lower as preferential assessment advocates. They feel all the gain in value should go back to the society, for they are responsible for the higher values.

A third contention is that underdeveloped land is under assessed in comparison to developed land. That is, in parts of Michigan the assessment-to-sales ratio is higher on developed than undeveloped land, largely because of poor assessment practices in rural areas. They believe that home-owners are subsidizing holders of open land who will eventually reap capital gains.

The fourth argument is in administrative procedures. Such questions as what is a farm and who is eligible for the program are not answered decisively. Opponents argue that speculators are allowed to maintain "token" farms in order to take refuge under preferential assessment.

A fifth complaint is the inequity of the whole concept. Should farmers receive a tax break when they have an interest in rising land prices and are therefore "speculators" who are being subsidized at public expense? Many feel that little is obtained in return for the retention of land in agricultural uses.

The sixth point is a question as to what extent do preferential assessment laws conform to a general planning process. This is a basic point which has been answered in many states by requiring the law to be in the public interest,

not simply a tax relief for farmers. And also the constitutionality of preferential assessment is a deterrent. Many state attorney generals have stated the preferential assessments violate the uniform tax provision of the constitution.

The arguments for preferential assessment are quite obvious. First, agriculture, recreation, forest lands, and open spaces cannot compete with developed uses in terms of rent to the land factor. Land is a vital resource in farming, not simply a location on which a factory, the industrial means of production, can be placed. The factory requires little land resources and is capable of paying many times over the agricultural use value to obtain the needed space. However as one can reason, agriculture is "better" than only one use, idle land. It is therefore, ridiculous to say that land and food production is an unimportant activity.

Secondly, farms and other open land uses are aesthetically pleasing and offer many other benefits which are not captured in price. Parks, cattle grazing in fields of clover, and a "lack of buildings" are highly desirable qualities, yet are ones which do not reflect their true value in dollars and cents. Food production is vital, yet the land on which it is grown is constantly being removed from production by alternative uses.

Thirdly, taxes are based on highest and best use in a quantative sense, which does not take into consideration

the externalities of open land. An acre of open land is not always worth less than is the higher valued developed acre when judged on a basis of benefit to society in the form of food and scenic beauty.

Legislative Situation in Michigan

At present, Michigan does not have differential assessment laws. However, attempts have been made to enact laws which might have provided for differential treatment of farm property. None has been successful. The first attempt was made in 1959. The bill was to provide for a constitutional amendment, but failed to get out of committee. The significant section of the bill read as follows:

> Sec. 3A. The legislature may provide by law that any city, when provided for by its charter, may create differential taxing districts within the city for operational expenses as long as the rate of taxes within the district is uniform.[35]

Other bills have also been discussed, one solely for agriculture and another for agricultural and open space land.[36] House Bill No. 4100 which would have amended Act. No. 206 of the Public Acts of 1893 of the State of Michigan and would have given Michigan a deferred taxation law with a three year roll back period. This bill also never was enacted into law. "The Open Space and Farmland Preservation Act of 1971" would have applied to all open land; wetlands, beaches, parks, forests, wildlife preserves, and historic sites, as well as farm and agricultural land. Under this

proposal upon application to the State Tax Commission, and certified by a local, area or regional planning commission that the land is zoned "open space", "farm and agricultural" or "timberland," or in the absence of a land use plan, certification from the local assessor that the land has been used for such uses for three of the preceding calendar years it becomes eligible for deferred taxation. This proposal would have provided for a five year roll back period with taxes due on the difference, plus a twenty percent penalty of the difference in taxes, plus interest. This proposal passed both House and Senate, but in different forms and is now in committee.

There has also been discussion as to the constitutionality of the property tax as a tool for financing public schools. As of yet no action has been taken on this, however there is a petition drive underway at present which supports the idea of removing the school operating millage from the property tax and replacing it with an increased state income tax. Whether the increase in state income tax will be graduated or not is an undetermined question. This alternative is discussed in detail in Chapter IV along with preferential assessment.

In the 75th legislature, House Bill No. 3582 was approved by the Governor, August 11, 1969. This bill stated that in determining the value, the assessor shall also consider the advantages and disadvantages of location, quality

of soil, zoning, existing use, and present economic income

of structures.[37]   However zoning regulations can be altered

by powerful concerns and the determination of value in an

existing use is very subjective.

The latest proposal is House Bill 6229. If land is

in one ownership with 80 or more acres and has been devoted

to agriculture or horticulture during 3 of the past 5 calen-

dar years or is using 5 acres or more but less than 100 with

a gross income of $100.00 or more per acre during 3 of the

five calendar years, that land will qualify for classification

under this act. The land is taxed on the basis of USDA Soil

Conservation Service capability classes with Class I land

@ $9.00 per acre, Class II and III @ $7.00 per acre, Class

IV @ $5.00 per acre, Class V, VI and VII @ $3.00 per acre,

and Class VII @ $1.00 per acre. Thus no valuation as to

dollars per acre is required for taxation. However, assess-

ment is required for determining the penalty when the land

changes use.

The penalty is accumulated difference between the

actual tax paid and the amount which would have been paid if

not under this method of taxation, plus 6 percent compounded

interest for 2 to slightly less than 3 years. Of if one

desires to change the land use immediately 6 percent of the

appraised value or sale price whichever is higher is collected

as a penalty. This proposal is still in committee, but

prospects for passage are uncertain.

Environmentalists and Agriculturalists have attempted to persuade legislators in stopping the unorganized encroachment of our valuable land resource and the loss of many farms.[39] However, no definite program has been initiated in Michigan. The Governor's Special commission on land use has presented a policy statement and support of the principal of preferential assessment. The governor has agreed with the report and the need for appropriate legislation.

The next chapter discusses the situation in the rural and urban fringe areas of this study and presents descriptive data and survey results. A definition of the area, the dairy farms in the area, the tax rates, and future estimates are also enumerated.

CHAPTER II

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35. House Joint Resolution S, Regular Session of 1959.

36. House Bill No. 4100 and The Open Space and Farmland Preservation Act of 1971.

37. Act No. 276, Public Acts of 1969, State of Michigan, August 11, 1969, Sec. 27.

38. Not only are high property taxes a problem for dairy farmers, but also the problem of manure handling, especially odor is increasing in magnitude. The movement of urban people to the suburbs has intensified the problem, with both urban residences and the public in general becoming concerned with odors and possible pollution of ground water and streams resulting from livestock manure. With non-farm neighbors surrounding many dairy farms today, and especially in the urban fringe area a dairyman who sold a tract of land for an urban home may be later confronted with complaints about pollution and odors.

CHAPTER III

DESCRIPTIVE DATA AND SURVEY RESULTS

The Areas of Study

The rural area studied consisted of a sample of the dairy farms in Clinton, Eaton, Ingham, Ionia, and Shiawassee Counties in south central Lower Michigan. The area is predominantly rural, yet does contain some degree of urban influence from the cities of St. Johns, Charlotte, Lansing, Ionia, and Owosso. This five county area was used as an example of a largely rural dairy area in Michigan.

The urban fringe area of study is also a five county area surrounding the city of Detroit. The counties from which dairy farms were sampled include: Macomb, Monroe, Oakland, Livingston, and Washtenaw. Omitted from the survey were the western two tiers of townships in Livingston and Washtenaw Counties and the western-most tier of townships in Monroe County. These townships are more nearly rural, and were thus excluded. This five county area is experiencing urban influence on the agricultural lands in increasing intensity. There exist many suburbs, industrial complexes, and commercial centers which are reaching outward for more

acreage needed for expansion, and by doing so are contributing

a great deal of urban pressure on the outlying agricultural

lands. Both areas of study are depicted in Figure 7.
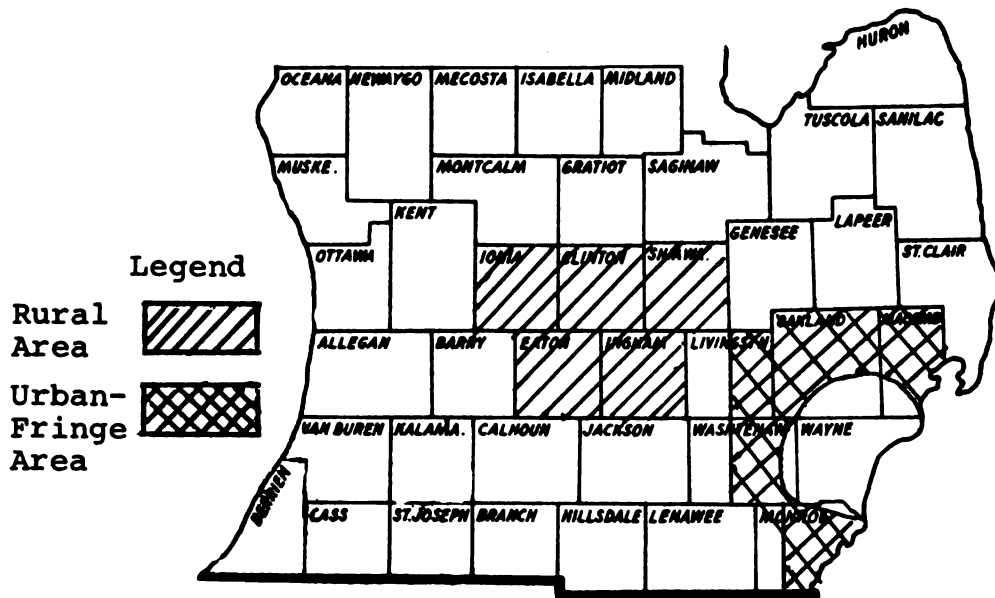
Figure 7. The rural and urban fringe areas of study.

Soils of the Areas of Study

The soils of the rural area are predominantly Miami

and Conover, with some Hillsdale, Bellafontaine, and Spinks.[1]

The Miami and Conover series are nearly level to rolling and

are deep, relatively high in fertility, and are durable under

cultivation. The Hillsdale and Bellafontaine are somewhat

rolling soils which are easily tilled, moderately productive,

and require fertilization for high crop yields. The yield

goals for these soils under good management with adequate

drainage range from a low of 75 bushel of corn on the Spinks to a high of 120 bushel or more on the Conover soils.

The soils of the urban fringe area are composed of Bellafontaine, Hillsdale, and Boyer soils on quite hilly conditions, along with Miami and Conover, Blount, Brookston and Hoytville soils.[2] These soils are also quite productive with corn yields ranging from 75 to 130 bushel.

Background and Growth Data

To put the study in perspective, a history or background along with growth data of the two areas was developed. The trend in the number of dairymen and the value of dairy products sold will be presented first. Michigan dairymen totaling 41,662 in 1960 declined by 67.6 percent or to 13,927 in 1971. This same downward trend occurred for both the rural and urban fringe areas. In 1960, the five county rural area contained 4,295 dairymen who were selling milk. This decreased to 2,849 in 1965 and to 1,530 in 1971, a decline of 64 percent and 1,319 dairymen over the eleven year period. The urban fringe area contained 2,548 dairymen in 1960; 1,419 in 1965, and only 745 in 1971, a decline of 70 percent and 1,803 dairymen over the same period. These summary figures are presented in Table 1 and as the data within each area are not homogeneous in all categories the data is given by counties in Appendix C, Table C-1.

Table 1. Number of dairymen selling milk in the rural and
          urban fringe areas.

	1960	1965	1970	1971
RURAL AREA				
Number of Dairymen	4,295	2,849	1,692	1,530
URBAN FRINGE AREA				
Number of Dairymen	2,548	1,490	788	745

Source: Michigan Department of Agriculture, Animal Health
         Division, BRT Counts, 1960, 1965, 1970, and 1971.

The value of dairy products sold in the rural area
was $17,896,270 in 1959 and increased to $30,958,371 in 1969.
This represents a 76 percent increase in the value of dairy
products sold over the ten year period. The value of dairy
products sold in the urban fringe area increased from
$14,282,892 to $16,621,717 an increase of 14.3 percent over
the same ten year period. However, the average sale of dairy
products per farm was greater in the urban fringe area. In
1959, the rural area averaged $3,976 per farm while the urban
fringe farms averaged $5,679 per farm. Dairy product sales
per farm were also higher for the urban fringe farms in 1969,
$18,615 for the rural compared to $19,463 for the urban fringe
but the differences were only one-half as great as for 1964.
Whereas the rural area produced 14.2 percent of Michigan's

dairy products in 1969, the urban fringe contributed only 7.6 percent. Thus, a decrease of 1 percent of the state total occurred in the urban area, while the rural area gained 0.2 percent of the state total. This data is presented in Table 2, and detailed information is given in Appendix B, Table B-2.

