OREGON'S AGRICULTURAL LANDS PRESERVATION POLICY: AN ANALYSIS OF EFFECTIVENESS IN THE WILLAMETTE VALLEY

by

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Developed in 1973, Oregon's agricultural lands preservation policy sought to stop the conversion of agricultural land to other uses, particularly in the Willamette Valley. This thesis analyzes the effectiveness of this policy in preserving agricultural land in large blocks in the Willamette Valley, examining trends at the county, regional, and state levels. State land use data are used to assess whether the 1989 and 1993 efforts to strengthen the original legislation slowed the rate of agricultural land use conversion.

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TABLE OF CONTENTS

Chapter Page

I. INTRODUCTION 1

A. Background 1
B. Thesis Question and Scope 3
C. Organization 4

II. METHODOLOGY 6

A. Policy Issues 6
B. Research Approach 7
C. Data Collection and Analysis 11
1. Overview 11
2. Data Analysis Plan 13

III. BACKGROUND 17

A. Conversion and Preservation of Agricultural Lands 17
1. Farmland Conversion 17
2. Arguments to Support Agricultural Lands Preservation Policies 18
a. Food Security and Supply 19
b. Economic Stability 21
c. Environmental Protection 24
d. Preservation of Landscape and Cultural Characteristics 28
3. Arguments about Causes of Agricultural Lands Conversion 30
B. Farmland Preservation Policies and Goals 35

Chapter Page

IV. AGRICULTURAL LANDS PRESERVATION IN OREGON 39

A. Oregon's Agricultural Lands Preservation Policy 39
1. Background 39
2. Complementary Farmland Protection Provisions 47
3. Existing and Complementary Assessments of the Policy 48
B. Development and Conversion in the Willamette Valley 51

V. DATA ANALYSIS 52

A. Have the Legislative Changes Helped the State to Retain More Total EFU-Zoned Lands? 52
1. How Much EFU Land Has Been Rezoned? 52
2. How Much Land Has Been Converted to Other Uses As Part of UG Expansions? 54
B. Have Legislative Changes Helped the State to Preserve EFU Lands in "Large Blocks" by Restricting Other Uses on Them? 56
1. How Many Farm and Non-Farm Dwellings Have Been Permitted on EFU Lands? 56
2. How Many Non-Farm Uses Have Been Permitted on EFU Lands? 62
3. How Many Divisions on EFU-Zoned Lands Have Been Approved? 64
C. Do Trends in Population, Number of Farms, and Acreage in Farms Provide Further Insight into the Policy's Effectiveness? 67

VI. CONCLUSION 73

APPENDIX: DATA SOURCES 79

Chapter Page

BIBLIOGRAPHY 81

LIST OF TABLES

Table Page

1. DLCD Data and Relevance to Research 14
2. Additional Data and Relevance to Research 16

LIST OF GRAPHS

Graph		Page
1.	Population	40
2.	Rezonings from and to Agriculture: Oregon	53
3.	Agricultural and Forest Lands Lost to UGB Expansions: Oregon	55
4.	Primary Farm Dwellings Approved (Indexed to 1994)	59
5.	Other Dwellings Approved (Indexed to 1994)	60
6.	Non-Farm Uses Approved: Oregon	63
7.	Farm Divisions Approved (Indexed to 1994)	65
8.	Non-Farm Divisions Approved (Indexed to 1994)	66
9.	Number of Farms	70
10.	Acreage in Farms	72

CHAPTER I

INTRODUCTION

A. Background

> Black and white cows grazing in a lush green meadow, bright red cherries hanging in clusters on trees, a fifty-six unit housing development across the street. Long vines of hops strung up like clothes on wash day, hundreds of farm workers, like a colony of ants, expertly harvesting delicious strawberries, a shopping mall next door. These scenes ask the question: "Are we giving away the farm?" (Schellenberg 1998, 987)

This image of "the farm" holds great power in the American imagination. It harkens back to the country's roots, to its ability to provide food for its citizens, to economic security, to agricultural values imbued in cultural life, to ideas of a "simpler" life than commonly seen in "developed" areas. The ability of "the farm" to maintain its existence in the face of non-agricultural development has therefore been a hot topic for the public, and consequently legislators, for decades. Policy discussions about how best to preserve agricultural lands and the agricultural economy have occurred within the state of Oregon as they have across the nation. Productive farmland is a resource, a use of land that, once given over to other land uses, disappears permanently – at least in relation to a human lifetime. Like other natural resources, agricultural lands are finite. When agricultural land converts to residential or other uses, observers speak of it as "lost" (i.e.

no longer providing the benefits associated with agricultural production) (Coughlin 1981, 16).

Many observers note the importance of preserving farmland in the face of the forces of development, especially in light of national trends toward a more urban lifestyle. Preservation of these lands is seen, in this sense, as an integral element of the nation's environmental, social, and economic sustainability, both in a consumptive sense (i.e. the use and economic values of agricultural production) and in an existence value sense (i.e. preservation of the existence of farmland, regardless of its production or any actual effects on the valuing individual).

> With life so greatly changed and daily activities so far removed from any intimate contact with the land, many people today still seek assurance that the bond between themselves and the land that supports them remains intact. A sustainable society requires a sustainable environment.... We are thus challenged to think about the land in new ways and to communicate what we see to people whose connections to the land are less direct but just as essential (NRCS 1996, 15-16).

In Oregon, this concern for farmland preservation first saw expression more than three decades ago as state legislators noted the increase in development in the Willamette Valley and then took action to halt the conversion of agricultural lands to non-productive uses. In the words of then-governor Tom McCall:

> [T]here is a shameless threat to our environment and to our whole quality of life – unfettered despoiling of the land. Sagebrush subdivisions, coastal "condomania," and the ravenous rampage of suburbia in the Willamette Valley all threaten to mock Oregon's status as the environmental model for the Nation.
>
> ... The interests of Oregon for today and in the future must be protected from grasping wastrels of the land. We must respect another truism: that unlimited and unregulated growth leads inexorably to a lowered quality of life (McCall 1973).

With this speech, McCall called on the state's legislature to draft a comprehensive land use planning law that would protect the state's natural resources lands, including agricultural lands, from development. The "grasping wastrels" would, he believed, threaten the state and, in particular, the prime farmland of the Willamette Valley. This

preservation of Willamette Valley farmland was crucial, many believe, because it "includes some of the most fertile soil in the world for growing vegetables and high-yield specialty crops" (Leonard 1983, 63-64). The pressure of population growth and the inevitable, consequent development of land posed threats to high agricultural yields and high fertility (Leonard 1983, 63-64).

As explained in detail in Chapter IV, the comprehensive land use plan passed by the Oregon legislature in 1973, and the subsequent additions and changes, provided specific guidelines for any alterations in the use of current agricultural lands. Goal 3, the statewide planning goal specifically devoted to farmland preservation, has guided the Land Conservation and Development Commission (LCDC) and Department of Land Conservation and Development (DLCD) over the subsequent years.

B. Thesis Question and Scope

This thesis analyzes the effectiveness of Oregon's agricultural lands preservation policy (as laid out in Goal 3 and supporting provisions) in achieving its stated goal. Although the legislative findings stated in the original 1973 bill list multiple goals—including conservation of "the state's economic resources," maintenance of the "agricultural economy," provision of "adequate, healthful and nutritious food," and conservation of the social and aesthetic benefits of resource conservation—preservation of "large blocks" of agricultural land is identified as the means for achieving these more general goals (O.R.S. 215.243 2005). Put even more generally, this legislation aimed to protect the prime farmland of the Willamette Valley from converting from a resource-based use (i.e. agriculture) to a non-resource-based use (i.e. residential development).

For these reasons, this thesis will consider the effectiveness of the agricultural lands preservation policy in terms of agricultural lands actually preserved (i.e. preservation of "large blocks").[1] Geographically, given the particular concerns associated

[1] Future analyses could expand upon this research to consider the larger goals, such as health of the agricultural economy or food security. Indeed, as discussed in Chapter IV, a number of studies have already attempted to gain perspectives into some of these questions.

with the Willamette Valley – the potential conversion of prime agricultural, resource lands to non-resource uses due to higher population growth and urban expansion than found in other regions of the state – this thesis will analyze the aggregated trends of the nine counties that fall within this region, with comparison to aggregated trends in the rest of Oregon.[2] These are the nine counties that, according to the Oregon legislature and a number of other observers, face the greatest threat from population growth and the consequent "sprawl" of urban development, and they are also the nine counties that collectively hold the greatest amount of Class I and II soils, i.e. the prime agricultural lands in the state. This analysis is also limited in time, specifically to the period encompassing the mid-1980s to 2004, because of limitations on available data and, perhaps even more importantly, substantial changes made to the agricultural land use laws in 1989 and 1993, and again in 2004 with the passage of Measure 37. As the Oregon legislature has attempted progressively to strengthen its agricultural land protection laws from 1973 to the present with the goal of protecting agricultural lands from the pressures of population growth, this thesis assesses whether the 1989 and 1993 revisions achieved the more ambitious goals for which they aimed. The research approach and data collection and analysis process are explained in further detail in Chapter II.

C. Organization

To address this research question, this paper is divided into the following chapters. First, Chapter II explains the importance of this policy issue in light of recent legislative changes; the research approach, including the geographic level of analysis; the problem of a control case; the time period analyzed; and the way in which this analysis builds upon and complements other methodologies. Next, Chapter III summarizes the context of the farmland preservation issue, including the significance of farmland conversion, possible benefits provided by agricultural lands, reasons for conversion, and

---

[2] These counties include Benton, Clackamas, Lane, Linn, Marion, Multnomah, Polk, Washington, and Yamhill.

various farmland preservation regulatory methods and goals. Chapter IV then specifically addresses Oregon's agricultural lands preservation policy as stated in statewide land use planning Goal 3, including the history and background of the law and previous assessments and analyses of Oregon's policy. Chapter V then turns to an assessment of the data pertaining to agricultural land use and the agricultural economy over the last several decades in the Willamette Valley. Finally, Chapter VI of this thesis concludes with a summary of information gleaned from the data, opportunities for future research, and issues for policy-makers to consider.

CHAPTER II

METHODOLOGY

A. Policy Issues

This thesis addresses an active and ongoing policy discussion taking place within the state. Although many argue that the passage of Measure 37, a citizens' initiative, in 2004 muted both the current and historical power of Oregon's land use laws,[3] it remains critical to evaluate the extent to which the policies of the past several decades have achieved their intended goals. Policy-makers are now considering how to go forward in the face of the significant changes mandated by Measure 37: the governor's Big Look Task Force has submitted a report to the legislature, including proposed legislation, that will be considered during 2009 (Oregon H.B. 2229 2009). In fact, a specific goal of the Big Look Task Force efforts was to analyze "the effectiveness of Oregon's land use planning program in meeting the current and future needs of Oregonians in all parts of the state" (Oregon Task Force on Land Use Planning 2009). The timing of these reconsiderations make an effectiveness evaluation critical, and this thesis should add to the discussion by providing a unique analysis of data not yet compiled in this manner.