Table 2. Value of dairy products sold in the rural and urban fringe areas class 1-5 farms, 1959 and 1969.

	1959	1969	Percent Increase
RURAL AREA			
Value of dairy products sold in dollars	17,896,270	30,958,371	76.0
Average per farm	3,976	18,615	368.2
Percent of state total	10.8	14.2	
URBAN FRINGE AREA			
Value of dairy products sold in dollars	14,282,892	16,621,717	14.3
Average per farm	5,679	19,463	242.7
Percent of state total	8.6	7.6	

Source: 1964 and 1969 Census of Agriculture

From the preceding information it is apparent that differences exist between dairy farms in the two areas. The differences are not limited to dairy farms as the following data on farm characteristics show. As is shown in Table 3

and detailed in Appendix B, Tables B-3 and B-4, in the rural area from 1959 to 1969 the number of farms decreased 21.9 percent, with the number of farms in the urban fringe area declining by 31.4 percent over the same period.

The same trend occurred for land in farms. Land in farms declined by 203,790 acres or 13.4 percent from 1959 to 1969 in the rural area. The urban fringe area showed a decrease of 259,659 acres, a 22.6 percent reduction over the same ten year period.

The percent of land in farms also followed a similar pattern, only that the rural area contained a higher percentage of farmland than did the urban fringe area, 73.2 percent compared to 45.2 percent. The percent of land in farms decreased 11.2 percent from 1959 to 1969 in the rural area, while the urban fringe area decreased 12.7 percent.

Accompanying the decrease in number of farms and land in farms was an increase in the average value of land and buildings, average farm size, and value per farm. Here we find the most pronounced differences, with the average value of land and buildings per acre increasing 65.4 percent from 1959 to 1969 in the rural area and 90.5 percent in the urban fringe area over the same period. Thus, in 1969 the average value per acre of land and buildings in the rural area was $342.29 compared to $681.33 in the urban fringe area or double that of the rural area. These differences would have

been greater if the data for the western tiers of townships in Livingston, Monroe, and Washtenaw Counties had been eliminated.

Table 3. Summary statistics of land use and value, rural vs. urban fringe, 1959-1969.

	1959	1969	Percent Change 1959 to 1969
RURAL AREA			
Number of farms	10,892	8,501	-21.9
Land in farms	1,520,138	1,316,348	-13.4
Percent of total land in farms	84.4	73.2	-11.2
Average value of land and buildings per acre	$207.01	$342.39	+65.4
Average farm size	140.1	155.7	+11.1
Average value per farm	$29,177	$53,294	+82.6
URBAN FRINGE AREA			
Number of farms	9,699	6,658	-31.4
Land in farms	1,146,670	887,011	-22.6
Percent of total land in farms	57.9	45.2	-12.7
Average value of land and buildings per acre	$357.71	$681.33	+90.5
Average farm size	121.0	130.7	+8.0
Average value per farm	$39,241	$85,097	+116.9

Source: 1964 and 1969 Census of Agriculture

The average farm size increased by 11.1 percent over the 1959 to 1969 period or a total of 14.6 acres per farm in the rural area, while the urban fringe increased 8.0 percent from 1959 to 1969. The average farm size increased 9.3 acres in the urban area, resulting in an average farm size of 130.7 acres compared to an average farm size of 155.7 acres in the rural area.

The average value per farm in the rural area increased 82.6 percent from 1959 to 1969. In 1969 the average value of a farm in the rural area was $53,294. Whereas in the urban fringe area there was an increase of 116.9 percent over the same period, giving an average farm value of $85,097 in 1969. (See Table 3, page 58.)

The percentage of the population which was classified as rural in the rural area by the Bureau of the Census was nearly the same, or 56 in 1960 and 1970 (Table 4). The corresponding populations per square mile for the two years were 141.0 and 173.8 respectively. For the urban fringe agea, 42.7 percent of its population was classified as rural in 1960 but only 38.7 percent in 1970. The concentrations of population per square mile was 359.8 persons in 1970, a 38 percent increase over 1960. The population per square mile in the urban area was more than double that of the rural area in 1970. Detailed information is presented in Appendix B, Table B-5.

Table 4. Percentage rural population and population per
          square mile in the rural and urban fringe areas
          and for the state.

	Rural Area	Urban Fringe Area	State
Percent Rural			
1960	55.8	42.7	26.6
1970	56.0	38.7	26.2
Population per Square mile			
1960	141.0	259.8	137.7
1970	173.8	358.9	156.2
Percent increase in population density	23.3	38.1	13.4

Source: 1960 and 1970 Census of Population.

The population of the two areas in 1970 and projected
to 1980 and 1990 are shown in Table 5. In 1970, the popula-
tion of the rural area was 487,346 compared to the urban
fringe population of 1,944,729. The population is increasing
much more rapidly in the urban fringe area than in the rural
area. The rural area population increased 22.8 percent from
1960 to 1970 and has a projected increase of 14.8 percent
from 1970 to 1980. From 1980 to 1990 the projected population
increase is 6.8 percent. The urban fringe area increased in
population by 38.5 percent from 1960 to 1970 and has a pro-
jected population increase of 11.3 percent from 1980 to 1990.

Again, detailed information is presented in Appendix B,

Table B-6. When compared to the population growth rate of

the state, both the rural and urban fringe areas are increas-

ing at a more rapid rate. (See Table 5.)

Table 5. Total population in 1970 and projected to 1980 and
1990 in the rural and urban fringe areas and for
the state.

	1970	1980	1990
RURAL AREA			
Population	487,356	559,580	642,144
Percent increase from previous 10 year figure	22.8	14.8	6.8
Percent of state population	5.5	5.7	5.8
URBAN FRINGE AREA			
Population	1,944,729	2,464,534	3,080,604
Percent increase from previous 10 year figure	38.5	26.7	11.3
Percent of state population	38.9	25.1	27.7
STATE			
Population	8,875,083	9,838,875	11,107,485
Percent increase from previous lo year figure	13.4	10.8	6.1

Source: J. Allen Beegle, Project 80 & 5, Michigan's popula-
tion, p. 3.

Table 6 shows the uses of Michigan's land resource. The trend toward increases in the acres of land in cities and suburbs will continue, while the land in farms will decrease. The number of acres in urban and suburban lands increased by 43.8 percent from 1960 to 1970 and by 1985 will have increased by an additional 30 percent. Harvested cropland was reduced by 23.1 percent from 1960 to 1970 and it is estimated that it will decrease by 12.8 percent from 1970 to 1985.

Table 6. Land use in Michigan, 1960 and 1970 with a projection to 1985.

Type of Use	1960	1970	1985
	(thousands of acres)		
Urban and suburban lands	1,600	·2,300	3,000
Land in farms	14,783	11,901	9,000
Forest and recreation lands	18,031	20,000	22,500
Other rural lands	2,078	2,291	1,992
Total land area	36,492	36,492	36,492

Source: Raleigh Barlowe, Project 80 & 5, Trends in Land and Water Use in Michigan, (Michigan State University, 1972), p. 50.

Trends in urbanization in Michigan are shown in Figure 8 from 1940 to 1970 and projected to 1990. The shaded areas represent those townships in which more than 40 percent of the land area was used for non-farm purposes. In southern lower Michigan the number of townships so classified was 79 in 1940 and 285 in 1970. As can be seen from the map, almost
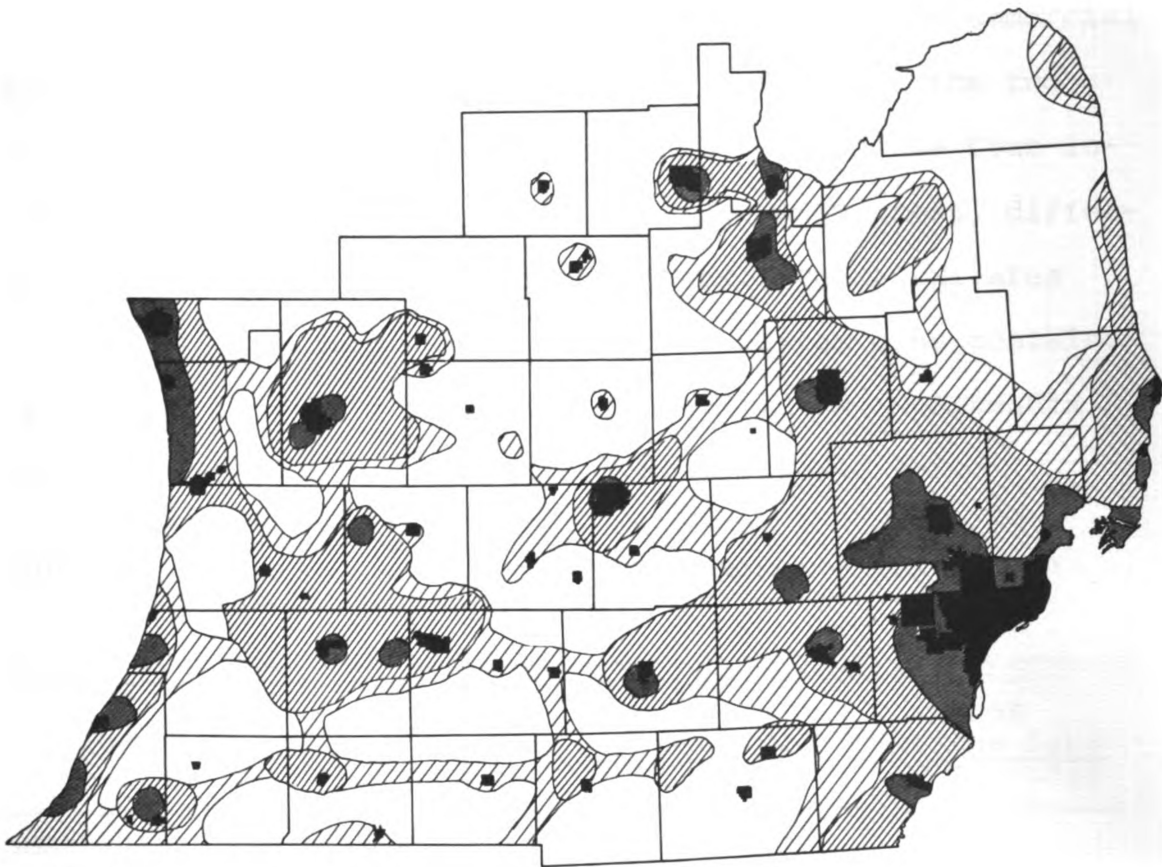
Figure 8. Trends in Michigan urbanization, 1940 to 1990.

Key: ■ 1940   The shaded area represents townships
                         in which greater than 40 percent of
        ▨ 1970   the land area in the township is used
                         for non-farm purposes.
        ▨ 1990

Source: Raleigh Barlowe, The Effects of Taxes on Land Use
        with Special Reference to Michigan. Seminar on
        Taxation of Agricultural and Other Open Land, MSU,
        April 1-2, 1971, p. 18.

the entirety of the urban fringe area was so classified in 1970 with a very small percentage of the rural area classified as greater than 40 percent non-farm.

The number and percentage distribution of commercial farms by economic class are shown in Table 7 for the two areas studied. The percentage distribution of the four income class farms is almost identical for both areas, differing only in the actual numbers of farms. The rural area contained 11,867 farms while the urban fringe area contained 9,268 farms in 1969. Detailed information is in Appendix B, Table B-7, and the data for the State in Table B-8.

Table 7. Economic classes of rural and urban fringe area farms.

Classification	Rural Area		Urban Fringe Area	
	1959	1969	1959	1969
Commercial farms with:				
Product sales of $5,000 or more	5,016	3,358	3,347	2,504
Product sales of less than $5,000	5,857	5,143	6,230	4.154
Part-time farms	2,850	2,636	2,940	1,947
Residential and part-time farms	990	730	1,070	663
Percent Distribution				
Commercial farms with:				
Product sales of $5,000 or more	33.9	28.3	24.6	27.0
Product sales of less than $5,000	39.5	43.3	45.9	44.8
Part-time farms	19.3	22.2	21.6	21.0
Residential and part-time farms	6.7	6.2	7.9	7.2

Source: 1964 and 1969 Census of Agriculture.

Survey Results

Property Tax Survey

A survey was taken of dairy farmers to determine the property taxes paid in the two areas using the farms in the Hoglund Dairy Adjustment Survey as the sample. The data is based on tax and land valuation figures from the various county treasurers contacted. The statistical significance of the results are shown in Table 8 and the actual data in Table 9. A significant difference exists between the tax per acre and the assessed value per acre between the urban fringe and rural areas. The tax per acre varied within both areas, however, the assessed values were not significantly different at the .05 level within the areas. This suggests that the rate of taxation must vary within the areas. This suggests that the rate of taxation must vary within the areas, but assessed values are quite similar within each area.

In Table 9, a summary of the actual data is presented, with the detailed data presented in Appendix B, Table B-9. The tax per acre was $7.05 in the rural area compared to $10.99 per acre in the urban area. As was shown in Table 9, the coefficient of variation of tax per acre is the same for the two areas.

Table 8. Statistical tests of significance.

	F Statistic	Approximate Significance of Probability of F
Between Rural and urban fringe area:		
Tax per acre	43.96	less than 0.0005
Assessed value per acre	54.20	less than 0.0005
Within counties of the rural area:		
Tax per acre	7.72	less than 0.0005
Assessed value per acre	0.65	0.626
Within counties of the urban fringe area:		
Tax per acre	5.74	less than 0.0005
Assessed value per acre	2.11	0.086

Source: Property tax survey.

Table 9. 1970 property tax data for the rural and urban fringe areas.

County or Area	Acres Per Observation	Total Property Tax Paid	Mean Values Assessed Value Per Observation	Tax/Acre	Assessed Value Per Acre	Coefficient of Variation of Tax Per Acre
Ingham	119	$ 988	$18,596	$ 9.13	$178.71	35.59
Shiawassee	126	890	25,233	7.23	204.95	33.85
Eaton	105	645	18,523	6.68	186.06	45.85
Ionia	77	376	14,323	4.80	181.49	37.32
Clinton	91	655	17,241	7.86	206.40	45.53
Rural Area	102	696	18,140	7.05	189.16	45.53
Monroe	72	613	19,019	8.12	262.45	31.01
Washtenaw	84	1,132	29,601	12.82	336.75	30.57
Macomb	85	930	23,910	11.29	289.07	32.61
Livingston	60	502	14,606	8.84	256.79	58.26
Oakland	53	739	18,244	14.30	352.59	51.78
Urban Fringe Area	73	821	22,124	10.99	299.04	45.58

Source: Property tax survey.

Dairy Adjustment Survey

This data was obtained from the Hoglund Dairy Adjustment survey conducted in 1970 and 1971. The purpose of this study was to determine the impact of the physical and economic environment on present and future anticipated adjustments of dairy farmers in various areas of Michigan. This data is presented for its value in giving additional insight into the present dairy situation, dairy farmer opinions, and future plans of dairymen.

The future plans of dairymen are shown in Tables 10 and 11. The rural area dairy farms reported that 54.7 percent would continue to milk the same number of cows compared to 75.2 percent in the urban area. Also, 13.1 percent of the dairymen were going to increase herd size in the urban fringe area compared to 34.8 percent in the rural area. More expansion is evident in the rural area, with comparable rates of exit from dairying in both areas.

When asked, "How do you size up prospects for profitable dairy farming over the next five to ten years?" only slightly more dairymen were optimistic in the rural than urban fringe area, 86.8 to 81.4 percent. This data is shown in Tables 12 and 13.

When comparing the rural and urban fringe dairy areas in the response to the question, "If you plan to discontinue dairying, what are your major reasons?" 40 percent

Table 10. Future plans of dairymen in the urban fringe
area by herd size and total for all farms
(1975 projection date).

Future Plans	Herd Size					Totals All Farms
	<30 Cows	30-49 Cows	50-74 Cows	75-99 Cows	>100 Cows	
Milk same number of cows:	76.9	68.6	78.8	85.7	72.2	75.2
Milk more cows:						
Same labor:	--	11.4	9.1	7.1	11.1	8.6
Hire more labor:	--	5.7	--	--	5.6	2.7
Take a partner:	--	--	--	--	11.1	1.8
Subtotal:	--					13.1
Milk fewer cows:	--	--	--	--	--	--
Sell cows-continue farming:	23.1	5.7	6.1	--	--	6.2
Sell farm:	--	8.6	6.0	7.2	--	5.5
Turn farm over to son or son-in-law:	--	--	--	--	--	--
Totals:	100.0	100.0	100.0	100.0	100.0	100.0

Source: Hoglund Dairy Adjustment Survey.

Table 11. Plans of dairymen in the rural area by herd size and total for all farms (1975 projection date).

Future Plans	Herd Size						Totals All Farms
	<30 Cows	30-49 Cows	50-74 Cows	75-99 Cows	>100 Cows		
Milk same number of cows:	58.8	46.2	44.4	61.5	62.5		54.7
Milk more cows:							
Same labor:	11.8	30.8	22.2	30.8	18.8	22.6	
Hire more labor:	--	7.7	--	--	15.6	6.6	
Take a partner:	--	7.7	11.1	7.7	3.1	5.6	
Subtotal:							34.8
Milk fewer cows:	--	3.9	--	--	--		1.0
Sell cows-continue farming:	23.5	--	5.6	--	--		4.7
Sell farm:	5.9	--	16.7	--	--		3.8
Turn farm over to son or son-in-law:	--	3.7	--	--	--		1.0
Totals:	100.0	100.0	100.0	100.0	100.0		100.0

Source: Hoglund Dairy Adjustment Survey.

Table 12.   Reasons for discontinuing dairying and optimism
and pessimism of dairy farmers, rural area.

	<30 Cows	30-49 Cows	Herd Size 50-74 Cows	75-99 Cows	>100 Cows	Totals All Farms
If discontinuing dairying,			Percent Distribution			
Why?						
Age and retire- ment	40.0	100.0	25.0	--	--	40.0
Too demanding	20.0	--	25.0	--	--	20.0
Cannot hire labor	20.0	--	25.0	--	--	20.0
Do not desire to expand	20.0	--	--	--	--	10.0
Other reasons	--	--	25.0	--	--	10.0
Totals	100.0	100.0	100.0			100.0
Number discon- tinuing dairying						10
Optimism or pes- simism on the profitability of dairy in the next 5-10 years						
Optimistic	88.3	84.6	88.9	92.3	84.4	86.8
Pessimistic	11.7	15.4	11.1	7.7	15.6	13.2

Source: Hoglund Dairy Adjustment Study.

Table 13. Urban fringe area reasons for discontinuing dairying and optimism and pessimism of dairy farmers 1970-75.

			Herd Size			
	<30 Cows	30-49 Cows	50-74 Cows	75-99 Cows	>100 Cows	Totals All Farms
If discontinuing dairying,		Percent Distribution				
Why?						
Age and retirement	--	20.0	25.0	100.0	--	23.1
Too demanding	--	20.0	25.0	--	--	15.4
Cannot hire labor	33.4	40.0	--	--	--	23.1
Do not desire to expand	33.3	--	--	--	--	7.7
Other reasons	33.3	20.0	50.0	--	--	30.7
Totals	100.0	100.0	100.0	100.0		100.0
Number discontinuing dairying						
Optimism or pessimism on the profitability of dairy farming in the next 5-10 years						
Optimistic	76.9	82.8	78.8	92.9	77.8	81.4
Pessimistic	23.1	17.2	21.2	7.1	22.2	18.6

Source: Hoglund Dairy Adjustment Survey.

for the rural area and 23.1 percent for the urban fringe area said it was a result of their age and retirement plans. The other reasons of too demanding, labor problems and no desire to expand were similar in the two areas.

Table 14. Reasons for optimism or pessimism*, rural area.

	Herd Size					Totals All Farms
	<30 Cows	30-49 Cows	50-74 Cows	75-99 Cows	>100 Cows	
	Percent Distribution					
Reasons for optimism:						
Fewer farms; more people	23.0	36.8	50.0	30.0	37.0	35.8
Family labor and good management	15.4	10.5	8.3	10.0	3.7	8.6
Present marketing and bargaining agents	7.7	--	--	10.0	--	2.5
If inventory and debt is kept down	7.7	5.3	--	10.0	7.4	6.2
Good milk price, steady income	30.8	31.6	33.3	40.0	33.3	33.3
Total Optimistic						86.4
Reasons for pessimism:						
Cannot compete with union wages	--	5.3	8.3	--	--	2.5
Small farms forced out	7.7	5.3	--	--	7.4	4.9
Too many government and health regulations	7.7	--	--	--	3.7	2.5
High taxes and land values	--	5.3	--	--	3.7	2.5
Too high investment	--	--	--	--	--	--
Too restrictive, no leisure	--	--	--	--	--	--
Costs too high	--	--	--	--	3.7	1.2
Total Pessimistic						13.6

*These figures do not correspond to Tables 12 and 13 due to nonresponse to the reasons for optimism and pessimism.

Total number of farms 106
Reply to this question 81

Source: Hoglund Dairy Adjustment Survey.

Table 15. Reasons for optimism or pessimism*, urban fringe area.

	Herd Size					Totals All Farms
	<30 Cows	30-49 Cows	50-74 Cows	75-99 Cows	>100 Cows	
			Percent Distribution			
Reasons for optimism:						
Fewer farms, more people	14.3	19.0	5.6	33.3	10.0	14.5
Family labor and good management	14.3	4.8	5.6	16.7	10.0	8.0
Present marketing and bargaining agents	--	--	--	--	--	--
If inventory and debt is kept down	--	--	--	--	--	--
Good milk price, steady income	28.6	53.4	38.9	16.7	40.0	40.3
Total Optimistic						62.8
Reasons for pessimism:						
Cannot compete with union wages	14.3	--	--	--	--	1.6
Small farms sorced out	--	--	--	--	--	--
Too many government and health regulations	--	--	--	16.7	--	1.6
High taxes and land values	14.3	19.05	38.9	16.7	30.0	25.8
Too high investment	14.3	--	11.1	--	10.0	6.5
Too restrictive, no leisure	--	4.8	--	--	--	1.6
Costs too high	--	--	--	--	--	--
Total Pessimistic						37.2

*These figures do not correspond to Tables 12 and 13 due to nonresponse to the reasons for optimism and pessimism.

Total number of farms 113
Reply to this question 62

Source: Hoglund Dairy Adjustment Survey.

When the reasons for optimism and pessimism are compared, more dairymen in the rural area were optimistic than in the urban fringe area, 86.4 percent compared to 62.8 percent. A great difference exists between rural and urban fringe areas in the pessimistic reasons of high tax rates and land values. Nearly 26 percent of the urban fringe area dairymen gave high tax rates and land values as reasons for being pessimistic and only 2.5 percent of the rural area dairymen gave them as reasons.

Table 16 shows the gross income distribution by herd size of dairy farms in the rural and urban fringe areas. There does not exist a great deal of variance between the two areas.

In the area land use evaluation, the rural area had 67.9 percent of the farms classified as Commercial #1, compared to only 5.3 percent of those in the urban fringe area. In the future, this is more pronounced by the fact that 41.6 and 34.5 percent of the farms will then be in nonfarm or suburban uses respectively in the urban fringe area compared to only 1.0 and 2.7 percent for the rural area. The definitions of Commercial #1, Commercial #2, Marginal, Nonfarm and Suburban as used in this study are presented at the bottom of Table 17.

Table 16. Gross income of dairy farms by herd size and
          total for all farms.

Gross Value of Sales Per Farm	<30 Cows	30-49 Cows	Herd Size 50-74 Cows	75-99 Cows	>100 Cows	Totals All Farms
Percent Distribution						
Rural Area						
<$10,000	5.9	--	--	--	--	1.0
$10,000-19,999	47.0	15.4	5.6	--	--	12.3
$20,000-29,999	35.3	57.7	11.1	7.7	--	22.6
$30,000-39,999	11.8	11.5	38.9	--	--	11.3
$40,000-49,999	--	7.7	22.2	7.7	--	6.6
>$50,000	--	7.7	22.2	84.6	100.0	46.2
Totals	100.0	100.0	100.0	100.0	100.0	100.0
Urban Fringe Area						
<$10,000	7.7	--	--	--	--	1.0
$10,000-19,999	69.2	35.4	--	--	--	18.9
$20,000-29,999	23.1	32.4	15.2	7.6	--	18.0
$30,000-39,999	--	14.7	36.3	--	--	15.2
$40,000-49,999	--	11.6	18.2	30.8	--	12.6
>$50,000	--	5.9	30.3	61.6	100.0	34.3
Totals	100.0	100.0	100.0	100.0	100.0	100.0

Source: Hoglund Dairy Adjustment Survey.

Table 17. Area land use evaluation by herd size and total for all farms, rural area.