---

[3] The first section of Measure 37 sets forth the critical language:

> "If a public entity enacts or enforces a new land use regulation or enforces a land use regulation enacted prior to the effective date of this amendment that restricts the use of private real property or any interest therein and has the effect of reducing the fair market value of the property, or any interest therein, then the owner of the property shall be paid just compensation." (Oregon Secretary of State 2004).

When policy-makers and other interested parties debate which aspects to retain and which to alter—or when, in other locales, they consider the wisdom of pursuing this particular regulatory path in the first place—analyses of the actual effects of the land use laws and policies will be crucial (Eber 2007), as will consideration of the underlying assumptions behind opinions of what constitutes a successful land use policy. The idea of "agricultural lands preservation," in particular, is arguably susceptible to various interpretations regarding exactly *what* values or benefits one intends to preserve through the policy and, concomitantly, *how* best to implement a policy that achieves those goals. (See Chapter III for further consideration of the "what" and "how" questions.)

This thesis assumes, in other words, that decision-makers should consider the following questions when weighing future policy directions. Has the current agricultural lands preservation policy preserved what the implementing legislators and administrators hoped it would preserve? Are the actual effects of the policy (the consequences of preservation) what they hoped to achieve? And perhaps most importantly going forward, how do current policy-makers define their desired goals: what are the values and benefits they hope to further and did the existing policy advance these objectives? To answer these questions, it is first necessary to gain a comprehensive, integrated understanding of the policy's actual consequences. A better empirical understanding of consequences is what this thesis strives to achieve.

B. Research Approach

This thesis project analyzes the effectiveness of Oregon's agricultural lands preservation policy in achieving its goals of maintaining EFU-zoned lands and preserving of such lands in "large blocks." The analysis will focus on the nine counties of the Willamette Valley, in aggregate, from the mid-1980s to 2004, with comparison to the aggregated counties of the rest of the state of Oregon. These nine counties were selected because of the specific concerned expressed by Oregon's legislature and governor in 1973 for the protection of the prime agricultural lands – the high concentration of Class I

and II soils as compared to the rest of the state – of the Willamette Valley. These particular high-value resource lands needed to be protected, they felt, from the potential encroachment of residential development and urban expansion. Such "developed" uses would take the lands out of the state's productive resource base by converting them through "the ravenous rampage of suburbia in the Willamette Valley" (McCall 1973). These concerns have continued to play into Oregon's land use planning policy, and the agricultural lands preservation policy in particular, over the subsequent decades. Land use planning theory has, in the meantime, further developed to include "smart growth" and "new urbanism" (which include the concept dense urban development), building upon some of the general concerns expressed in 1973.[4] For these reasons, this thesis will focus specifically on the Willamette Valley counties to determine how their aggregated trends compare with the rest of the state.

In addition to the concerns expressed by the governor and legislature, the diversity of Oregon's landscapes and agricultural production (discussed more in Chapter IV), make a regional analysis more useful for policy-makers than a statewide analysis.

> Agricultural issues tied to geographical regions within the state provide a more accurate representation of individual concerns than do state averages. The considerable diversity of Oregon agriculture masks many local issues, which means that policy development might productively draw upon the agricultural infrastructure that exists below state-level organization (Cornelius 1989, 149).

With this in mind, however, it is important to remember that even a regional analysis is somewhat broad and will inevitably generalize some of the particularities of localities at and below the county level. The focus of this thesis research on aggregated county-level statistics simply reflects the limits of this particular project; more localized, geospatial analysis may be useful at a future date.

Because there are no Oregon counties that are not subject to the agricultural lands preservation policy, there is no comparable geographic area within Oregon that could

[4] See, for example, the description of "new urbanism" and "smart growth" provided by the Congress for the New Urbanism at http://www.cnu.org/history (2009).

serve as a control case against which to evaluate effectiveness. Counties in other states would be subject to a number of additional independent variables (e.g., different soils, climate, regional economic factors, agricultural laws, development pressures, infrastructure) that would negate their comparative value. Nonetheless, consideration of trends in Willamette Valley and in the rest of Oregon – at least where such data is available – allows for some comparison between the two. In addition, where data is available, comparisons can be made between pre-policy change numbers and post-policy change numbers. Finally, it is worth noting the importance this analysis may have in a more general theoretical context, as the empirical data can shed light on how such an agricultural lands preservation policy plays out in this particular instance.

This analysis is also limited in time to the mid-1980s through 2004. One reason for this focus is that the legislature attempted to strengthen the agricultural land use laws by restricting non-farm uses in exclusive farm use (EFU) zones in 1989 and by changing the rules for dwellings and lot sizes in 1993 (Sullivan 2000, 458). Second, because the state did not require counties to provide information about conversion of agricultural lands until 1987, there is no comprehensive, applicable county-level land use data from before this time (DLCD 1999, 2). Regardless of missing data, however, the substantial changes made to the agricultural land use laws in 1989 and 1993 provide logical delineation points for a policy effectiveness analysis. These statutory changes represent an attempted progression from "weaker" to "stronger" to "even stronger." While many other changes have been made to the preservation policy over the years, these represent significant milestones (Sullivan 2000, 458). This project therefore considers the extent to which those statutory changes affected agricultural land conversion rates and the state of the agricultural economy in the Willamette Valley.

There is no single approach to analyzing the effectiveness of Oregon's farmland preservation policy that will answer all questions. The approach chosen will inevitably illuminate particular aspects of the issue more than others. Some previous researchers

have approached the study of agricultural preservation in Oregon from an economic perspective, others from a geospatial perspective, and still others from an analysis of regulatory compliance. (See Chapter IV for further discussion.) All these approaches are useful tools for achieving a broader understanding of the policy's effectiveness. The objective of this thesis project is to build upon and complement existing research while also shedding light on aspects of the issue not previously analyzed in this manner.

The contributions of this particular analysis lie in the aggregation of years' worth of county-level land use data provided in the Exclusive Farm Use Reports published annually by the Oregon Department of Land Conservation and Development (DLCD); in the comparison of farm and non-farm use and division trends at the regional (i.e. Willamette Valley) and state levels; and in comparison of trends before and after the progressive legislative changes to the state's agricultural lands preservation law. These data analyses will shed light on the question of whether these legislative changes have, in fact, strengthened the state's ability to preserve agricultural lands in the critical Class I and II soils of the Willamette Valley (with concomitant redirection of development to the less valuable soils of eastern Oregon). Specifically:

> (1) Have the changes helped the state to retain more total land designated as exclusive farm use (EFU)?
>
> - How much EFU land has been rezoned?
> - How much land has been converted to other uses as part of urban growth boundary (UGB) expansions?
>
> (2) Have the changes helped the state to preserve EFU lands in "large blocks" by restricting other uses on them?
>
> - How many farm and non-farm dwellings have been permitted on EFU lands?
> - How many non-farm uses have been permitted over time on EFU lands?

- How many divisions on EFU-zoned lands have been approved?

(3) Do trends in population, number of farms, and acreage in farms provide further insight into these questions?

The data collected by the DLCD from counties from 1987 to present directly address the first and second questions, but their individual presentation in annual EFU reports limits their usefulness for long-term trend analysis of the questions above – unless aggregated and compared at the regional and state levels, as in this thesis. Population data and information from the USDA Census of Agriculture also shed further light on the information gleaned from the DLCD reports.

C. Data Collection and Analysis

1. Overview

As noted by the Natural Resource Conservation Service (NRCS), analysis of land use is often not hampered by lack of data (1996, 24). Paradoxically, analysts may find themselves overwhelmed by the amount and variety of available data, thereby finding it difficult to tell a comprehensive, yet understandable, story of what is actually happening on the land. The challenge, the NRCS finds, is to use the data in such a way so as to paint a picture in terms of both space and time – such as the conditions within a particular region over a specified period of time (24). In this way one can evaluate policy effectiveness: is "our path ... one of improvement or deterioration?" (NRCS 1996, 24). Much like the study conducted by consultants Beaton and Hibbard (1991, 10) for the DLCD, the purpose of this research project is to identify trends in agricultural land use in the Willamette Valley and the relationship of these trends to changes in land use policy.

Various sources exist through which one can obtain data for analysis. For an understanding of land use trends, National Research Initiative (NRI) data illuminates urbanization and conversion trends on a national scale based on analysis of aerial photographs and remote sensing data (Olson and Olson 1999, 22). For purposes of this research project, however, the data compiled by individual counties and presented by the

DLCD – which, unlike NRI data, specifically tie land use to particular policy measures and regulations – were chosen as the most accurate way to assess the actual effects the laws associated with Goal 3 have had on lands in the Willamette Valley. In addition, the DLCD data focus on residential development *within* existing EFU-zoned land (as set forth in Goal 3), while NRI data recognize only that land immediately surrounding the dwelling as residential – and so would not, for example, recognize the conversion of the entire twenty acres of agricultural, EFU-zoned land to residential property in the same manner as would DLCD data (Olson and Olson 1999, 24). In this way, depending upon how one defines "development," the NRI may significantly underestimate the extent of conversion, reporting large-lot residential parcels as agricultural land (Olson and Olson 1999, 24).[5] Because Oregon's land use laws specifically set forth a goal of "large blocks" of agricultural land and a system of EFU zoning, the NRI data simply does not correspond in a way useful to understanding the effectiveness of Oregon's policy. This research project therefore utilizes DLCD data as the most appropriate sources for this particular analysis.

According to the DLCD, three key factors are crucial for understanding land preservation and conversion trends under the state's land use policy:

> (1) the total amount of land designated as EFU, including the number and size of designated parcels, rezonings, and urban growth boundary (UGB) expansions;
>
> (2) the identification and extent of non-farm uses permitted in EFU zones; and
>
> (3) the number of farm and non-farm dwellings permitted on EFU-zoned land (DLCD 2006a).

Based on information provided by the counties, the DLCD analyzes trends related to these three factors when assessing its current policy (DLCD 2006).

---

[5] This is not to say, however, that the NRI data is not useful for other purposes, such as general comparisons.

2. Data Analysis Plan

Because the DLCD data relates specifically to the state's land use laws and regulations, much of it is useful for this project. The annual farm reports provide data relating to two general categories: (1) dwellings (both farm and non-farm) and (2) land uses and designations. When aggregated, the data in these two categories illuminate the question of the effectiveness of Oregon's agricultural lands preservation policy over time (and in light of the 1989 and 1993 changes). Each element in the data analysis addresses one of two questions: (1) how effectively has the state's policy maintained a total amount of EFU-zoned lands, and (2) how effectively has the state's policy preserved EFU-zoned lands in "large blocks," thereby preserving the agricultural character and economic fabric of agricultural regions?

The specifics of this data and its usefulness to this particular project are presented in Table 1.

Table 1. DLCD Data and Relevance to Research

DLCD Data Description	Relevance to Research Question
Number of farm dwellings approved - pre-1994 standards for new and replacement dwellings; accessory dwellings - post-1994 standards for new dwellings ($80,000 income; non-high value/acreage; non-high value/income; and capability); farm help dwellings; replacement dwellings	To what extent have "large blocks" of agricultural lands been preserved? Specifically, how did changes implemented in 1993 and 1994 affect the number of farm dwellings approved? Do differences exist between the Willamette Valley and Oregon in general?
Number of non-farm dwellings approved - pre-1994 standards for non-farm dwellings - post-1994 standards for non-farm dwellings	To what extent have "large blocks" of agricultural lands been preserved? Specifically, how did changes implemented in 1993 and 1994 affect the number of non-farm dwellings approved? Do differences exist between the Willamette Valley and Oregon in general?
Number of farm divisions approved	To what extent have "large blocks" of agricultural lands been preserved? Specifically, has the number of farm divisions approved changed over time? Do differences exist between the Willamette Valley and Oregon in general?
Number of non-farm divisions approved	To what extent have "large blocks" of agricultural lands been preserved? Specifically, has the number of non-farm divisions approved changed over time? Do differences exist between the Willamette Valley and Oregon in general?
Number and type of non-farm uses approved on EFU lands	To what extent have "large blocks" of agricultural lands been preserved? Specifically, how did changes to the law in 1989 affect the number of non-farm uses approved in Oregon?

Table 1. Continued

DLCD Data Description	Relevance to Research Question
Number of acres of agricultural land lost to UGB expansions	To what extent has the total amount of agricultural land been maintained? Specifically, how much total agricultural land has been lost to UGB expansions, and has the rate changed over time? How does this rate compare to the "expected" rate of loss to UGB expansions?
Number of acres of agricultural land rezoned to other uses	To what extent has the total amount of agricultural land been maintained? Specifically, how much total agricultural land has been rezoned to other uses, and has the rate changed over time?

In addition to the DLCD's county-level data, which is specifically tied to the EFU zoning system, this thesis will also consider population, number of farms, and acreage in farms, as described in Table 2.

Table 2. Additional Data and Relevance to Research

Additional Data Description	Relevance to the Research Question
Population	What level of development pressure has the Willamette Valley and state as a whole experienced, and how might this affect the total amount of agricultural land and preservation of EFU land in "large blocks"? How has the population of counties in the Willamette Valley changed over time? How do these trends compare to Oregon as a whole?
Land in farms by number of farms and acres	To what extent has the total amount of agricultural land been maintained? Specifically, has the amount of agricultural acreage (not defined as EFU) or the number of farms changed over time at the county or state levels?
Size of farms by average farm size and by size categories	To what extent have "large blocks" of agricultural land been preserved? Has the size of farms (not defined as EFU) changed over time at the county or state levels? Is there a correlation between size and urbanization?

Finally, to aid the interpretation of these complex land use and agricultural data sets, interviews with selected experts in the field are crucial. These experts can allow for a more integrated conceptualization of the state of the agricultural industry and land use in Oregon, in the Willamette Valley, and in individual counties and sub-county localities. The experts interviewed as part of this research project were the two most knowledgeable individuals in the state regarding the EFU program, agricultural land use, and the agricultural economy: Ronald Eber, the DLCD's Goal 3 expert, and Jim Johnson, the Oregon Department of Agriculture's (ODA) land use and agricultural economy expert.

CHAPTER III

BACKGROUND

A. Conversion and Preservation of Agricultural Lands

1. Farmland Conversion

To understand how Oregon's agricultural lands preservation policy came about, how it changed over time, and the issues that remain, it is important to note the weight many observers give to the health and continued existence of farmland. Given that much of Oregon's, and indeed the nation's, natural resources exist on private agricultural lands, preservation of these lands have been an enduring policy concern. Substantially less public funding goes toward the preservation of private lands as compared to public lands. As the Natural Resources Conservation Service (NRCS) notes, "[a] majority of the Federal commitment to conservation on private land today is accomplished through the U.S. Department of Agriculture, with annual appropriations of less than $2 an acre" – or five times less than the allocation to public lands (1996, 12).

Loss of agricultural land to development results from two kinds of growth, according to Heimlich and Anderson: (1) growth on the "urban fringe," or areas in metropolitan counties that are not dense enough to be "urban," and (2) growth "beyond

the urban fringe," or in rural areas often in non-metropolitan counties (2001, 2). While growth on the urban fringe results in low-density development (two houses per acre or less), growth beyond the fringe results in single-family houses scattered throughout the landscape. Although the latter growth is not "urban," it nonetheless still changes the surrounding landscape, and it may convert productive farmland to residential uses. It is this kind of growth that has the potential to result in the greatest amount of farmland conversion, according to Heimlich and Anderson, especially as larger-lot residential parcels become more popular in rural areas (Heimlich and Anderson 2001, 2).

Taking into account the analyses conducted by Beaton and Hibbard and others, the DLCD concluded that "[s]trong protection of farm and forest land is vital for Oregon's future economic health and prosperity" (1991, 1). Land use actions occur at the local level, DLCD found, but combine to create a serious erosion of the state's agricultural resources. Development tends to shift land from productive, commercial use of resources to non-productive, non-commercial residential uses (Beaton and Hibbard 1991, 1). Preservation of large blocks of agricultural lands is crucial for preventing these shifts toward non-productive land uses, according to DLCD. It maintains, therefore, that avoiding the loss of lands to non-resource-based uses requires state policy commitment to limitations on dwellings, non-farm uses, and land partitions in EFU zones (DLCD 1991, 2).

2. Arguments to Support Agricultural Lands Preservation Policies

As discussed in the next chapter, the arguments in support of Oregon's (or, indeed, any) agricultural lands preservation policy are based upon the premise that certain

benefits accrue from the conservation of farmland. The policy arguments explained below—food security and supply, economic stability, environmental protection, and preservation of landscape and cultural characteristics—all factored in, at least to some extent, to the Oregon legislature's motivations for passing the comprehensive land use planning law in 1973 (O.R.S. 215.243 2005).

These presumed benefits of preserving productive agricultural lands arguably include all three prongs of the term "sustainability": economics, environment, and society. As Porter notes, land use planners "must acknowledge and reconcile tensions between economic development, needs for social justice, and protection of the essential environmental qualities – the concept of sustainable development" (1997, 9). There are direct economic benefits, such as local sales and national exports, that bolster economic stability (Coughlin 1981, 16). But many also see other more intangible benefits – such as the maintenance of open space, landscape integrity, cultural heritage, and rural character – as deriving from the preservation of farmland (Coughlin 1981, 16; Freedgood 2002, 6). Heimlich and Anderson, for example, contend that development and farmland conversion affect communities in many ways:

> New development is a "shock," whose effects ripple through the economic, fiscal, environmental, and social fabric of a community, influencing employment, income, government tax revenues, quantity and quality of public services, and nonmarketed "public" goods related to the quality of life and the environment (2001, 28-29).

a. Food Security and Supply

Some stress the importance of an adequate agricultural land base for the nation's continued ability to ensure food security (Coughlin 1981, 16), a factor which is also noted in the 1973 Oregon legislature's findings (O.R.S. 215.243(2) 2005). The concept of food

security may include a number of sub-issues. First, the growing populations of the United States and other countries require the maintenance of a land supply adequate to produce the food necessary to feed them (Coughlin 1981, 16), unless a country is to rely upon imports. The American Farmland Trust (AFT) argues that the future price of food in this country will depend upon the ability to provide an adequate domestic food supply (1997b, 5). Second, agricultural experts are unsure how quickly additional advances in agricultural productivity will occur. Because of the uncertainties involved and the critical nature of the issue, some observers argue that a precautionary approach is advisable so that the United States does not underestimate the amount of farmland necessary to meet future needs (Coughlin 1981, 16).

Disagreeing with the food security argument, however, some argue that there is no looming crisis, at least not in the near future, because they believe that the nation's supply of agricultural land is currently under-utilized. Lynch cites to several studies that indicate food security will not likely become an issue in the foreseeable future (2003, 286). Libby additionally contends that the food-security discussion is actually "a red herring" in the agricultural preservation debate, serving to distract from the true motivations and goals behind the argument (2003, 313).

Regardless of the potential for a food security crisis, however, other food supply issues may remain. Heimlich and Anderson argue that development and conversion of farmland may reduce the availability of certain higher-value and specialty crops. As they note, "61 percent of U.S. vegetable production is located in metropolitan areas, but

vegetable production takes up less than 1 percent of U.S. cropland" (2001, 4).[6] While agriculture may continue to exist in developing areas, it may adapt to increasing urbanization by changing the products and services it offers. Higher land values and increasing farmer-neighbor conflicts may require more emphasis on high-value agricultural products, more intensive agricultural practices that allow for more production on less land, and operations that can exist more comfortably within an urbanizing environment. One can see the result of such forces in the fact that farms in urban fringe areas are generally smaller, produce more on less land, are more diverse, and tend to focus on higher-value products (Heimlich and Anderson 2001, 4). Such trends ultimately change the nature of the local food supply, with lands initially providing more of some crops (e.g., vegetables),[7] but eventually ceding to development as pressures increase (Rashford et al. 2003, 6; Livanis et al. 2006, 916). Market values for agricultural commodities may initially increase, therefore – a positive benefit when viewed from an economic sense – but the increase may not hold as more agricultural lands convert to other uses. What food is produced, and where, overlaps with economic effects, as trends toward or away from higher-value production will have an impact on the agricultural and general economies.

b. Economic Stability

As mentioned previously, the presumed economic benefits associated with farmland preservation are probably the most used as justifications for Oregon's policy.

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[6] The nature of "metropolitan areas" may differ significantly, however, even within the state of Oregon and within the Willamette Valley. Land use in the metropolitan Portland area is presumably quite different than land use in the Eugene-Springfield metropolitan area.

[7] This may be somewhat less true in the Willamette Valley, where non-food crops such as grass seed or nursery plants are also prevalent.

Elements of the economic benefit arguments are summarized below. It is certainly possible to argue that maintaining lands as agricultural creates costs as well, or to argue that conversion of agricultural lands to residential uses occurs precisely because people (as opposed to the government) do not value farmland protection. This section does not attempt to refute these possibilities. It is worth recognizing that many of the economic benefit arguments arose *in response* to arguments that agricultural lands do not tend to create economic benefits (i.e. that other land uses are more economically valuable). A nuanced economic analysis of the pros and cons of agricultural lands preservation would be valuable, providing better insight into the contexts in which preservation does help the economy and those in which it does not, as it seems unlikely that preservation either produces only benefits or only costs in an economic sense.

The AFT argues that communities often falsely view development as a means of generating income, even though development does not actually tend to result in increased local economic sustainability (AFT 1997). Instead, critics of pro-development policies argue that conversion from agricultural to residential lands tends to increase property taxes and the burden of infrastructure costs (Freedgood 2002, 6). After conducting eighty-three cost of community services studies (COCS), the AFT concluded that agricultural and other open resource lands provide communities with a net financial benefit because they require little public infrastructure as compared to developed lands. This is true, the AFT contends, even when one accounts for the fact that agricultural lands are subject to preferential tax rates (AFT 1997).