			Herd Size			
	<30 Cows	30-49 Cows	50-74 Cows	75-99 Cows	>100 Cows	Total All Farms
			Percent Distribution			
Present land use of area:						
Commercial #1	70.6	38.5	83.3	76.9	78.1	67.9
Commercial #2	29.4	50.0	16.7	15.4	21.9	28.3
Marginal	--	11.5	--	--	--	2.8
Nonfarm	--	--	--	--	--	1.0
Suburban	--	--	--	7.7	--	--
Totals	100.0	100.0	100.0	100.0	100.0	100.0
Expected land use of area in 5 to 10 years						
Commercial #1	58.8	30.7	77.8	76.9	75.0	62.3
Commercial #2	35.3	53.9	16.7	7.7	25.0	30.2
Marginal	5.9	11.5	--	--	--	3.8
Nonfarm	--	--	5.5	--	--	1.0
Suburban	--	3.9	--	15.4	--	2.7
Totals	100.0	100.0	100.0	100.0	100.0	100.0

Key for Table:
  Commercial #1: Land use is totally agricultural.
  Commercial #2: Land use is predominantly agricultural.
  Marginal: An occasional farm in a predominantly forest or nonagricultural use. Low quality land.
  Nonfarm: Land partly or totally idle awaiting development.
  Suburban: Predominant land use is housing.

Source: Hoglund Dairy Adjustment Survey

Table 18. Area land use evaluation by herd size and totals for all farms, urban fringe area.

| | Herd Size | | | | | |
	< 30 Cows	30-49 Cows	50-74 Cows	75-99 Cows	>100 Cows	Totals All Farms
	Percent Distribution					
Present land use of area:						
Commercial #1	--	2.8	9.1	--	11.1	5.3
Commercial #2	46.1	51.4	51.5	78.6	61.1	55.8
Marginal	7.7	8.6	--	--	--	3.5
Nonfarm	38.5	28.6	30.3	14.3	16.7	26.6
Suburban	7.7	8.6	9.1	7.1	11.1	8.8
Other	--	--	--	--	--	--
Totals	100.0	100.0	100.0	100.0	100.0	100.0
Expected land use of area in 5 to 10 years						
Commercial #1	--	--	3.1	--	5.6	1.8
Commercial #2	15.3	17.1	18.1	21.4	33.3	20.4
Marginal	--	2.9	--	--	--	0.9
Nonfarm	53.9	42.9	42.4	57.2	16.7	41.5
Suburban	30.8	37.1	36.4	21.4	38.8	34.5
Other	--	--	--	--	5.6	0.9
Totals	100.0	100.0	100.0	100.0	100.0	100.0

Key for Table:

Commercial #1: Land use is totally agricultural.
Commercial #2: Land use is predominantly agricultural.
Marginal: An occasional farm in a predominantly forest or nonagricultural use. Low quality land.
Nonfarm: Land partly or totally idle awaiting development.
Suburban: Predominant land use is housing.

Source: Hoglund Dairy Adjustment Survey

Table 19 shows that more dairy farmers in the rural area are planning on adding more land to the dairy operation than are those in the urban fringe area. In the rural area, 18.6 percent of the dairy farmers interviewed stated that they would try to buy more land compared to 8.3 percent in the urban fringe area. This fact could be attributed to the optimism of the rural areas farmers and the lower land prices in the rural area due to less urban influence.

Table 19. Dairy farmer plans for adding more land by herd size and total for all farms.

Plans for adding more land:	<30 Cows	30-49 Cows	50-74 Cows	75-99 Cows	>100 Cows	Total All Farms
			Herd Size			
			Percent Distribution			
			Rural Area			
None	93.7	69.2	80.0	69.2	71.9	75.5
Try to buy	6.3	23.1	13.3	15.4	25.0	18.6
Try to rent	--	7.7	6.7	15.4	3.1	5.9
Totals	100.0	100.0	100.0	100.0	100.0	100.0
			Urban Fringe Area			
None	92.3	87.5	93.5	100.0	66.7	87.9
Try to buy	--	9.4	6.5	--	22.2	8.3
Try to rent	7.7	3.2	--	--	11.1	3.8
Totals	100.0	100.0	100.0	100.0	100.0	100.0

Source: Hoglund Dairy Adjustment Survey.

Land values are shown in Table 20. The differences in land values are even more pronounced when the values are farmer opinion than when that of tax assessors as presented in Table 10. In reply to the question, "What is the going price for cropland like yours in the community, the rural area land value per acre was $414 compared to $1,143 in the urban fringe area. It appears that urban fringe land values are underassessed more so than are rural land values. This can be determined from comparing the land values in Table 10 to those in Table 20. The assessed value per acre for the rural area was $189.16 based on a market value of $378.32 per acre and the farmer opinion was a market value of $414 per acre. However, in the urban fringe area the assessed value per acre was $299.04 based on a market value of $598.08 per acre compared to the farmer opinion estimate of $1,143 per acre.

Table 20. Cropland value per acre by herd size and total all farms.

	<30 Cows	30-49 Cows	Herd Size 50-74 Cows	75-99 Cows	>100 Cows	Total All Farms
			Rural			
Value of cropland per acre	$364	$447	$401	$436	$411	$414
			Urban Fringe			
Value of cropland per acre	$1,380	$1,006	$1,117	$800	$1,525	$1,143

Source: Hoglund Dairy Adjustment Survey.

Table 21 presents the number of dairymen, herd size, and total number of cows sold from each area. More cows (1,327) were sold in the urban fringe area than were in the rural area (512). Cows per farm (36) or the size of the farm which went out of business was also greater in the urban fringe than rural area (28).

Table 21. Number of farms, cows per farm and total cows sold of those who quit dairying in the rural and urban fringe areas 1968 to 1970-71.

	Number of Farms	Cows per Farm	Total Cows Sold
Rural Area			
Eaton	4	31	124
Ingham	6	25	148
Ionia	4	18	76
Clinton	4	35	143
Shiawassee	2	11	21
Total or Average	21	28	512
Suburban Area			
Oakland	11	39	405
Macomb	7	33	234
Washtenaw	5	29	146
Monroe	2	18	36
Livingston	11	46	506
Total or Average	36	36	1,327

Source: Hoglund Dairy Adjustment Survey.

Table 22 presents the reasons why dairy farmers quit
dairying. Since 1968, 19 percent of the dairy farmers in
the rural area had quit dairying compared to 31 percent for
the urban fringe area. The reasons for quitting the dairy
business were similar for all categories except taxes and
nearness to a subdivision. In this category, 9 in the sub-
urban and none in the rural area said that was a reason for
their discontinuance of dairying operations. As was shown
in the property tax survey property taxes and assessed
values are significantly higher in the urban fringe area and
are one major factor responsible for the decline of dairy
farms in the areas.

Also, those who planned on expanding the herd were
more prevalent in the rural area, 39 farms in the rural area
were expanding and only 15 were expanding in the urban fringe
area. Reasons for this may be skepticism on the part of
many dairymen regarding increasing urban influence on land
values, and also waste management problems.

The differences in the rural and urban fringe areas
are many. The most pronounced differences are the number of
dairymen, land values, property taxes per acre, population,
and degree of urbanization. Considering these factors, it
is apparent that the dairymen in an urban fringe setting
experience higher property taxes and more problems with
pollution. It was evident in the Hoglund Dairy Adjustment

Table 22. The reasons given by those who quit dairying, 1968 to 1970-71.

	Eaton	Ionia	Ingham	Shia-wassee	Clinton	Total	Macomb	Oakland	Washtenaw	Living-ston	Monroe	Total
Age and Retirement	1	--	2	--	--	3	1	2	--	3	--	6
Too time consuming-- more leisure	1	--	1	1	1	4	--	--	1	--	--	1
Health	--	1	--	--	--	1	--	--	--	--	--	0
Move to a less intensive farm enterprise	1	1	1	--	1	4	2	--	1	1	--	4
Lack of suitable labor force	--	--	--	--	--	0	--	1	1	--	--	2
Cannot or will not expand	--	--	--	--	--	0	--	--	--	--	--	0
Take on off-farm job	--	--	2	--	--	2	1	--	--	3	2	6
Taxes or close subdivision	--	--	--	--	--	0	--	4	2	3	--	9
Other or not determined	1	1	--	1	3	7	3	4	--	1	--	8
Totals	4	4	6	2	5	21	7	11	5	11	2	36
Percent of sample surveyed	21	15	22	12	24	19	32	61	14	52	11	31

Source: Hoglund Dairy Adjustment Survey.

Survey that more dairy farms are discontinuing dairying in
the urban fringe area and 25 percent of those who have quit
did so because of high taxes or the nearness to a subdivision.

Chapter IV contains the budgetary analysis and shows
what impact herd size, production level, land value and
property and state tax rates have on dairy farm net cash
incomes.

Table 23. Plans for adding or decreasing herd sizes in the
next 5 years.

	<30 Cows	30-49 Cows	50-74 Cows	75-99 Cows	>100 Cows	Number of Farms
			Herd Size			
			Rural			
If add more cows, how many cows will you total:	28.5	69.0	94.5	106.6	193.5	39
If milk less cows, how many cows will you total?	--	37.0	--	--	--	1
			Urban Fringe			
If add more cows, how many cows will you total?	--	58.3	113.3	100.0	310	15

Source: Hoglund Dairy Adjustment Survey.

CHAPTER III

<u>Footnotes</u>

1. E. P. Whiteside, I. F. Schneider and R. L. Cook, <u>Soils of Michigan</u>, Extension Bulletin E-630, Michigan State University, 1968, p. 46.

2. <u>Ibid.</u>

CHAPTER IV

THE BUDGETARY ANALYSIS

Complete and partial budgeting techniques were used to calculate receipts, expenses, and net incomes after taxes for several alternatives studied. The input data were obtained from Telfarm Summary records, the Property Tax Survey, and the Hoglund Dairy Adjustment Survey. The budgets were constructed to determine the impact of varying land values and property tax rates on the net cash incomes for dairy farmers with differing herd sizes, and milk production levels.

Base Factors for the Budgets

The following items were used as a base for computing the budgets:

Item	40 Cow Herd	86 Cow Herd
Acres of Cropland		
Owned	209	352
Rented	56	105
Man Equivilents	1.73	2.72
Milk Price, net 3.5 percent butterfat	$6.00/cwt	$6.00/cwt
Value of Buildings	$12,000	$30,000

The acres of cropland and man equivalents of labor were taken from the Telfarm Summary and are averages for the herd sizes given. The milk price was assumed to be $6.00 per cwt. on the basis of past and expected future milk prices.

Buildings used for the budgets of the 40-cow herd included a 40-cow stanchion barn, various outbuildings, and a 20 x 60 concrete silo with a total value of $12,000. The dairy facilities for the 86-cow operation include a 90-cow free stall barn, a herringbone milking parlor, 2-24x70 concrete silos, and other buildings with a total value of $30,000. For each 1,000 pounds of additional milk produced it is estimated that livestock expenses will increase by 5 percent, hired labor by 5 percent and purchased feed by 10 percent.

The Budgeting Variables

The budgeting variables included (1) herd size, (2) land values, (3) management or production levels, and (4) property tax millage and income tax rates. The 40-cow herd size was selected to represent a one-family operation. In five to ten years a 40-cow operation will be considered a small herd and a minimum number of cows necessary to earn a reasonably satisfactory living with good management. The 86-cow herd was chosen to represent a minimum size two-family operation which would provide an acceptable income at 1970-1975 expected prices and costs as derived from the

property tax survey. The average land value in the survey was $350 per acre and the maximum value was $850 per acre for the rural area. The same is true for the medium and high land values in the urban fringe area.

The production levels of 12,000 and 15,000 lbs. of milk per cow were chosen to represent a medium and a high level of management. The millage rates for the rural and urban fringe areas are actual data averaged for the areas obtained from the Michigan Department of Education, Bulletin No. 1012. The income tax level for the state of Michigan is 3.9 percent and is increased to 6.2 percent for the purpose of removing the financing of public schools from the property tax and replacing it with an increased income tax rate of 6.2 percent. However, this would not be the entire amount to be substituted, also another source would be required, such as an increased income tax levy beyond 6.2 percent, or the levy of a value added or similar consumption tax.

The Budgetary Results

The analytical procedure consisted of setting the millage rates, school operating millage, and state income tax levels at present rates for the first alternative and then using those calculations to determine the impact of preferential assessment on net cash incomes after taxes. The two remaining alternatives were judged from this base. The second alternative determines the effects of the removal

Table 24. Budgeting variables.