> [Agricultural lands] typically make a contribution similar to that of commercial and industrial lands. … [B]ecause they are included in a larger land use sector of "undeveloped" lands, COCS studies' particular contribution to the literature is to

> show that working and open lands augment "developed" commercial and industrial uses. In many cases, without them the commercial/industrial sector would be unable to balance the community's budget (Freedgood 2002, 8).

The point of these studies is not that agriculture provides extensive revenue to local communities; it does not. Rather, the AFT makes the argument that conversion from agricultural to residential uses may not only fail to provide net local revenue, but may actually drain the local economy in ways that are not always anticipated or acknowledged. The COCS studies suggest that localities' assumptions of benefits they will gain from certain policies do not necessarily match up with the actual effects once those policies are implemented. Of course, it is also possible that a policy's actual benefits *do*, in fact, achieve the intended effects. The potential for disconnect (whether actual or simply argued), however, does highlight why studies of policy effectiveness are critical (AFT 1997). Nonetheless, one can debate the AFT's argument in a policy sense: is farmland preservation worth limiting the free-market ability of the state's citizens to use the land as they see fit and, if state policy-makers answer in the affirmative, is top-down, regulatory-based protection the best solution? These questions cannot be answered by data alone, but rather fall within the realm of policy.

Agriculture benefits community economies in other ways as well. Perhaps most obviously, agriculture provides local jobs and adds to the state gross domestic product (GDP). When a critical mass of farmers exists, however, the local economy also enjoys the benefits of an agricultural infrastructure – businesses, services, and processors that cater to the needs of local farms (AFT 1997, 7). Thus, while agriculture may account directly for only a small percentage of the nation's workforce and GDP, it can exert a significantly greater influence on the economy because of the "interrelated web of

industries" that constitute the "food and fiber system" (Lipton 1998, 1). This web extends to include agricultural supply retailers, manufacturers, warehousers, mechanics, energy producers, transporters, miners, processors, creditors, brokers, marketers, and food retailers (Lipton 1998, 1-2). Lipton argues that, consequently, the true economic impact of agriculture at both the local and national levels includes the value of income and employment added by all the various related industries (Lipton1998, 5), although it is not usually analyzed in this way. Although agriculture affects the economies of both rural and metropolitan areas, Lipton notes that its impact in rural areas is more pronounced (Lipton 1998, 9).[8]

c. Environmental Protection

From an environmental perspective, the preservation of agricultural lands leads to both positive and negative consequences, with the balance arguably (but not clearly) leaning toward a net ecological benefit. The 1973 Oregon legislature did not directly address the environmental effects of preservation, although the lawmakers probably had them in mind when noting the importance of "open land" as a means of conserving the natural resources that provide "physical . . . [and] aesthetic . . ." benefits (O.R.S. 215.243(1) 2005).

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[8] Nonetheless, it is worth noting that a judgment about benefits of an agricultural infrastructure versus the benefits of residential development or other non-agricultural uses is necessarily a policy decision. This thesis does not argue that agricultural land uses are inherently better – simply that there are arguments put forth by some to support their preservation. The decision among land uses, and among their related benefits, is subjective. But if policy-makers state as their goal the desire to preserve agricultural lands for these stated reasons, then it is worth considering the effectiveness of the policy in achieving the goals desired – and also worth realizing that the goals of policy-makers may, in some instances, diverge from the collective decision-making process of the area's citizens (which, of course, creates the rationale for a policy to counteract the otherwise existing trends).

When discussing agriculture's environmental effects, it is important to remember that proponents of sustainable farming argue that the rise of industrialized agriculture has led to grave environmental consequences (e.g., Kimbrell 2002). Nonetheless, the AFT argues that, although agricultural practices may result in undesirable environmental effects through the use of extensive chemical and energy inputs, even the worst agricultural consequences are better than the alternative – i.e. development (1997, 6). The NRCS also appears to agree with this proposition:

> Urbanization brings streets and rooftops that run stormwater directly into drains and drainageways instead of filtering it naturally through the soil. There are new pollutants as well, such as oil leaked from automobiles or chemicals leached from suburban lawns (1996, 22-23).

In fact, Coughlin makes the argument that saving quality agricultural lands from development may even allow farmers to lessen their impacts on other natural resources, thereby allowing agriculture to remain or become more sustainable (1981, 16). If development on productive lands drives farmers to cultivate more marginal lands, they will require more inputs to achieve the same production (e.g., more water for irrigation, more chemical inputs, more energy usage for production and transportation) (Coughlin 1981, 16). In this way, preservation of high-quality farmland, such as that found in the Willamette Valley, arguably allows farmers to engage in less environmentally damaging agricultural practices. Regardless whether agriculture in general is an environmental "good," this argument finds that farmland preservation keeps agriculture from being as "bad" as it could be.

In addition to requiring fewer environmentally detrimental inputs, agricultural lands that are thoughtfully managed (not simply industrially farmed) provide

demonstrable tangible benefits such as wildlife habitat and forage, groundwater recharge, wastewater filtration, floodwater control, watershed protection, and clean air (Freedgood 2002, 46; AFT 1997, 7; Lynch 2003, 286). As 1000 Friends of Oregon notes, development poses twice the risk to endangered species as does ranching (2004, 16). Even low-density rural development can increase the impact of invasive species, detrimentally affect native species, and impair local water supplies (1000 Friends 2004, 17). According to 1000 Friends, agricultural and other privately held lands may in some ways be more critical to the nation's environmental health than public or wilderness lands, despite the traditional focus on these less easily developed lands (1000 Friends 2004, 16). "[P]rivate lands contain disproportionately high levels of biodiversity and habitat for rare species," but yet are also often highly attractive for urban development (1000 Friends 2004, 16). Proponents of agricultural lands protection argue that the ecological importance of many private lands, paired with the development pressures exerted upon them, necessitates a high policy prioritization for the protection of such lands. While private agricultural lands may not be the *best* land uses if environmental protection is the goal, they are arguably *better*

Preserving farmland may provide environmental benefits even if the land becomes too expensive for active agricultural operations. Heimlich and Anderson argue that other rural and environmental amenities may justify preservation regardless of actual agricultural production (i.e. regardless of economic or food security benefits) (2001, 44). Non-active farmland may, for example, revert to ecologically valuable (or, at least, more valuable) landscapes, such as forest or wetlands (Heimlich and Anderson 2001, 44).

Whether active or inactive, however, each piece of farmland must operate in the context of the overarching landscape in an environmental sense. Multiple farms and other land uses make up ecological landscapes. As the NRCS states, "[f]ew farms are large enough to encompass an entire landscape or watershed, and even those farms that are exceptionally large are ecologically linked to neighboring land, including nonagricultural land. Everybody is somebody's neighbor" (1996, 19).

Because of the interrelated character of landscape ecology, land fragmentation due to development poses environmental problems. Agriculturally fragmented lands are also ecologically fragmented lands, as parcels become divided and put to different and denser uses (1000 Friends 2004, 18). The fragmentation resulting from development also tends to lead to difficulties in achieving cooperation or consensus on environmental stewardship: land that used to belong to several farmers may belong to hundreds of individual landowners once it has been sold and developed. An increase in the number of landowners appears likely to result in a concomitant increase in divergent opinions and interests (NRCS 1996, 23).

For these reasons, environmental sustainability and agricultural preservation are not necessarily oppositional policy goals, but rather may be able to work together in a complementary fashion. In fact, according to the United States Department of Agriculture (USDA), land use programs – whether termed agricultural or conservation – have more effect on the environment than they do on agricultural production (Lubowski, Claassen, and Roberts 2006, 29).

For all the environmental benefits potentially provided by agricultural lands, however, it is important to note the NRCS's caveat that "agricultural land alone cannot

possibly offset the need for less-polluting urban and industrial activities" (1996, 5). Agriculture itself, furthermore, is often not a model of environmental stewardship, often resulting in negative ecological and social impacts on surrounding lands and communities (although more environmentally sensitive farming methods are known and used by some farmers, such as organic, biodynamic, and "sustainable" agriculture). Nonetheless, proponents of farmland preservation argue that agriculture remains less destructive overall than the alternative of urban development (Heimlich and Anderson 2001, 3).

Again, the benefits of agricultural land uses versus the benefits of more traditional environmental protection must be weighed in the policy arena. Without attempting to argue that agriculture necessarily is an environmentally positive force, at least as conventionally practiced (e.g., with chemical inputs, deleterious run-off effects, or loss of soil fertility), proponents of preservation do make such arguments to support the implementation of farmland preservation policy, and as such it is worth noting that it serves as a rationale. This thesis does not attempt to make a judgment as to the environmental values of agriculture, but rather notes how observers have used them as justification.

d. Preservation of Landscape and Cultural Characteristics

Finally, many farmland preservation advocates point to the additional intangible benefits of open space, landscape character, and community identity, as also noted generally in section (1) of the 1973 Oregon legislature's finding (O.R.S. 215.243 2005). As the Natural Resources Conservation Service ("NRCS") evocatively puts it:

> Our farm, our neighbors' farms, and all other private land comprise a majority of the American landscape. As we use our land, we paint our individual and

> community portraits on the land. Done well, these portraits can be a source of pride (NRCS 1996, 5).

The rural landscape, according to this view, is more than simply open land; it is "a working landscape" (Heimlich and Anderson 2001, 44). As such, it is an expression of community character and values.

The importance of the rural landscape may be somewhat explained as "sense of place." As Howard describes:

> [S]ense of place is about landscapes of which people are proud: they are landscapes influenced by human work and craftsmanship, and the perception that this work is done well for good reasons. It is also about landscapes in which people live comfortably: they are landscapes that are understood and known as hearth and home and where people feel they belong (1998, 151).

The Jeffersonian, agrarian system of values (founded, of course, upon values stated several centuries ago) is based in the land itself: "place creates virtues while serving as the point of application for the virtues" (Howard 1998, 157). Some further argue that farming is "a way of life" that is "essential to the social well being of the Nation" (Szlanfucht 1999, 337-38). The NRCS states the concept of sense of place perhaps even more simply: as a desire—for farmers and non-farmers alike—to maintain a bond with the land (1996, 15). True sustainability, the NRCS asserts, depends upon these connections (1996, 15).

Bahls, however, claims that such rationales are insufficient. It is confusing, he contends, to see the Jeffersonian ideal of agricultural virtue still so alive in modern times, especially given how few Americans actually have any current connection with agriculture. While Bahls finds that the agrarian ideals may not be entirely misguided, he questions whether they provide sufficient reason in the face of so many other issues that

need financial and policy attention (1997, 323-24). The best justification for farmland preservation, he finds, is the protection of open spaces and rural character, not simply preservation of family farms for the maintenance of civic virtues (Bahls 1997, 328).

The AFT addresses critics of agricultural preservation by pointing to the varied social, economic, and environmental benefits, including the maintenance of landscape and cultural characteristics. While the "highest and best use" of land may appear to some to be development, this seems true, at least according to the AFT, only if one ignores the non-market values associated with agriculture (which certainly may be difficult for individual landowners to do in light of financial realities) (1997, 9).[9] Since landscape and cultural benefits tend to be difficult amenities to which to assign market prices, the only observable price may be the land's value for development, according to Heimlich and Anderson (2001, 4). In addition, a number of market distortions affect the ability of agriculture to compete "fairly" with other land uses in the free market. For example, the deduction for home mortgages confers an advantage to residential development, and artificially low prices for gasoline allow homeowners to live further outside cities (AFT 1997, 9). In this sense, policy-makers relying only on economic models may underestimate the value and variety of benefits provided by farmland preservation unless they take account of the externalities and potential market distortions.