Budgeting Variables	40-Cow Herd	86-Cow Herd
Land values per acre <u>Rural</u>		
Medium	$350	$350
High	$850	$850
<u>Urban fringe</u>		
Medium	$600	$600
High	$1,500	$1,500
Milk sales per cow		
Medium	12,000 lbs.	12,000 lbs.
High	15,000 lbs.	15,000 lbs.
Millage rates <u>Rural</u>		
Total mills	36.00	36.00
School operating millage	22.00	22.00
<u>Urban fringe</u>		
Total mills	44.60	44.60
School operating millage	29.60	29.60

of the school operating millage from the property tax and the increase of 2.3 percent in state income taxes. The third alternative considers the effect of both preferential assessment and the removal of the school operating millage from the property tax and adding 2.3 percent to the state income tax.

For each of the above three alternatives, herd sizes of 40 and 86 cows, production levels of 12,000 lbs. and 15,000 lbs. of milk per cow and land values of $350, $600,

$850, and $1,500 per acre were included to determine the impact of the three taxing alternatives on net cash incomes after taxes.

The data used for computing net cash incomes and an example of how they were computed are contained in Appendix C, Tables C-1 and C-2.

The Impact of Preferential Assess-
ment on Net Cash Income

Table 25 presents the income situation as it exists at present, that is, with the present state income tax rate of 3.9 percent, present property tax millage rates, and no preferential assessment. This table clearly shows the great impact of land values and corresponding property taxes on farm incomes. A profitable dairy farm can be placed in a very low income situation because of increasing land values and property tax rates which cause increased expenses.

Assuming the preferential assessment will result in valuation of all agricultural land at its agricultural use-value of $350 per acre, a comparison of the increases in incomes for the two herd sizes at differing land values is presented in Table 26. For example, the calculation made using the 40-cow herd size, 12,000 lbs. of milk production level, and a land value of $1,500 per acre, would result in an increase in net cash income of $5,069 ($8,869-$3,800) as a result of the preferential assessment.

Table 25. Net cash incomes of dairy farms with present tax rates.

| Land Values* | Herd Size of Production Level | | | |
	40 Cows @ 12,000#/ Cow	40 Cows @ 15,000#/ Cow	86 Cows @ 12,000#/ Cow	86 Cows @ 15,000#/ Cow
	NET CASH INCOME			
I $350/acre	$8,869	$13,054	$17,705	$25,463
II $600/acre	$7,574	$11,950	$15,864	$23,941
III $850/acre	$7,272	$11,670	$15,859	$23,846
IV $1,500/acre	$3,800	$8,505	$10,183	$19,109

*Land values I and III are the rural area values and land values II and IV are the urban fringe values and are taxed by the millage rates in the respective area.

Table 26. Increases in net cash income after taxes due to preferential assessment*

| Land Values | Herd Size and Production Level | | | |
	40 Cows @ 12,000#/ Cow	15,000#/ Cow	86 Cows @ 12,000#/ Cow	15,000#/ Cow
	- - - - - - - Dollars - - - - - - -			
I $350/acre	--	--	--	--
II $600/acre	$1,295	$1,114	$1,841	$1,522
III $850/acre	$1,597	$1,384	$1,846	$1,617
IV $1,500/acre	$5,069	$4,549	$7,522	$6,354
	Percent Increase			
I $350/acre	-0-	-0-	-0-	-0-
II $600/acre	17.09	9.33	11.61	6.36
III $850/acre	21.96	11.86	11.64	6.78
IV $1,500/acre	133.39	53.49	73.87	33.25

*Preferential assessment will revalue all land at its agricultural value of $350. The figures in the table are computed with all tax rates at present levels.

preferential assessment favors the smaller herd size and smaller production levels in terms of percent increases in net cash income after taxes, but not in absolute figures. For each land value, the lower production levels for both herd sizes received the greatest percent increases in income. Also, the 40-cow herd size received greater percentage increases in incomes than did the 86-cow herd size. However, the 86-cow herd size received the greatest dollar amount of increased income.

The lower production levels and smaller herd sizes receive the greatest percentage increase in net cash incomes after taxes as a result of preferential assessment. The lowest percent increase in income (6.4 percent) was for the 86-cow herd size with 15,000 lbs. of milk per cow and $600 land value while the greatest percent increase (133.4 percent) was for the 50-cow herd, 12,000 lbs. of milk per cow, and $1,500 land value per acre. The same pattern exists throughout the table when dollar increases are compared the 86-cow herd receives the most. And the 86-cow herd with 12,000 lbs. of milk per cow received the greatest increases for all land values.

The Impact of the Removal of the School Operating Millage on Net Cash Incomes

Table 27 presents the net cash income structure of the dairy farms under consideration if the school operating millage was removed from the property tax and the state

income tax was increased 2.3 percent. Here, also, land
values have a great impact on farm incomes; yet the removal
of the school operating millage does eliminate some of the
effects of high land values.

Table 27. Net cash incomes with the removal of the school
operating millage and an additional 2.3 percent
state income tax.

| Land Values* | | Herd Sizes & Production Levels | | | |
		40 Cows @ 12,000#/ Cow	40 Cows @ 15,000#/ Cow	86 Cows @ 12,000#/ Cow	86 Cows @ 15,000#/ Cow
I	$350	$9,456	$13,511	$18,561	$26,048
II	$600	$9,124	$13,193	$18,042	$25,594
III	$850	$8,895	$12,972	$17,848	$25,422
IV	$1,500	$8,001	$12,147	$16,335	$24,079

*Land Values I and III are rural values and II & IV are urban
fringe values and are taxed accordingly.

The same analysis is used in Table 28 to show the increases
in net cash incomes which are due to the removal of the
school operating millage and an addition of 2.3 percent to
the state income tax level. For example, a 40-cow herd,
12,000 lbs. of milk production level, with $350 valued land,
would have an increased income of $587 ($9,456-$8,869).

The same type of relationship is found with the
removal of the school operating millage and the increase of
state income taxes, as was the case for preferential assess-
ment. Here, also, the lower production levels and herd sizes

Table 28. Increases in net cash incomes after taxes due to the removal of the school operating millage and increase in the state income tax 2.3 percent to 6.2 percent.

| Land Values | Herd Sizes & Production Level | | | |
| | 40 Cows @ | | 86 Cows @ | |
	12,000#/ Cow	15,000#/ Cow	12,000#/ Cow	15,000#/ Cow
I $350/acre	$587	$457	$856	$585
II $600/acre	$1,550	$1,253	$2,178	$1,653
III $850/acre	$1,623	$1,302	$1,983	$1,576
IV $1,500/acre	$4,201	$3,642	$6,152	$4,970
Percent Increase				
I $350/acre	6.62	3.50	4.83	2.30
II $600/acre	20.46	10.49	13.73	6.90
III $850/acre	22.32	11.16	12.50	6.61
LV $1,500/acre	110.55	42.82	60.41	26.01

received the greatest percentage increase in net cash incomes after taxes, but not in absolute figures. The 40-cow herd again received the greater percentage increase in net cash income after taxes than did the 86-cow herd size. But, the 86-cow herd received the greater dollar amount of increase in net cash income after taxes than did the 40-cow herd. The lowest increase of 2.3 percent was again for the 86-cow herd, 15,000 lbs. of milk production and a land value of $1,500 per acre, and the greatest dollar increase was $6,152 for the 86-cow, 12,000 lbs. of milk per cow, and $1,500 land value.

The Impact of the Combination of Pref-
erential Assessment and the Removal of
the School Operating Millage and Adding
2.3 Percent to State Income Tax Levels
on Net Cash Incomes

Table 29 presents the situation if both preferential

assessment and removal of the school operating millage from

the property tax were implemented. This table is simply the

top row of Table 27 because under preferential assessment all

land would be valued at its use value of $350 per acre.

Table 29. Net cash incomes after taxes using both preferen-
           tial assessment and removing the school operating
           millage while increasing the state income tax to
           6.2 percent.

| Land Values | Herd Size and Production Level | | | |
	40 Cows @ 12,000#/ Cow	12,000#/ Cow	86 Cows @ 12,000#/ Cow	15,000#/ Cow
All land values $350 to $1,500 per acre	$9,456	$13,511	$18,561	$26,048

When both preferential assessment and the removal of

the school operating millage plus the increase of 2.3 per-

cent in the state income tax are combined, the same pattern

of percentage increases exists as was the situation for the

two alternatives individually. Again, the low production

level and small herd size received the greatest percentage

increase in incomes with the 86-cow herd receiving the

greater dollar increases. When using both dollar increases

Table 30. Increases in net income after taxes due to using both preferential assessment and the removal of the school operating millage.

| | | Herd Size and Production Level | | | |
| | | 40 Cows @ | | 86 Cows @ | |
		12,000#/ Cow	15,000#/ Cow	12,000#/ Cow	15,000#/ Cow
I	$350	$587	$457	$856	$585
II	$600	$1,882	$1,571	$2,697	$2,107
III	$850	$2,184	$1,841	$2,702	$2,202
IV	$1,500	$5,656	$5,006	$8,378	$6,939
		Percent Increase			
I	$350/acre	6.62	3.50	4.83	2.30
II	$600/acre	24.85	13.16	17.00	8.80
III	$850/acre	30.03	15.78	17.04	9.23
IV	$1,500/acre	148.84	58.86	82.27	36.31

in incomes and percentage increases in incomes as a criterion of judgment, the combination of the two methods proved to be the alternative in which net cash incomes after taxes increased the most.

Keeping in mind that $350 and $600 per acre land values are averages for the rural and urban fringe areas respectively, and that the $850 and $1,500 per acre land values are maximum land values, it can be seen from Tables 26, 28, and 30 that the urban fringe area will gain more net cash income in percentage and absolute terms from preferential assessment, the removal of the school operating millage,

and the combination of the two than will the rural area.
This is a result of the fact that higher assessed land values
exist in the urban fringe area, thereby giving a larger base
from which deductions can be made, reducing expenses more so
than in rural areas.

Property Taxes as a Percent of Net Cash Incomes

Property taxes as a percent of net cash income are
presented in Table 31. It is apparent that dairy farmers
with lower production levels will pay a greater percent of
their incomes out in the form of property taxes. The dairy-
man with the 40-cow herd with a 12,000 lb. production level
and a high land value of $1,500 per acre would pay 65.6
percent of his income out in the form of property taxes
whereby the dairyman with the 86-cow herd with 15,000 lbs.
production level would pay only 8.0 percent of his income
out in the form of property taxes. The corresponding reduc-
tions in the percent of income paid out in property taxes
are given in Table 31. Here property taxes are at a much
lower percent of income than they are with the school oper-
ating millage included in the property tax.

Rate of Return on Investment

Table 32 shows the rate of return on investment for
the various herd sizes and production levels at the present
tax levels. The rate of return on investment is negative

Table 31. Property taxes as a percent of net cash income
before taxes with and without the school oper-
ating millage.

Land Value per acre	Herd Size and Production Level			
	40 Cows @ 12,000#/ Cow	40 Cows @ 15,000#/ Cow	86 Cows @ 12,000#/ Cow	86 Cows 15,000#/ Cow
	With the school operating millage Millage rate at 36 for I and III land values and at 44.6 for land values II and IV			
I $350	13.9	9.4	11.9	8.0
II.. $600	27.8	18.8	23.2	15.6
III $850	30.9	20.9	23.2	15.6
IV $1,500	65.6	44.4	53.6	36.0
	Without the school operating millage Millage rates of 14 for land values I and III and 15 for land values II and IV			
I $350	5.4	3.7	4.6	3.1
II . $600	9.3	6.3	7.8	5.2
III $850	12.0	8.1	9.0	6.1
IV	22.1	14.9	18.0	12.1

Table 32. Rate of return on investment*

Land Value	Herd Size and Production Level			
	40 cows @ 12,000#/ Cow	40 cows @ 15,000#/ Cow	86 cows @ 15,000#/ Cow	86 cows @ 15,000#/ Cow
$350	-1.0	3.3	6.3	14.0
$600	-1.6	1.6	2.5	5.9
$850	-1.3	0.9	1.8	4.9
$1,500	-1.9	-0.5	-0.1	1.7

*Present tax rates, including operator and family labor at $2.50 per hour.

for the 40-cow herd with a milk production level of 12,000

lbs. and was low or negative even at the 15,000 lbs. produc-

tion level. The rate of return was higher for the 86-cow

herd but with a milk production level of 12,000 lbs. was low

or negative with land values of $600 or more and with a

15,000 lbs. production level was low at land values of $850

or more. It is apparent from this table that investment in

a small dairy farm is not a very profitable venture at

present tax arrangement. However, if preferential assess-

ment were implemented, the rate of return on investment for

the $350 per acre land would be the relevant values for all

land. This would help considerably as rates of return would

increase. However, a problem then arises as to the value of

one's land and this will have a great impact on one's net

worth statement.

A brief look at the future income of dairy farms is

in Appendix C, Table C-3.

Chapter V presents the summary, conclusions and

implications of the study.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary

The specific objectives of this study were to determine the impact of three differing property taxing methods on the net cash incomes of dairy farmers with two herd sizes and two milk production levels. The general objectives of this study were to appraise the current dairy farm situation in a rural and urban fringe area of Michigan, and to evaluate the present and future economic impact of property taxation on dairy farm stability and income.

Complete budgets were calculated as a base to judge changes for the dairy farms, and the partial budgeting technique was used to evaluate the impact of two herd sizes and production or management levels, and four land values on net cash income after taxes. Partial budgets were also used to assess the relationship and impact of differing property taxation methods on net cash incomes after taxes. Data for the budgets was obtained from the Telfarm Summary, the Property Tax Survey conducted by the author, and the Hoglund Dairy Adjustment Survey.

It was found that all three methods (1) preferential assessment, (2) removal of the school operating millage and increasing the state income tax to 6.2 percent, and (3) combining 1 and 2 yielded very similar patterns of percentage and dollar increases in net cash incomes after taxes. The results show that both preferential assessment and the removal of the school operating millage provided greater percentage net cash income increases for lower production levels and herd sizes. However, the larger herd sizes received the largest absolute increases in net cash incomes.

With preferential assessment incomes increased from 6.4 percent or $1,522 for the $600 per acre land value, 86 cow herd with 15,000 pounds of milk production per cow to 133.4 percent or $5,069 for the $1,500 per acre land value, 40 cow herd with 12,000 pounds of milk per cow. However, the dairy farmer with land valued at $350 per acre, which is the agricultural use value, would receive no increase in income with preferential assessment, yet would receive an increase in net income with the removal of the school operating millage.

When the school operating millage is removed from the property tax and the state income tax is increased to 6.2 percent the same pattern of increase in income exists as was the case for preferential assessment. Here also the lower production level and smaller herd size received the greatest percentage increases in net cash incomes after taxes. These

increases ranged from 2.3 percent to 110.6 percent. But here again the larger herd size and production levels gained the most in absolute terms. For example the 86 cow herd with 12,000 pounds per cow production and $1,500 land values had an increased net cash income of $6,152.

When 1 and 2 were combined, as would be expected, the same pattern of increases in income again holds, however, the impact of both methods are felt so that an additive effect exists and the levels of income increases for the combination of methods is higher than that for either independently.

When asked which alternative one would choose, 1, 2 or 3 if the objective were to increase net cash incomes, the response would be No. 3, the removal of the school operating millage and the increase in the state income tax coupled with preferential assessment. This choice is made for the reason that for all herd sizes, production levels, and land values, dairy farmers would receive the greatest increase in net incomes with alternative 3.

However, if the distinction was between alternatives 1 and 2 only, the answer is more complicated. The answer would generally be for land values $600 per acre or below regardless of size and production level use the preferential assessment option to increase net cash income the most. With land valued at $600 or more per acre the removal of the

school operating millage would be the best alternative. This
is a result of the fact that at higher land values the de-
crease in millage rates outweighs the revaluing effect of
land to its use value.

Conclusions

It can be concluded from the study that preferential
assessment, the removal of the school operating millage,
and the combination of the two, results in increases in net
cash incomes after taxes which in percentage terms are biased
in favor of the lower herd size and lower production level
dairy herds. However, when absolute amounts of the in-
creases in net cash incomes are compared, the larger herd
size and production levels benefit the most. Increases in
net cash incomes after taxes were apparent for all categories
and all alternatives except the $350 land value category
when applying preferential assessment. All three alterna-
tives can be viewed as favorable changes from the present
set of tax rates and tax methods for property taxation and
state income taxes when dairy farmers' net cash incomes are
used as a criterion for judging.

It can also be concluded from the study that dairy
farms in the rural area are more profitable than are those
in the urban fringe, i.e., ceteris paribus. Also dairy
farms in the urban fringe area stand to gain more net cash

income in percentage terms than do those in the rural area
as a result of the implementation of preferential assessment
and the removal of the school operating millage.

Benefits of Preferential Assessment and the Removal of the School Operating Millage and Replacing it with an Increased State Income Tax

From society's point of view the current pattern of
land use is costly. If a zoning plan or green belt area
could be developed, coupled with the preferential assessment
and the removal of the school operating millage and an in-
crease in the state income tax, our land resource could be
orderly preserved and wisely used. With preferential assess-
ment and zoning or other methods of removing the tax pressure
from farm and open space land, a more orderly development
and conversion of our land resource could be achieved. For
converting land from farm to non-farm uses would be more
favorable if it were not done in random and scattered manner.
If land were added to the urban area as it was required in
an orderly fashion with less tax pressure on lands located
further from the city, our lands could be wisely used and
open land preserved. Accompanying the planned use of our
land resources would be a decrease in cost of such public
expenditures as, lighting of streets, sewage treatment, water
supply, and many other public services. Also, there would
be added income to the dairy farmers and all farmers' incomes
as well as an equitable means of financing public education.

However, if one group benefits from a new policy, the question arises whether anyone is harmed by such action. The answer to this question involves determining who will be picking up the taxes that farmers and landowners have foregone to enable the same level of state and local spending. It is clear that non-land owning or those with limited land ownership will pick up the extra revenues required. However, the impact upon this limited land ownership group as well as other types of farming enterprises is not known.

Implications

The implications of this study can be divided into three sections: (1) implications of present trends, (2) implications of differing taxing methods on dairy farms' incomes and the stability of dairying, and (3) implications of the study for alternatives which are available to dairy farmers in high tax areas.

With an ever increasing population it is inevitable that additional land resources will be required for the urban fringe area. These additional urban lands will develop at the expense of land in lower rent uses, such as open space, recreational, or agricultural lands. And as commercial or residential growth occurs in this transitional area, land prices will increase. As land prices increase, so do property taxes. The budgets in Chapter IV present the fact that small herd sizes and low production levels are responsible

for an early exit from the dairy business. The first farms
to terminate the business are those with small herd sizes
and/or low production levels because they do not have suffi-
cient income to pay property taxes and still maintain a high
level of family living when faced with increasing land values.
Dairy farms as well as all other low intensity land uses
will be forced to vacate their property on the urban fringe
when land values reach the threshhold where they can no
longer effectively compete with other more intense uses.

The question then arises, will high taxes on property
cause a dairy farm to leave the area? The answer cannot be
generalized, rather depending on alternative farm plans,
off-farm jobs, selling prices of the farm and anticipated
gain from the sale of the property. In differing situations,
one of the above may be the reason for the sale, but cannot
always be generalized.

Urban sprawl is detrimental to society, only those
who are involved in the transaction are moving to the rural
area, or profit from the misallocation of the land resource
through increased costs will benefit. Urban sprawl will
continue unless legislation, zoning or other measures are
undertaken to forbid the practice of scatteration of housing
and other land developments.

It is more profitable to operate a dairy farm in a
rural area, especially where land values in the urban fringe
area are greater than the agricultural use value, thus

increasing fixed costs. Urban fringe dairy farms can compete only if management practices are excellent and herd sizes and production levels are also high. By high production levels and larger herd sizes the dairy farmer in effect intensifies his operation in order to withstand pressure from other highly intensified uses which exert pressure to change the land use.

The implications of this study on dairy farm net cash incomes is quite simple. The three alternatives studied for relieving property tax pressure all decreased expenses so as to increase net cash incomes. And these increases were substantial amounts in all cases. The implications of increased incomes are towards a more stable dairy sector as far as numbers of dairy farmers and location of the farms are concerned.

The second implication of the study is concerned with alternatives which are available to dairy farmers in the quest for reduced property taxes or increased incomes. The alternatives which are available and feasible for dairy farmers to use in this quest depend on five factors. These factors are: (1) age and family plans, (2) the financial position of the dairy farm, (3) the present herd size and efficiency of operation, (4) the dairy farm location, and (5) off-farm job opportunities which are available.

Keeping these five factors in mind, the dairyman facing high land values and high tax rates has several

alternative plans of action which may enable. him to remain competitive in the dairy industry. The following are offered as suggestions and are not a cure-all in themselves.

First, increase efficiency to be competitive in the short run. This alternative should be practiced by any dairyman who wants to increase profits or remain competitive. It involves buying feed in low price periods or in large enough quantities to receive volume discount. In reducing unnecessary labor or adding a new milking system to reduce labor requirements. The dairy farmer could rent or buy additional land to lower machinery costs per acre or unit. Any number of such management decisions could be made to increase efficiency. What should be kept in mind, however, is the importance of increasing milk production per cow to levels above 12,000 pounds. This will help to distribute costs over more pounds of milk produced and as a result have more pounds of milk to sell, thus increasing efficiency. It must be remembered that increasing herd size and more mechanization do not necessarily contribute to increased efficiency in the dairy operation but must be accompanied by increased output per cow and man. This alternative should be placed above all others as a starting point from which to build or add strategies or other alternatives to in order to increase net cash income. However, for the dairy farmer nearing retirement age with a very small herd size in an urban fringe location, this may not be a viable alternative.

Second, minimize new investments and hope to sell
the farm at a high price on a later date is a possibility.
This alternative could prove to be a large financial gain to
certain individuals who are lucky enough to sell their farms
for $1,000 or more per acre. However, the capital gains tax
and a new place to live or job to find elsewhere may compli-
cate the situation. For if more than 30 percent of the
selling price of the farm is paid in cash during the year
of sale, the seller must pay capital gains tax on the entire
net profit at the end of the year. Or finding a new home in
a different area is not always a cheaper way to live than in
the individual's present location. Also a farmer of age
50-60 may find it very difficult to find off-farm employment,
thus further increasing the complications. Selling the farm
with a life-lease of the house at retirement age, with the
farm payments being made over a number of years may be a
wise choice. By doing this the dairyman insures himself of
an income and a place to live during retirement and minimizes
capital gains taxes.

Minimizing new investments as an alternative relies
on the fact that the farmer is nearing retirement age, or if
notnot, has off-farm job opportunities. And if the farmer
does sell, there also is the possibility of finding a new
home and the financial position of the farmer bears heavily
on this factor.

<u>Third, pushing for zoning, preferential assessment, or the</u>
<u>removal of the school operating millage and replacing it</u>
<u>with an increase in state income tax</u>, may be an answer in
some areas. This cannot be accomplished by one farmer alone,
but may be advanced if the farmer is involved and gets
others involved also. Zoning and preferential assessment
can be of help to many farmers on the rural-urban fringe by
reducing the competition for the dairyman's farm land or by
giving him special treatment in tax rates. However, there
are many unique characteristics of both systems and should
be explored in detail to fit the exact situation which the
individual dairyman is facing.

Before considering any further alternatives, the
possibility of obtaining zoning and the most helpful of the
two, preferential assessment should be explored in detail.
Preferential assessment and the removal of the school oper-
ating millage and replacing it with an increased state income
tax is a very good alternative, yet the possibility of ob-
taining such legislation is uncertain.

<u>Fourth, selling some land and buying most of the</u>
<u>feed requirements</u> may be another alternative; however, the
feasibility of which is questionable. Selling some land for
a subdivision may meet with resistance from the developers
if the dairyman plans to continue his dairy operation. For
there are very few dairy farms in the center of residential

subdivisions for obvious reasons. It is, however, a possibility at further distances from the rural-urban fringe, but its feasibility of really helping alleviate the problem of high land values and tax rates is questionable.

This alternative is a temporary one at best and for the younger dairy farmer who wants to grow this alternative is quite poor.

Fifth, relocate in a low tax rate area or a lower land value area at a greater distance from the rural-urban fringe. Here many factors come into focus. These are the age of the dairyman, his financial position, any sons to take over the business, the cost of the transition, and social or community opportunities available in the new location. It may be neither desirable nor profitable for a dairyman reaching retirement age with no sons to take over the business to relocate the dairy operation in another area. However, if there is a reason to keep the business viable, then relocation in a lower land value or tax rate area may be the answer.