3. Arguments about Causes of Agricultural Lands Conversion

Understanding the possible reasons *why* farmland converts to developed uses is arguably at least as important as understanding the benefits that accrue from preserving it.

[9] AFT's argument is subjective also, of course, and must be considered only as another rationale used by some observers and policy-makers to justify the implementation of farmland preservation laws, which ultimately do tend to go against the apparent collective wishes of the decision-making public.

Without a solid conception of why something occurs, it is difficult to draft a policy that will address the true cause (or causes). Nonetheless, although observers generally agree about the universe of factors that contribute to conversion of agricultural lands, they do not necessarily agree which factors are the most important, which highlights the interplay of multiple causes. To the extent there is disagreement about causation, one could reasonably expect there to be disagreement about solutions. This thesis presents reasons that have been put forth by various observers so that those interested in Oregon's agricultural lands preservation policy may remind themselves of the universe of possible contributing factors.

This section accepts the assumption that conversion of agricultural lands should be limited. Because farmland preservation policies (and, in particular, Oregon's agricultural lands preservation policy, as discussed in Chapter IV) necessarily presume that conversion has negative effects, at least if allowed to occur without limitations, this thesis likewise presumes such results for purposes of analyzing the effectiveness of Oregon's policy. This section presents an overview of the arguments and rationales only, but does not represent an argument that either in favor or in opposition. This paper should not be read as an attempt to solve this larger debate.

To some, the various needs associated with population growth are the key, if not sole, influences of farmland conversion (Barnard et al. 2003, 320). Additional factors may augment the effects of population growth, such as smaller household sizes, consumer desires for large acreages and homes, and increasing consumer wealth. In fact, some argue that the cumulative effects of these consumption patterns, which augment

effects of population, may now actually exceed the effects of population growth (Barnard et al. 2003, 320).

In a different vein, Heimlich and Anderson argue that rural residential growth, and the concomitant farmland conversion, result from market failure (2001, 3). Consumers do not have the necessary information, they assert, when purchasing agricultural land to anticipate the effects that converting it to residential use will have on the surrounding landscape. Without community planning (such as, presumably, Oregon's comprehensive land use program), there is no institutional framework to guide the development process, leaving consumers to buy into the ideal of the existing rural open space – an ideal that will begin to erode as the development, to which they have contributed, alters the landscape. Their collective decisions, although small and seemingly inconsequential at the individual level, create overall changes in the landscape that are often not anticipated (Heimlich and Anderson 2001, 37). This market failure leads to a situation in which "[i]naccurate judgments about future landscapes are locked in because development is irreversible" (Heimlich and Anderson 2001, 4).[10]

Others such as the AFT argue that increasing consumption of land is due not only to changes in consumer wealth, but also to "a weak farm economy and [similarly to Heimlich and Anderson's argument] little or poor community planning—especially in rural areas" (Freedgood 2002, iii). Persistent disparities between the relatively strong general economy and a relatively weak agricultural economy provide both developers

[10] The market can only "fail" in an economic sense, of course, to the extent that it does not actually lead to the achievement of society's goals or is not economically efficient. One can debate the appropriate goals or the true definition of an "efficient" economy. These discussions inform the policymaking process – and in some cases are the perceived justification for government intervention in social and economic processes.

and farmers with incentives that foster development and conversion. This is because the agricultural land becomes less affordable for the farmer, but more affordable for the developer when compared to land in more urbanized areas (Freedgood 2002, 2). In economic terms, the opportunity cost of maintaining land in agriculture increases as the market price for developable land increases (Kline and Alig 1999, 5-6). As the value of land increases, more productive farmland is less likely to develop than less productive farmland, where the opportunity costs are less or absent (Kline and Alig 1999, 7). In other words, according to this argument, a productive farm generates enough profit to resist conversion for a longer period of time, whereas a less productive farm will sooner reach a point where the market value of its land is worth more than its productive potential. Similarly, agricultural landowners with greater expertise or commitment to an agricultural lifestyle may be less inclined to develop their properties, because they will tend to operate more productive farms (Kline and Alig 1999, 7). Despite the tendency of a less productive farm to convert in the face of rising land values, however, developers arguably still "generally must pay a premium to bid the land away from its agricultural use or agricultural owners" (Shi, Phipps, and Colyer 2000, 93).

As agricultural land develops, real estate values rise and property taxes increase, and agricultural land consequently continues to convert to other uses – a self-perpetuating cycle. Combined with a general decline in agricultural profitability, farmers find it increasingly expensive to keep their land in agriculture (AFT 1997, 3). Farmers watching neighboring farms convert to development may begin to experience the so-called "impermanence syndrome," which leads them to decrease their long-term investments because of the perception that the local agricultural community is in decline (AFT 1997

13; 1000 Friends 2004, 12). Paradoxically, this "expectation of decline" may in fact constitute part of a "snowballing process," whereby expectation creates the eventual reality (AFT 1997, 3; Knaap and Nelson 1992, 127).

Other factors cited for agricultural conversion include farmer-neighbor conflicts, decreased satisfaction with the farming lifestyle, and stringent environmental regulations (AFT 1997, 3). In addition, Heimlich and Anderson point out that the creation of infrastructure tends to lead to even further development by building the necessary framework within which development can occur (2001, 21). Changes in technology also make it easier for individuals who live in rural areas to communicate with businesses in urban areas. In this way, city centers become less important, because both consumers and businesses can easily make transactions by telephone, facsimile machines, the internet, and other technological means. Today's knowledge-based economy is more dispersed, which also allows individuals more expanded options for residential locations (Heimlich and Anderson 2001, 23-24). Such an economy leads some residential consumers to choose a rural life (perhaps on formerly agricultural land) over an urban one.

In addition to general societal and economic factors, agricultural conversion also occurs because of the very nature of the land itself. Productive agricultural land tends to be well-suited for construction: it is often flat, drains well, and does not present physical obstacles to development (Freedgood 2002, 2). In comparison to forested lands, agricultural lands are much easier and cheaper to develop (Barnard 2003, 320). In addition, not only are areas that are warmer in winter well suited for high-value agricultural production, according to Barnard, they are also more desirable places to live for the same reason (2003, 320). The physical properties that make land suitable for

agricultural production also make it desirable for residential development (Lynch 2003, 299). This is not to say, however, that land's value for agricultural production itself affects the price the land will receive on the private market (Lynch 2003, 286).

Finally, land desirable for urban development is especially closely linked to land that is desirable for vegetable production; the qualities necessary for vegetable production are also desirable for development (i.e. temperature, water supply, level land, and good soils) (Heimlich and Anderson 2001, 41). Because existing agriculture in urbanizing areas tends to produce more intensively, vegetable production may actually increase in these areas for a while—at least until it becomes too expensive not to convert the land to residential use. Yet urbanization also has negative consequences for vegetable production because of neighbor conflicts, theft, pollution, vandalism, and restrictions on water and land use (Heimlich and Anderson 2001, 41).

B. Farmland Preservation Policies and Goals

Because most observers view farmland conversion as the result of complex social and economic forces, various state and local governments have developed and implemented a number of techniques for slowing the tide of conversion (at least as perceived by those who do, in fact, believe that it is occurring). Oregon's policy is just one of many approaches employed throughout the nation; it is in light of the variety of possible approaches that an analysis of the effectiveness of Oregon's particular strategy is important. Just as observers disagree about the extent to which, and why, farmland conversion is actually a problem, they also disagree about how to address the problem. Government policy-makers inevitably choose certain methods from the overall toolbox and apply them in various combinations. The end result is an arsenal of regulatory

mechanisms that allows government to attack the problem from a number of angles. Ideally, the techniques should relate to each other in a complementary fashion, filling existing gaps and strengthening the other techniques without working at cross purposes.

Before determining the appropriate method or methods for preserving farmland, it is important to consider the goals of farmland preservation. If not all stakeholders agree on the ultimate goals, this may result in differing views of the preferred preservation technique. Possible goals that may influence the choice of farmland preservation policy may include:

(1) preservation of farmland most at risk for conversion (Lynch 2003, 286);

(2) preservation of productive farmland (e.g., productive soils, high-value crop production) (Lynch 2003, 286);

(3) preservation of maximum acreage (e.g., number of farms, size of farms) (Lynch 2003, 286);

(4) preservation of contiguous farmland (Lynch 2003, 286); and

(5) preservation of agrarian values (e.g., sustainability, pastoralism, healthy food, work ethic, community) (Donahue 2003, 35).

Libby explains the preservation policy debate as one of how best to achieve efficiency: "how much farmland is enough; what is the best use for a particular parcel of farmland; and what is the best mix of farmland overall" (2003, 304). The effectiveness of the private market in achieving efficiency may depend upon the goal one hopes to achieve. Libby argues, for example, that the market cannot accurately value some benefits provided by agricultural preservation because of "high exclusion costs" (2003, 305). For this reason, the ultimate policy choice may not involve efficiency per se, but

rather consideration of "whose preferences are expanded and whose preferences are reduced under the various policy mixes" (2003, 306).

Policy goals, once chosen, can be achieved by either "carrots" (i.e. incentives) or "sticks" (i.e. regulations) (AFT 1997, 17). Oregon's program, explained in more detail in the next chapter, falls into the "sticks" category: it requires and/or prohibits certain actions. Top-down growth management has appeal in that it makes the results relatively clear, while incentives may take longer to work or may not work as well in some contexts. On the other hand, critics of regulatory means for goal achievement have pointed out the burden that such laws may impose upon farmers: the growth management laws, by restricting private property rights (e.g., through zoning) may reduce the price a farmer can get for his or her land on the market (AFT 1997, 17).

The technique of agricultural zoning (i.e. Oregon's EFU zoning system) presents both benefits and drawbacks, according to observers. On the positive side, zoning (1) allows for the protection of extensive areas without great expense or implementation time, (2) reduces farmer-neighbor conflicts; (3) suppresses sprawl, (4) maintains low infrastructure costs, (5) provides stability for farm investment decisions, (6) is already familiar to the general public, and (7) is flexible and open to modifications (AFT 1997, 50; Libby 2003, 309). Negative aspects, on the other hand, may include (1) impermanence, (2) monitoring and enforcement difficulties, (3) annexation potential by municipalities, and (4) reductions in property values (AFT 1997, 50; Libby 2003, 309).

There is certainly disagreement about whether the above pros outweigh the cons or vice versa. Ultimately, the social and economic contexts of communities affected by public policies may determine effectiveness – and, therefore, the type of policy that

should be chosen in the first place (White 1998, 115). What might work in Oregon might not work in a Midwestern state, or what might work in one region of Oregon itself might not work in another. Policy-makers must also weigh whether it is most desirable to obtain public support for a program, or whether the problem requires policy-makers to go against the public will with top-down, regulation-based zoning rules that might be less popular. This thesis presumes no correct answer to this complex question. Presumably, however, the choice will have an impact on the policy's ultimate effectiveness.

CHAPTER IV

AGRICULTURAL LANDS PRESERVATION IN OREGON

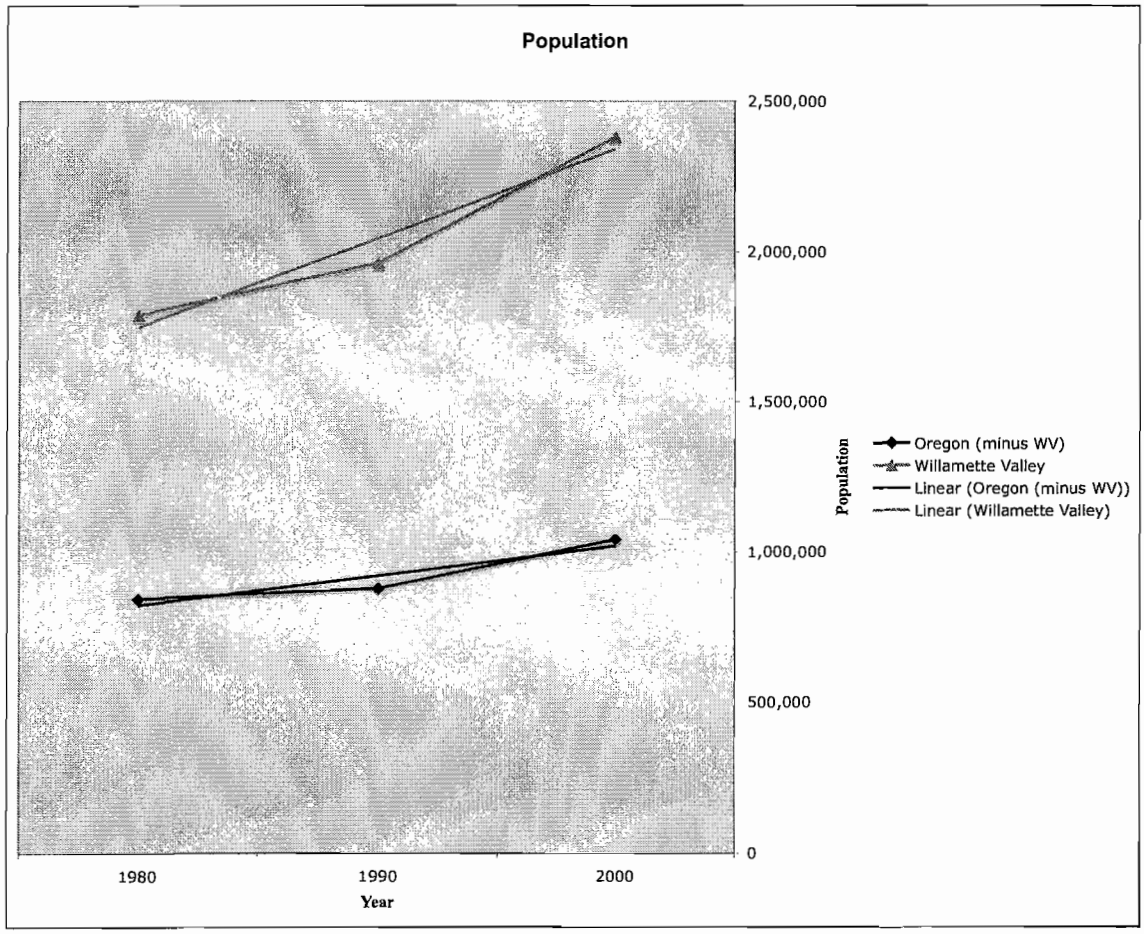
A. Oregon's Agricultural Lands Preservation Policy

1. Background

The Oregon legislature laid the foundations of today's comprehensive land use program in 1973 with the passage of Senate Bill 100. This bill developed in response to a concern – as voiced so passionately by then-governor Tom McCall – that the state would lose its most productive farm and forest lands to urbanization (Azuma et al. 2002, 5). Early drafts of the bill, in fact, focused exclusively on farmland conversion threats in the Willamette Valley because of the potential negative effects (as perceived by the legislature and governor) of high population growth on high-value resource lands (Knaap and Nelson 1992, 131).

As can be seen below in Graph 1, the nine counties of the Willamette Valley have, in fact, experienced a higher rate of population growth over the subsequent decades than has the rest of the state (all counties not except the nine in the Valley).

Graph 1. Population



In the year of its passage, the Valley reportedly lost 30,000 acres of farmland to urban development (Knaap and Nelson, 132). To address such threats, the state developed a series of statewide planning goals, including Goal 3 (one of Oregon's eventual nineteen statewide planning goals), which mandated the preservation and maintenance of agricultural lands (Azuma et al. 2002, 5; LCDC 2006). Although the state

legislature had developed the EFU zoning system in 1961 to accompany its preferential farm tax program, EFU zoning in accordance with Goal 3 began in 1975 (DLCD 2006, 3; DLCD 1999, 3). By the mid-1980s, all cities and counties in the state had completed the comprehensive land use plans required by the law, including identification of residential and resource lands (Azuma et al. 2002, 5). In 1987 state requirements mandated that counties begin reporting all EFU zone changes to the state legislature and LCDC (DLCD 1999, 3). According to DLCD, approximately 56% of Oregon's privately owned land, or 15.5 million acres, was zoned as EFU in 2006 (DLCD 2006, 3). As 1000 Friends notes, the amount of EFU-zoned land is significant in comparison to the 1.6 million acres zoned as urban and rural residential lands (2006a).

Part of Multnomah County is subject to additional requirements – the even stricter federal land use rules of the Columbia River Gorge Commission and National Scenic Area Management Plan. One unique aspect of this Act is the aggregation requirement: landowners must "aggregate all substandard and contiguous parcels under common ownership for development purposes" (White 1998, 122). While landowners can construct dwellings on parcels if the dwellings are in conjunction with farming operations, they may not construct dwellings on every legal parcel that is part of a larger farming unit (White 1998, 122).

Over the years, Goal 3 has developed in response to legislative changes in the EFU and other land use laws. But as Knaap and Nelson note, two questions have remained central to the development of the agricultural lands preservation policy: "What constitutes farmland? And what should be allowed on such land?" (1992, 135).

Despite the initial requirements of Goal 3 and related laws, many observers remained concerned that agricultural lands outside the UGBs continued to convert to development. Counties approved a number of non-farm uses and allowed for the construction of non-farm dwellings on agricultural lands (DLCD 1999, 4). DLCD argued to the state legislature that stricter policies would ensure that dwellings allowed in EFU zones would actually be used in conjunction with commercially productive farm use (1991, 5). In response, the legislature adopted changes in 1989 that required approvals of most non-farm uses be compatible with commercially productive agricultural practices (Sullivan 2000, 457-58). In addition, the DLCD noted that allowing construction of dwellings on smaller parcels made it less likely that commercial farm production would continue (DLCD 1991, 5). The legislature responded to these concerns in 1993, making changes to the law intended to discourage development on agricultural lands in the Willamette Valley and encourage it elsewhere in the state (DLCD 1991, 4). These changes established minimum lot sizes for EFU-zoned lands and established new standards for farm dwelling approvals (Sullivan 2000, 458; DLCD 1996, 5).

According to DLCD in 1991, the preservation of large blocks of agricultural land constitutes the "overriding objective" of Goal 3 (2). Uses in EFU zones must relate to or be otherwise compatible with farm uses. Partitions of agricultural lands may occur only when agricultural enterprises will continue to exist despite the partitions, and landowners may construct dwellings only when such buildings would be "customarily provided in conjunction with farm use" (DLCD 1991, 2).

In furtherance of the 1993 legislative mandate, LCDC instituted an income test in 1994 to determine eligibility to build a farm dwelling on EFU-zoned land. Both the 1993

legislative changes and the new LCDC administrative rules went into effect during the 1994-95 reporting period (Eber 2007). The administrative rule allows the construction of dwellings on high-value agricultural land when there has been $80,000 in gross farm sales in two or three out of five years. The goal of this requirement is to limit dwelling construction to commercially productive agricultural lands – i.e. to preclude construction of residences on relatively non-productive "hobby farms" (1000 Friends 2006a). As argued by1000 Friends, the $80,000 income requirement is not as high as it might first appear, because this gross income figure actually translates to an estimated $14,500 in net income according their calculations.[11] According to 1000 Friends, a net income below the poverty for an average-sized family does not present a tremendous hurdle for a reasonably productive, functioning commercial farm (1000 Friends 2006a).

Through these regulatory requirements, the Oregon legislature instituted a regional bifurcation within the state: legislators hoped to limit divisions and construction of dwellings on high-value farmland – such as that in the Willamette Valley – while allowing for more opportunity to build on less productive agricultural lands such as the rangelands east of the Cascades (DLCD 2006, 3). These rules take into account regional differences within the state of Oregon by setting different requirements for farmland in the Willamette Valley, on the Coast, and in eastern and southern Oregon. The definition of "high-value farmland" ensures that the stricter requirements apply to the more productive agricultural lands of the Willamette Valley, thereby precluding rampant development. Consequently and as intended, far more non-farm dwellings are constructed

[11] The "gate" or market value of agricultural commodities sold is not the same as net farm income. Although the gate value might be high, other factors may chip away at a farmer's net income, such as water, transportation, or labor costs (Johnson 2007).

on the less-prime soils of eastern Oregon than in the Willamette Valley, according to 1000 Friends (2006c).

Not only do the EFU zoning requirements attempt to limit development in prime farmland, they also emphasize the preservation of agricultural lands in large blocks. Farmland in western Oregon must satisfy an 80-acre minimum requirement, unless the LCDC approves smaller lot sizes for certain counties (1000 Friends 2004, 3). According to 1000 Friends, preservation of agricultural lands in large acreages prevents the fragmentation of existing contiguous areas of land and preserves the "economies of scale" necessary for competitive agricultural production (2004, 10).

Azuma et al. find that a major goal of Oregon's land use program is the encouragement of denser development within areas that have already been designated as "developable" (2002, 19).[12] When developing their comprehensive land use plans, cities and counties generally took existing land uses into account. The resulting plans, therefore, identified "developable" areas that corresponded with urban areas. Agricultural conversion within these areas is arguably not actually a "loss," because it occurred according to plan (Azuma et al. 2002, 19-20). As DLCD notes, "we weren't trying to save this land (1999, 2). According to Azuma et al., "in 2002 there seemed to be significant additional room for expansion and development within areas that were zoned specifically as developable" (2002, 21). The goal of dense urban development appears to tie into the state's focus on preserving large blocks of agricultural land, as stated by the DCLD (1991, 2).

[12] However, this may be a more current understanding of the state's land use goals (as opposed to an express goal in 1973 when the law was initially developed), as concepts of dense urban development have developed more recently. See, for example, Center for the New Urbanism (2009).