Sixth, the possibility of intensifying the land use may be a solution. Moving from corn or hay to a vegetables or fruit may be a way to increase returns from the land. The problem with this alternative is many dairy farmers do not possess the necessary management or technical skills to grow fruits and vegetables. Also, if the farmer wishes

to remain in dairy farming the loss of feed for the herd from the conversion may be detrimental to the dairy operation.

There are also alternatives which may be advisable if the dairy farm operation is to be discontinued.

First, there is the possibility of selling out and retiring. This is quite feasible for a dairyman nearing retirement age, with no one to take over the operation. The prospect of selling out and moving to Florida is in the mind of many dairymen. Or, he may want to acquire a job in a city or town, which the feasibility of has already been discussed as not promising for older persons. The age and off-farm job opportunities play a very important role in this alternative as well as the financial position of the dairyman. Second, the opportunity for an off-farm job may look promising to those with the necessary skills and located near other employment or would be willing to relocate. Third, selling the land and retaining the home is an alternative which could be desirable if the dairyman was able to find local off-farm employment or was nearing retirement.

Need for Further Research

This study deals entirely with short-run (one to five year) adjustments in net cash incomes of dairy farmers. Much research needs to be done on the long-run (five to forty years) preferential assessment and the removal of

school operating millage on improving land use to an orderly and planned conversion process. The data is not conclusive what the impact of various property tax relief measures and planning programs will be upon the scatteration of agricultural land development and conversion over the long-run. Will these programs alleviate the property tax pressure on farm lands on the urban fringe and enable farms in the transition area to earn satisfactory incomes until their land is needed for urban expansion? This question needs to be answered by further research.

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APPENDICES

APPENDIX A

APPENDIX A-1

Taxes levied on farm real estate and realized net farm
income, Michigan, 1960-70.

Year	Taxes on Farm Real Estate	Realized Net Farm Income
	(Millions of Dollars)	(Millions of Dollars)
1960	34.1	254.7
1961	36.2	269.2
1962	38.9	285.2
1963	40.3	259.7
1964	43.4	281.7
1965	41.7	296.1
1966	51.5	352.4
1967	51.9	291.9
1968	60.0	249.4
1969	68.9	286.0
1970	76.8	245.8

Source: U.S. Department of Agriculture, Farm Real Estate
Taxes, Ret. 11, E.R.S., January, 1972 and U.S.
Department of Agriculture, Farm Income Situation,
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APPENDIX B

APPENDIX B-1

Number of dairymen selling milk.

County	1960 June	1965 July	1970 Nov.	1971
Clinton	961	635	405	383
Eaton	909	576	284	249
Ingham	679	479	280	242
Ionia	939	665	403	375
Shiawassee	807	494	300	281
Total	4,295	2,849	1,672	1,530
Avg/County	859	570	334	306
Macomb	574	332	168	160
Washtenaw	769	483	278	251
Monroe	305	152	65	70
Livingston	572	389	210	205
Oakland	328	134	67	59
Total	2,548	1,490	788	745
Avg/County	510	298	158	149
State	41,662	26,713	15,100	13,927

Source: Michigan Department of Agriculture, Animal Health
Division, BRT Counts, 1960, 1965, 1970, and 1971.

Table B-2. Value of dairy products sold "dollars" class
1-5 farms, 1959, 1969.

	1959	1969	Number of Farms 1959	Number of Farms 1969
Clinton	4,193,475	7,865,197	1,021	397
Eaton	4,293,625	4,053,590	1,001	267
Ingham	5,391,755	6,551,269	748	297
Ionia	4,017,415	7,278,571	940	419
Shiawassee	4,357,105	5,209,744	791	283
TOTALS	17,896,270	30,958,371	4,501	1,663
$ per farm avg.	3,976	18,615	900	332
State Totals	166,068,949	218,698,356		
% State	10.8	14.2		
Macomb	2,794,115	2,718,299	582	164
Washtenaw	4,064,675	5,785,036	728	309
Monroe	1,311,015	1,107,554	291	82
Livingston	4,068,243	5,343,324	597	221
Oakland	2,044,844	1,667,504	317	78
TOTALS	14,282,892	16,621,717	2,515	854
$ per farm avg.	5,679	19,463	503	171
State Totals	166,068,949	218,698,356		
% State	8.6	7.6		

Source: 1964 and 1969 Census of Agriculture.

Table B-3. Farm characteristics by counties, rural area.

County	Number of Farms	Land in Farms	Percent of Total Land	Land and Buildings Average Per Acre	Average Farm Size	Value Per Farm
			1959			
Clinton	2,285	324,364	88.8	$191.57	142.0	$28,774
Eaton	2,393	310,342	85.5	205.93	129.7	26,801
Ingham	1,899	282,030	78.8	240.31	148.5	31,885
Ionia	2,087	306,679	83.3	165.25	146.9	26,355
Shiawassee	2,228	296,723	85.9	232.01	133.2	32,072
Totals or Average	10,892	1,520,138	84.4	207.01	140.1	29,177
			1969			
Clinton	1,981	286,958	78.4	$329.13	144.8	$47,677
Eaton	1,782	259,883	71.1	311.41	145.8	45,416
Ingham	1,399	230,949	64.6	398.40	165.0	65,852
Ionia	1,629	280,124	76.2	278.97	171.9	47,971
Shiawassee	1,710	258,434	74.8	394.07	151.1	59,556
Totals or Average	8,501	1,316,348	73.0	342.40	155.7	53,289

Source: Census of Agriculture 1964 and 1969.

Table B-4. Farm characteristics by counties, urban fringe area.

County	Number of Farms	Land in Farms	Percent of Total Land	Land and Buildings Average Per Acre	Average Farm Size	Value Per Farm
			1959			
Macomb	1,896	151,229	49.1	$503.81	79.8	$38,215
Washtenaw	2,106	320,097	69.9	296.07	152.0	40,987
Monroe	2,830	280,742	78.1	380.60	99.2	34,481
Livingston	1,497	229,492	62.8	223.10	153.3	36,267
Oakland	1,370	165,110	29.4	384.98	120.5	46,257
Totals or Average	9,699	1,146,670	57.9	357.71	121.0	39,241
			1969			
Macomb	997	96,934	31.5	$885.41	97.2	$86,085
Washtenaw	1,699	260,283	57.2	500.33	153.1	76,650
Monroe	2,000	253,927	71.2	569.53	126.9	72,310
Livingston	1,099	174,047	47.5	475.00	158.3	75,246
Oakland	863	101,820	18.4	976.38	117.9	115,197
Totals or Average	6,658	887,011	45.1	681.31	130.6	85,097

Source: 1964 and 1969 Census of Agriculture.

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Table B-5. Population characteristics of the rural and urban fringe area.

County	Urban	Rural	Total	% Rural	Total Per Square Mile '70	% Change '60-70 Urban	% Change '60-70 Rural
1960							
Clinton	8,288	29,681	37,969	78.2	84.8	24.7	28.5
Eaton	19,302	30,382	49,684	61.2	120.7	50.2	31.3
Ingham	173,578	37,718	211,296	17.9	467.0	28.9	-1.0
Ionia	14,971	28,161	43,132	65.5	79.6	2.2	8.5
Shiawassee	23,082	30,364	53,446	56.8	116.8	2.6	29.7
Totals or Average				55.8	173.8		
Macomb	354,825	50,979	405,804	12.6	1,302.7	62.5	-4.6
Monroe	27,993	73,127	101,120	72.3	212.7	48.0	5.4
Washtenaw	121,484	50,956	172,440	29.6	329.3	50.6	0.3
Livingston	4,861	33,372	38,233	87.3	103.1	33.6	57.2
Oakland	609,090	81,169	690,259	11.8	1,047.1	34.1	12.1
Totals or Average				42.7	358.9		
1970							
Clinton	10,338	38,154	48,492	78.7			
Eaton	28,988	39,904	68,892	57.9			
Ingham	223,702	37,337	261,029	14.3			
Ionia	15,299	30,549	45,848	66.6			
Shiawassee	23,686	39,389	63,075	62.5			
Totals or Average				56.0			
Macomb	576,672	48,637	625,309	7.8			
Monroe	41,424	77,055	118,479	65.0			
Washtenaw	182,994	51,109	234,103	21.8			
Livingston	6,493	52,474	58,967	89.0			
Oakland	816,874	90,997	907,871	10.0			
Totals or Average				38.7			

Source: 1970 Census of population, Michigan, U.S. Department of Commerce, p. 24-19, to 24-20.

Table B-6. Rural and urban fringe population in 1970 and projected to 1980 and 1990.

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	1970	% Change From 1960	1980	1990
Rural				
Clinton	48,492	27.7	58,219	73,151
Eaton	68,892	38.7	88,702	113,284
Ingham	261,039	23.5	290,952	316,058
Ionia	45,848	6.3	48,506	52,920
Shiawassee	63,075	18.0	73,201	86,731
Totals or Average	487,346	22.8	559,580	642,144
State	8,875,083		9,838,875	11,107,485
% State	5.5		5.7	5.8
Urban Fringe				
Macomb	625,309	54.1	836,778	1,095,583
Monroe	118,479	17.2	133,432	154,281
Livingston	58,967	54.2	80,107	106,233
Washtenaw	234,103	35.8	302,218	365,005
Oakland	907,871	31.5	1,111,999	1,359,502
Totals or Average	1,944,729	38.5	2,464,534	3,080,604
State	8,875,083		9,838,875	11,107,485
% State	38.9		25.1	27.7

Source: J. Allen Beegle, Project 80 and 5, Michigan's Population, Michigan State University, p. 3.

Table B-7. Economic classes of rural and urban fringe area farms.

Classification	Clin-ton	Eaton	Ingham	Ionia	Shia-wassee	Totals
		Rural	Area			
1959						
Number of farms	2,253	2,451	1,925	2,108	2,236	10,973
Part-time farms	550	635	515	555	595	2,850
Residential and part retirement farms	185	265	155	220	165	990
Product sales >$5,000	927	1,436	854	858	941	5,016
Product sales <$5,000	1,326	1,015	971	1,250	1,295	5,857
1969						
Number of farms	1,981	1,782	1,399	1,629	1,710	8,501
Part-time farms	615	648	446	369	558	2,636
Residential and part retirement farms	157	174	132	131	136	730
Product sales >$5,000	811	605	532	771	639	3,358
Product sales <$5,000	1,170	1,177	867	858	1,071	5,143

Source: Census of Agriculture, Michigan, 1959 and 1969.

Monroe	Macomb	Oak-land	Living-ston	Wash-tenaw	Totals
			Urban Fringe Area		
2,808	1,883	1,307	1,482	2,097	9,577
955	505	480	460	540	2,940
320	210	165	175	200	1,070
823	708	412	562	842	3,347
1,985	1,175	895	920	1,255	6,230
2,000	997	863	1,099	1,699	6,658
570	241	288	387	461	1,947
154	109	111	107	182	663
737	441	234	387	705	2,504
1,263	556	629	712	994	4,154

Table B-8. Economic classes of Michigan farms, 1950-1969.

Classification	1950	1959	1964	1969
		Numbers		
Commercial farms with:				
Product sales of $5,000 or more	28,294	37,028	38,108	31,603
Product sales of less than $5,000	78,530	28,014	22,079	16,726
Part-time farms	24,023	34,148	23,683	22,637
Residential and part retirement farms	24,600	12,512	9,603	6,962
Abnormal units	142	63	31	18
		Percentage distribution		
Commercial farms with:				
Product sales of $5,000 or more	18.2	33.1	40.8	40.6
Product sales of less than $5,000	50.5	25.1	23.6	21.5
Part-time farms	15.4	30.6	25.3	29.0
Residential and part retirement farms	15.8	11.2	10.3	8.9
Abnormal units	0.1	--	--	--

Source: U.S. Census of Agriculture. Modifications in class definitions make direct comparisons between the four census years difficult. The classes listed in the table are generally comparable for the purposes of this presentation. One must recognize, however, that the inflation factor alone should have caused numerous operators with less than $5,000 in product sales in 1950 to rise above this level in the three later years.

Table B-9. Property tax survey data table by county and area totals.