DLCD analysis notes that "[o]nly recently have cities begun to exhaust the supply of land within their UGBs" (1999, 2), which suggests that the land previously identified as "developable" will get exhausted, requiring cities and counties to designate new "developable" lands. Considering that planners designated UGBs to include twenty years' worth of developable land in the mid-1980s, one would not expect to find many expansions of the boundaries within the last 20 years. But even if more expansions loom on the horizon, DCLD planning staff calculated in 1999 that cities in the Willamette Valley would only need to add an additional 15,000 acres to meet the demands of population growth (DLCD 1999, 3). According to DLCD, we should not expect dramatic UGB expansions because cities have learned to accommodate growth more efficiently (*ibid.*). It is possible, however, that DLCD has underestimated the extent of future UGB expansion, especially in light of the 19,046 acres added statewide in 2002 (mostly from expansion of the Portland UGB) (DLCD 2004, Table N), already more than 4,000 acres more than DLCD estimated would be necessary in the long term.

Nevertheless, it is arguable that development within planned "developable" areas may occur regardless of land use policies. As Azuma et al. note, "[b]oth before and after land use planning, forest or agricultural lands distant from urban or residential areas were less likely to be developed" (2002, 24). If development was unlikely to occur in rural areas far from metropolitan centers regardless of the implementation of land use policies, one could argue that the policies did not in fact encourage higher-density urban development. It may be the case that planners designated as "developable" those lands which they knew were likely to develop anyway. If so, development in those areas may be "planned," but also inevitable (and hence not limited by land use laws).

Another significant aspect of Oregon's current agricultural lands preservation policy is the specific focus on prime farmland as a crucial foundation of the state's resource base. It is this land that provides "the base for production of a wide diversity of crops with high gate value (initial sales from the farm) and high value added (income generated through additional or secondary processing)" (Beaton and Hibbard 1991, 4). Economically, therefore, prime farmland is worth far more than less agriculturally productive lands, even if it is simultaneously worth more for more urbanized land uses as well. Farmers can grow crops on these lands at less cost, and they can also produce a great diversity of crops (Beaton and Hibbard 1991, 4). Only a fraction of Oregon's agricultural lands constitute "prime" farmland, and the vast majority of those lands – 83 percent – are found in the Willamette Valley. Although these lands represent a small fraction of the state's total agricultural lands, they produced 48 percent of the gross agricultural product in 1987. And it is these key productive lands that are also most likely – nationwide, not simply in Oregon – to convert to developed, non-agricultural areas (Beaton and Hibbard 1991, 4).

The focus on prime farmland, however, does not necessarily take into account the intensity of use of such land. In fact, only 14.9 percent of prime farmland in Oregon was used as cropland in 1987, according to Beaton and Hibbard, a figure that is much lower than the 68 percent of prime farmland used as cropland nationally at the same time (1991, 5). Despite a possible tendency in Oregon to put prime farmland to other resource uses, Beaton and Hibbard note that intensity of production and the allocation of prime farmland to cropland alone are not only factors:

> [t]he arguments for preserving cropland and prime farmland are essentially inseparable, since *cropland represents lands currently allocated to most productive uses, and prime farmland represents lands with the highest potential for future productivity.* Either rationale can reasonably support land use policy (1991, 7) (emphasis in original).

It is also important to remember, according to Beaton and Hibbard, that farmers may grow certain high-value crops on non-prime farmland (1991, 7).

2. Complementary Farmland Protection Provisions

In addition to the land use program, Oregon also provides for farmland protection by two other means: (1) deferred taxation and (2) a right-to-farm law (AFT 1997, 152-69). Deferred taxation allows farmers to enjoy a lower tax rate when they use their land for agricultural purposes, making it more financially feasible for them to stay in the business of farming (AFT 1997, 152-69). If the farmer later takes the land out of agricultural production, he or she must pay the difference between the preferential agricultural assessment and the market value (1000 Friends 2004, 3). According to Beaton and Hibbard, however, it is possible that tax deferral may actually encourage hobby farms by enabling their continued existence despite their potentially "inefficient" land use (1991, 12). The right-to-farm law protects farmers from private and public nuisance suits and from local anti-nuisance regulations (AFT 1997, 178-79). These right-to-farm laws do not, however, protect farmers from the liability consequences of their drifting spray. In addition, even if farmers defend themselves successfully, they must still allocate the necessary funds and time to any nuisance lawsuits brought against them (1000 Friends 2006a).[13]

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[13] One can certainly debate the value of right-to-farm laws, especially if one seeks to change the impacts of conventional, chemically-based agriculture. Nonetheless, the laws do serve a complementary role in

3. Existing and Complementary Assessments of the Policy

Prior to this paper's analysis, a number of observers (both inside and outside Oregon) have lauded Oregon for the strength and successes of its statewide land use program, including the agricultural lands preservation policy (e.g., AFT 1997, 30; Rashford et al. 2003, 3). Although the AFT recognized that there are risks inherent in regulatory preservation strategies, it found that Oregon and Washington have achieved more success than any other states in using comprehensive planning strategies to preserve agricultural lands (1997, 30). Oregon's comprehensive, statewide mandate has served as a model for other states to emulate, even receiving accolades from the American Planning Association (Kline 1999, 5). Because of its comprehensive land use program and the use of UGBs, "Oregon is recognized as being the most successful State in separating rural and urban uses" (Heimlich and Anderson 2001, 56).

Not all view the policy in a positive light, although their critiques do not tend to argue that Oregon's policy does not effectively preserve farmland. In fact, their opposition does not seem to be directed toward the assumption that the policy *does* achieve its goal; rather, it appears to be with the choice of farmland preservation as a goal in itself (e.g., Hunnicutt 2006, 33-38; Leonard 1983, 64). Since this thesis focuses on the effectiveness of the policy, it will not address such normative questions as the appropriate level of private property rights or how much preserved farmland is actually necessary.

Nonetheless, there are those who argue that the laws are not strict enough. Schellenberg, for example, contends that Oregon's land use laws, rather than preserving

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protecting agricultural lands if such lawsuits have the effect of persuading farmers that they will be better off selling their farms (and hence possibly converting them to other land uses) than paying to defend. Which outcome is best is left for the reader to decide.

agricultural lands as intended, are effectively "giving away the farm" (1998, 987). This is occurring, he claims, because the state's agricultural zoning system allows for too many non-farm exceptions. Schellenberg argues that the legislature's apparent eagerness to continue adding exceptions for such things as golf courses and model airplane clubs in agriculturally zoned areas undermines the goal of avoiding adverse impacts on neighboring agricultural operations (1998, 990). UGBs, furthermore, represent a potential threat as they continue to expand and take in farmland. State laws requiring a 20-year supply of land within UGBs are inherently in conflict, he claims, with the policy goal of protecting the state's supply of farmland (Schellenberg 1998, 990).[14]

Knaap and Nelson also appear to agree that the laws should be stricter (1992, 158). They note that, while local implementation allows local governments to make individualized decisions based on their specific circumstances, it can also present difficulties. Local governments may choose not to protect farmland aggressively, allowing for partitions and development in many cases, without significant state oversight (Knaap and Nelson 1992, 158).

These differences of opinion about the policy's effectiveness highlight continuing uncertainty about its actual effects, as well as differing initial assumptions about preferred policy goals. While this thesis does not argue in favor of any particular policy goal, it does aggregate and analyze DLCD and USDA land use data in such a way that will provide helpful information to these debates. Although the data analyzed in this

[14] See also Rasche (1998) for a critique of the many approved exceptions to Oregon's EFU zoning system. The loss of farmland obvious to citizens driving the state's highways, he argues, does not result so much from UGB expansions as from expanded non-farm uses allowed in EFU zones (Rasche 1998, 1003).

thesis cannot answer all questions, it is useful for illuminating one perspective within the larger puzzle:

> The comprehensive and ambitious scope of Oregon's farmland protection program is known throughout the nation. Less well known, even in Oregon, however, are the impacts of these instruments on Oregon's farmland and farm economy (Knaap and Nelson 1992, 138).

Perceiving all the pieces in the overall puzzle will require combining the results of various analyses. Spatial analyses, for example, can provide useful perspectives of what is actually happening on the land – such as Azuma et al.'s analysis of dominant land use through comparison of aerial photographs, which found that the agricultural lands preservation laws encourage denser development and a decreased rate of conversion (2002). Spatial analyses might also be useful to evaluate the extent to which residential development on EFU lands threaten preservation efforts (1000 Friends of Oregon 2004), especially to gauge the level of fragmentation. Economic analyses may also prove helpful, although integration with spatial analysis might be difficult given the heterogeneity of agricultural lands and the simultaneous influence of multiple urban areas on the same areas (Shi 2000, 93). Analysis of changes in the intensity of agricultural production and crops planted in urbanizing areas (and the corresponding economic effects) can help policy-makers consider the long-term investment implications that policies may have on private landowners (Beaton and Hibbard 1991). Regulatory studies, such as those by Cho (2005) and Kline (1999), can show statistical effectiveness of policies in reducing development, but even within this category of means, the results can differ depending upon how the researcher focuses on the data. It is in this way that this

thesis data is most useful – as a new perspective to complement existing studies and findings.

B. Development and Conversion in the Willamette Valley

Although agricultural lands in the Willamette Valley are more geographically homogeneous than in the state of Oregon as a whole, the region is still incredibly diverse (Rashford et al. 2003, 5). Land in the Valley varies from densely populated Portland, Salem, and Eugene-Springfield to rural, as well as from flat to rugged (Rashford et al. 2003, 6). But it is only a relatively thin strip of land on either side of the Willamette River that provides this region with most of its agricultural productivity and diversity. As LCDC Commissioner Jim Smart noted in 1978:

> You can't overlook the fact that the best farmland in the Willamette Valley lies in a narrow ribbon. The state of Oregon is big, but with 52 percent in federal ownership, and the rugged terrain all around, the key to many types of agriculture in Oregon ins this narrow ribbon running through the Willamette Valley. Fly in a small plane along the River and you'll be impressed how fragile this land base is and how many people not associated with agriculture are trying to find a place to fit themselves into it (Leonard 1983, 66).

Because of its concentration of prime farmland, the Willamette Valley constitutes the most important agricultural region in the state, according to Beaton and Hibbard (1991, 8). While other parts of the state tend to focus on one or several types of crops, farms in the Valley produce a wide variety. But somewhat paradoxically, despite the importance of the region's agriculture to the state's economy, the Willamette Valley is actually *less* dependent upon agriculture relative to other regions of the state. This is due to both its higher population base and the greater diversity of its production (Beaton and Hibbard 1991, 8).

CHAPTER V

DATA ANALYSIS

In light of state, and indeed national, trends toward conversion of agricultural lands, this chapter analyzes the effectiveness over time of Oregon's agricultural lands preservation policy. The data analyzed in this chapter has been chosen to address the policy's effectiveness in meeting the specific goals of retaining total EFU-zoned lands and preserving agricultural lands in "large blocks" (as expressed in more detail on page 8). Focusing on the nine counties in the Willamette Valley from the mid-1980s to 2004, this analysis considers (1) DLCD data, which was collected specifically to measure compliance with the state's land use laws, and (2) population and USDA Census data, which demonstrates county and state trends in urban growth, farm profits and size, and extent of cropland.