County	Minimum Value	Maximum Value	Mean	Standard Deviation	Skewness	Kurtosis	Standard Error of the Mean	Number of Observations
Ingham								24
Acres	19	400	119	93	1.96	6.19	18.99	
Total property tax	76	3,716	988	724	2.33	9.41	147.99	
Total assessed value	1,700	73,000	18,596	15,126	2.22	8.26	3,087.72	
Tax per acre	2.22	18.60	9.13	3.61	.28	3.49	0.73	
Assessed value/acre	25	357	179	89	.11	2.28	18.28	
Shiawassee								15
Acres	40	290	126	56	1.50	6.08	14.48	
Total property tax	368	1,988	890	451	1.03	3.57	116.65	
Total assessed value	9,870	52,213	25,233	12,823	.91	2.94	3,310.96	
Assessed value/acre	97	390	205	73	1.07	3.84	18.91	
Eaton								16
Acres	51	176	105	37	.39	2.27	9.29	
Total property tax	278	1,082	645	229	.08	2.27	57.13	
Total assessed value	9,125	34,300	18,524	6,810	.60	2.85	1,702.60	
Tax per acre	2.95	15.52	6.68	3.06	1.37	5.35	0.76	
Assessed value/acre	101	312	186	63	.41	2.26	15.78	
Ionia								26
Acres	33	200	77	45	1.77	5.40	8.76	
Total property tax	118	1,142	376	281	1.71	4.98	55.03	
Total assessed value	4,467	40,500	14,323	10,053	1.53	4.36	1,971.70	
Tax per acre	2.18	9.32	4.80	1.68	.51	3.26	0.33	
Assessed value/acre	94	361	181	57	1.12	4.98	11.22	

Table B-9. Cont'd.

County	Minimum Value	Maximum Value	Mean	Standard Deviation	Skew-ness	Kur-tosis	Standard Error of the Mean	Number of obser-vations
Clinton								19
Acres	37	153	90	36	.37	2.15	8.34	
Total property tax	312	1,087	655	238	.23	1.87	54.80	
Total assessed value	8,367	28,620	17,240	5,920	.30	2.02	1,358.20	
Tax per acre	2.59	17.79	7.86	3.11	1.48	6.69	0.72	
Assessed value/acre	66	425	206	72	1.12	5.84	16.64	
Monroe								18
Acres	33	122	72	29	.19	1.92	6.78	
Total property tax	138	1,180	613	324	.01	1.80	76.44	
Total assessed value	5,225	34,650	19,019	10,514	.03	1.56	2,478.24	
Tax per acre	3.94	11.80	8.12	2.52	-.07	1.89	.59	
Assessed value/acre	129	750	262	145.15	2.20	8.15	34.21	
Washtenaw								29
Acres	27	160	84	38	.90	2.87	7.20	
Total property tax	192	3,321	1,132	756	1.36	4.34	140.47	
Total assessed value	5,267	85,000	29,601	19,310	1.27	4.03	3,585.91	
Tax per acre	7.20	21.14	12.82	3.92	.67	2.45	.73	
Assessed value/acre	189	531	336	97.80	.45	2.22	18.54	
Macomb								18
Acres	20	200	84	42	1.13	4.28	9.97	
Total property tax	190	1,766	930	425	-.08	2.40	100.34	
Total assessed value	4,725	44,164	23,910	10,677	-.16	2.35	2,516.70	
Tax per acre	6.49	18.81	11.29	3.68	.68	2.66	.87	
Assessed value/acre	161	425	289	83	.20	1.90	19.54	

Table B-9. Cont'd.

County	Minimum Value	Maximum Value	Mean	Standard Deviation	Skew-ness	Kur-tosis	Standard Error of the Mean	Number of observations
Livingston								20
Acres	30	107	59	21	.48	2.41	4.60	
Total property tax	144	1,129	502	298	.66	2.50	66.68	
Total assessed value	1,470	33,258	14,606	8,920	.57	2.52	1,994.71	
Tax per acre	2.30	20.28	8.84	5.15	.73	2.53	1.15	
Assessed value/acre	182	706	353	154	1.07	3.42	46.43	
Oakland								11
Acres	30	120	53	26	1.62	4.62	8.05	
Total property tax	115	1,452	739	455	.28	1.67	137.14	
Total assessed value	7,595	33,280	18,140	11,304.44	1.92	8.33	1,136.14	
Tax per acre	2.19	18.60	7.05	3.21	1.06	4.65	0.32	
Assessed value/acre	25	425	189.17	71.82	0.60	3.98	7.22	
Area I								
Rural Area								99
Acres	19	400	101	61.69	.48	10.62	6.20	
Total property tax	78	3,716	693	494.32	2.75	15.90	49.68	
Total assessed value	1,700	73,000	18,140	11,304.44	1.92	8.33	1,136.14	
Tax per acre	2.19	18.60	7.05	3.21	1.06	4.65	0.32	
Assessed value/acre	25	425	189.17	71.82	0.60	3.98	7.22	
Area II								
Urban Fringe Area								96
Acres	20	200	73	34.90	1.20	4.49	3.56	
Total property tax	115	3,321	821	567.13	1.72	7.44	57.88	
Total assessed value	1,470	85,000	22,124	14,479.29	1.55	6.78	1,477.79	
Tax per acre	2.30	30.43	10.00	4.90	0.88	4.48	0.50	
Assessed value/acre	37	749.74	299.04	129.05	0.85	4.21	13.17	

Table C-1. Budgeting of 40 and 86-cow dairy farms 12,000 and 15,000 lbs. production/cow, 350 and 850 land values two millage rates and two state tax levels.

Rural Value	Total Cash Value of Land & Buildings	Cropland Value per Acre	Assessed Value	Property Tax @ 36 Mills	Property Tax W.O. 22 Mills of S.O.M. "14 Mills"	Decrease in Property Tax
40-cow herd 12,000#/ cow	85,150	350	42,575	1,532	596	936
40-cow herd 15,000#/ cow	85,150	350	42,575	1,532	596	936
86-cow herd 12,000#/ cow	153,200	350	76,600	2,758	1,072	1,686
86-cow herd 15,000#/ cow	153,200	350	76,600	2,758	1,072	1,686
40-cow herd 12,000#/ cow	189,650	850	94,825	3,414	1,328	1,986
40-cow herd 15,000#/ cow	189,650	850	94,825	3,414	1,328	1,986
86-cow herd 12,000#/ cow	299,200	850	149,600	5,385	2,094	3,291
86-cow herd 15,000#/ cow	299,200	850	149,600	5,385	2,094	3,291

Federal Income Tax @ 36 Mills	Federal Income Tax W.O. 22 Mills of S.O.M.	State Income Tax @ 3.9%	State Income Tax @ 6.2%*	Total Tax Bill @ 36 Mills & 3.9% S.T.	Total Tax Bill @ 14 Mills & 6.2% S.T.
646	765	11	241	2,189	1,602
1,540	1,667	217	569	3,289	2,832
2,438	2,724	325	869	5,521	4,665
5,516	5,815	766	1,568	9,040	8,455
372	645	000	196	3,786	2,169
1,200	1,519	59	524	4,673	3,371
1,890	2,484	92	806	7,367	5,384
4,755	5,492	527	1,505	10,667	9,091

*Computed without a property tax credit.

Percent of Property Tax Reduction Not Paid in Other Taxes	P.T./A @ 36 Mills	P.T./A @ 14 Mills	Acres Owned	Net Cash Income After Taxes @ 36 Mills	Net Cash Income After Taxes @ 14 Mills
62.7	7.33	2.85	209	8,869	9,456
48.8	7.33	2.85	209	13,054	13,511
50.8	7.83	3.05	352	17,705	18,561
35.8	7.83	3.05	352	25,463	26,048
82.0	16.33	6.35	209	7,272	8,895
65.6	16.33	6.35	209	11,670	12,972
60.2	15.29	5.95	352	15,859	17,842
47.9	15.29	5.95	352	23,846	25,422

Table C-1. Cont'd.

Urban Fringe Area	Total Cash Value of Land & Buildings	Cropland Value per Acre	Assessed Value	Property Tax @ 44.6 Mills	Property Tax W.O. 29.6 Mills S.O.M. 15.0	Decrease in Property Tax
40-cow herd 12,000#/ cow	137,400	600	68,700	3,064	1,030	2,034
40-cow herd 15,000#/ cow	137,400	600	68,700	3,064	1,030	2,034
86-cow herd 12,000#/ cow	241,200	600	120,600	5,378	1,809	3,569
86-cow herd 15,000#/ cow	241,200	600	120,600	5,378	1,809	3,569
40-cow herd 12,000#/ cow	325,500	1,500	162,750	7,258	2,441	4,817
40-cow herd 15,000#/ cow	325,500	1,500	162,750	7,258	2,441	4,817
86-cow herd 12,000#/ cow	558,000	1,500	279,000	12,443	4,158	8,258
86-cow herd 15,000#/ cow	558,000	1,500	279,000	12,443	4,185	8,258

Federal Income Tax @ 44.6 Mills	Federal Income Tax W.O. 29.6 at 15.0 Mills	State Income Tax @ 3.9%	State Inc. Tax @ 6.2% & P.T. at 15.0 Mills	Total Tax Bill @ 44.6 & 3.9% S.T.	Total Tax Bill @ 15 Mills & 6.2% S.T.
420	690	000	214	3,484	1,934
1,253	1,578	86	542	4,403	3,150
1,892	2,551	92	824	7,362	5,184
4,652	5,577	532	1,523	10,562	8,909
000	489	000	127	7,258	3,057
580	1,300	000	455	7,838	4,196
600	2,030	000	676	13,043	6,891
2,906	4,864	45	1,375	15,394	10,424

Table C-1. Cont'd.

	Federal Taxable Income @ 44.6 Mills	Federal Taxable Income @ 15 Mills	Increase in Federal Income Tax	Increase in State Income Tax	Net Decrease in Total Taxes Paid
40-cow herd 12,000#/ cow	2,815	4,370	270	214	1,550
40-cow herd 15,000#/ cow	7,331	8,901	325	456	1,253
86-cow herd 12,000#/ cow	10,326	13,163	659	732	2,178
86-cow herd 15,000#/ cow	21,163	23,741	925	991	1,653
40-cow herd 12,000#/ cow	(-)834	3,230	489	127	4,201
40-cow herd 15,000#/ cow	3,764	7,577	720	455	3,642
86-cow herd 12,000#/ cow	3,884	10,953	1,430	676	6,152
86-cow herd 15,000#/ cow	13,930	21,188	1,958	1,330	4,970

Percent of Property Tax Reduction Not Paid in Other Taxes	P.T./A @ 44.6 Mills	P.T./A @ 15 Mills	Acres Owned	Net Cash Income After Taxes @ 44.6 Mills	Net Cash Income After Taxes @ 15 Mills
76.2	14.66	4.93	209	7,574	9,124
61.6	14.66	4.93	209	11,940	13,193
61.0	15.28	5.14	352	15,864	18,042
46.3	15.28	5.14	352	23,941	25,594
87.2	34.72	11.68	209	3,800	8,001
75.6	34.72	11.68	209	8,505	12,147
74.5	35.35	11.89	352	10,183	16,335
60.2	35.35	11.89	352	19,109	24,079

Table C-2. Forty-cow herd with 12,000#/cow production,
           the property tax at 36 mills and the land value
           at $350 per acre.

INCOME:	$33,795	
	+ 1,770	Capital gains
	$35,565	
EXPENSES:	$20,956	Cash expenses (excluding property tax)
	3,887	Machinery depreciation
	1,434	Improvement depreciation
	+ 1,532	Property tax on 209 acres @ $350/ acre and buildings at $12,000.
	$27,809	
FARM PROFIT:	$7,756	
	-2,600	Allowance for 4 dependents
	-1,008	Deductions
	- 11	State income tax
	$4,137	Federal taxable income Federal income tax $646.00
FARM PROFIT:	$7,756	
	-4,800	Deductions $115.00 state tax
	$2,956	State taxable income -$104.00 property tax credit
	$7,756	
	+ 1,770	
	$9,526	Net cash income
	- 646	Federal income tax
	- 11	State income tax
	$8,869	Net cash income after taxes

NET CASH INCOME AFTER TAXES: $8,869

With expenses increasing, a look at what the future will hold for the dairy farmer if the milk price does not increase is found in Table C-3. Only two land values were used for they reason that they are significant to show the results. If the price of milk remains at $6.00 per cwt. decreases in income will result to the point where the profitability in dairy farming will be limited to only the very ifficient.

Table C-3. Net cash income after taxes with a 15 percent increase in expenses with the milk price remaining at $6.00/cwt.

Land Values Per Acre	40 Cows		86 Cows	
	12,000#	15,000#	12,000#	15,000#
	Net Cash Income			
$350	$6,211	$9,558	$12,958	$20,900
$850	$3,011	$8,839	$ 9,393	$16,458
	Decrease in Income			
$350	$2,658	$3,496	$ 4,752	$ 4,563
$850	$4,261	$3,101	$ 6,466	$ 7,388