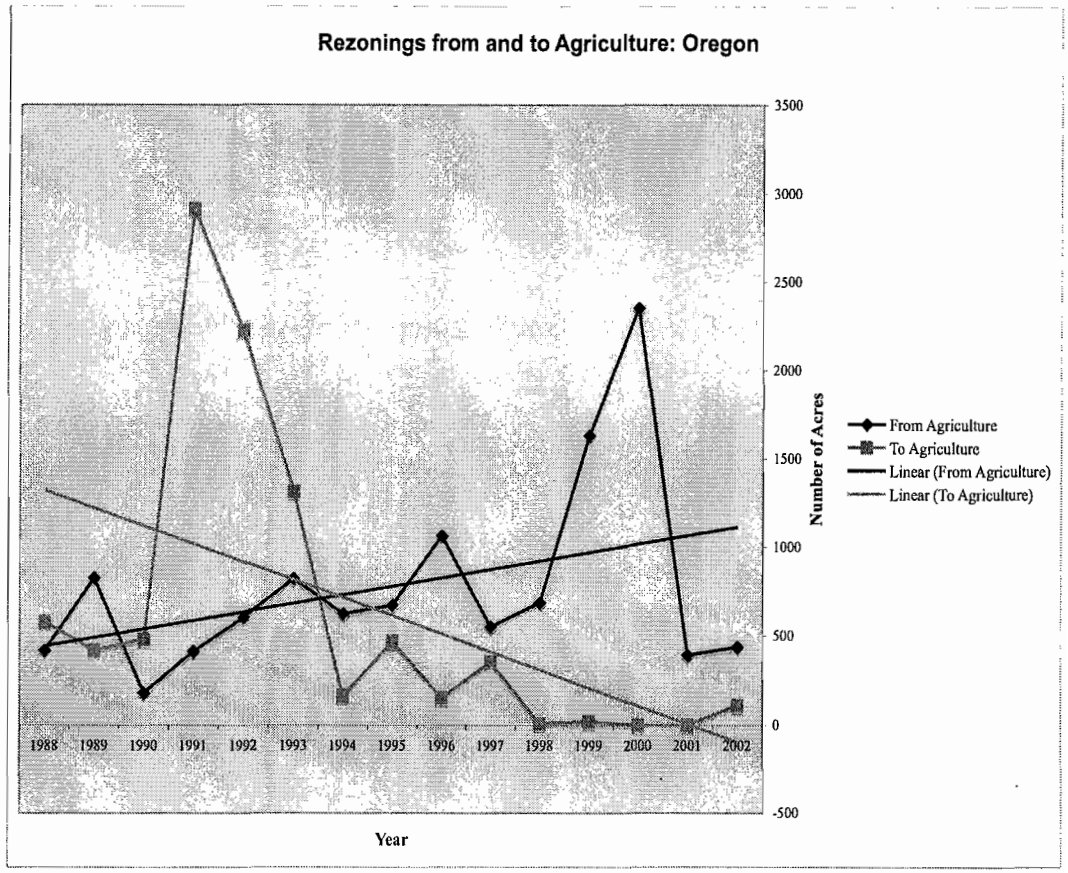
A. Have the Legislative Changes Helped the State to Retain More Total EFU-Zoned Lands?

1. How Much EFU Land Has Been Rezoned?

Analysis of agricultural lands rezones to other uses in the state of Oregon answers the questions: how much total agricultural land has been rezoned to other uses? Has the

rate changed over time? This data addresses the state's success at maintaining total EFU lands, regardless of the dwelling or land division rules. The data is available from the DLCD EFU reports only for the state of Oregon as a whole, which limits analysis to the general statewide trend, with no comparison available for Willamette Valley counties. See Graph 2 below for total rezonings.

Graph 2. Rezonings from and to Agriculture: Oregon



As Graph 1 demonstrates, Oregon as a whole is experiencing an upward trend in rezonings from agricultural to other lands uses and a decline in rezonings from other land uses to agriculture. It is possible, however, that the higher acreage amounts rezoned from agriculture to other uses in 1999 and 2000 are anomalous; if these years are ignored, the trend remains relatively constant. There was, in fact, another, much more dramatic peak in 1987, which saw a major rezoning of 14,433 acres, mostly due to 14,066 acres rezoned from agricultural to industrial.[15] Inclusion of the 1987 data would suggest an overall downward trend. Regardless, Graph 2 does demonstrate an overall net loss of EFU-zoned lands in Oregon – with the trend lines indicating an increasing rate of loss. This suggests that the agricultural preservation policy has not been entirely effective in maintaining total EFU-zoned lands.

2. How Much Land Has Been Converted to Other Uses As Part of UGB Expansions?

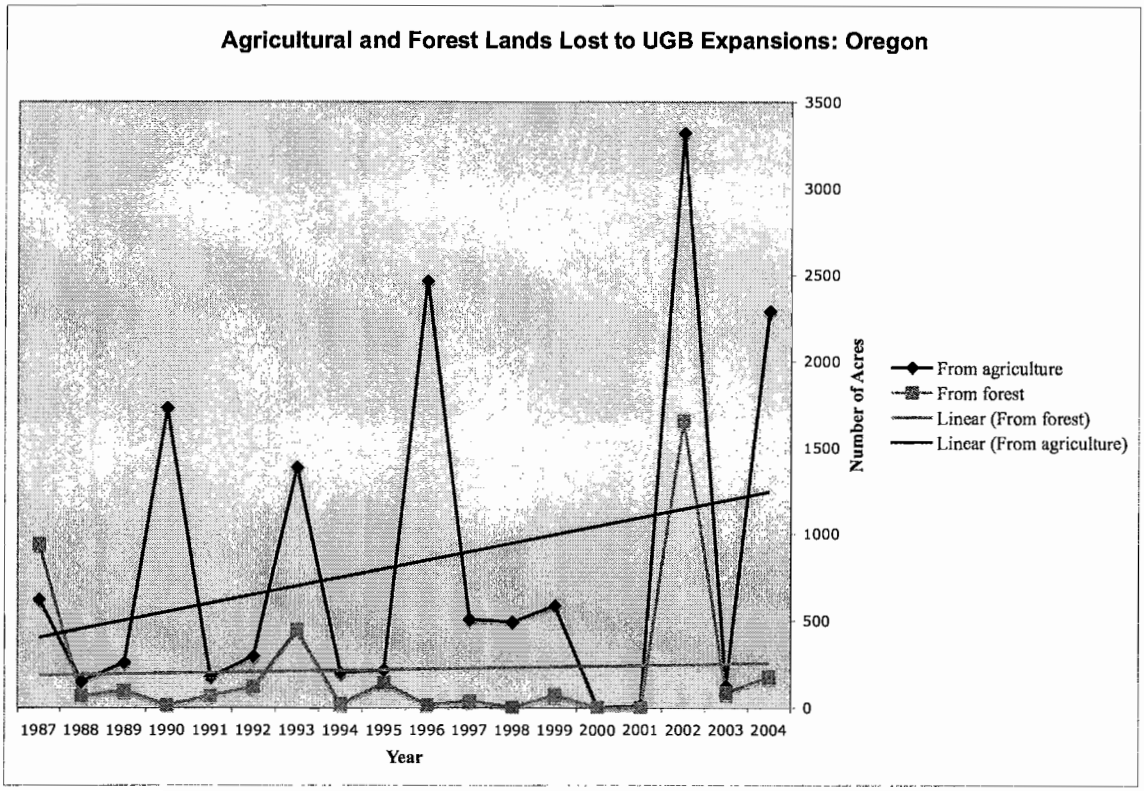
Analysis of the amount of agricultural land lost to UGB expansions in the state of Oregon answers the questions: how much total agricultural land has been converted to other uses due to UGB expansions? Has the rate changed over time? How does it compare to loss of other resource lands (i.e. forest)? These questions address the issue of whether, regardless of the dwelling approval and non-farm use approvals rules, the state is maintaining EFU-zoned lands.

The goal for UGB expansions is for planners to expand into the "best" lands last (Eber 2007). This data is available in the Exclusive Farm Use Reports for the state of

[15] Graph 2 depicts rezonings from 1988 to 2002. 1987 was not included because of the dramatic difference in number of acres rezoned that year in comparison to all other years. Excluding 1987 not only makes the graph more readable, but also eliminates apparently anomalous data from the first year of the time period examined.

Oregon as a whole only, and so analysis of Willamatte Valley trends cannot be compared to state trends. Nonetheless, overall UGB conversion rates can be ascertained and provide a general picture – especially important since the largest metropolitan area in Oregon, the city of Portland, exists within the Willamette Valley. Graph 3 illustrates the agricultural and forest lands lost to UGB expansions.

Graph 3. Agricultural and Forest Lands Lost to UGB Expansions: Oregon



The data in Graph 3 demonstrate that EFU lands have been converted at an increasing rate from 1987 to 2004 due to UGB expansions. 1990, 1993, 1996, 2002, and 2004 all experienced a large number of converted acreage. Although intervening years showed less conversion, the overall trend appears to suggest that EFU lands are converting more quickly as time progresses and that even the smaller conversion numbers of the intervening years are gradually increasing. The trend is not nearly so apparent for forest lands, which not only have significantly lower conversion rates, but also do not appear to be converting at an appreciably greater rate.

This significance of this trend is arguable. It may represent a worrisome trend from the standpoint of the state's expressed goal of maintaining total EFU-zoned lands, or it may simply represent planned expansions of major metropolitan areas (such as Portland UGB expansion, evident in the 2002 data), which will not occur again for many years. Some argue that such conversion is "expected" and so does not represent unplanned loss of EFU farm (which is presumably more problematic). But it does represent a loss of EFU lands regardless. It appears that the meaning and significance of this trend – and the extent to which it may negate the effectiveness of the agricultural lands preservation policy – must be resolved on the policy level.

B. Have the Legislative Changes Helped the State to Preserve EFU Lands in "Large Blocks" by Restricting Other Uses on Them?

1. How Many Farm and Non-Farm Dwellings Have Been Permitted on EFU Lands?

Analysis of the number of dwellings approved in Willamette Valley counties and Oregon as a whole address the questions: how did changes implemented in 1994 affect

the number of dwellings in each county and in Oregon? Do differences exist among counties, or between the Willamette Valley and Oregon in general? Has the average parcel size (or distribution of parcel sizes) for dwellings changed over time? These questions shed light on the policy's effectiveness in preserving "large blocks" of agricultural lands, as construction of dwellings may represent a de facto conversion of land or break up contiguous areas, even if the land is still zoned as agricultural. This arguably becomes important to the extent that the integrity of agricultural infrastructure arguably relies upon a certain amount and geospatial distribution of contiguous agricultural lands. If enough agricultural lands convert to de facto residential uses through the construction of dwellings, it is possible that the infrastructure necessary to maintain a healthy agricultural economy may reaching a critical breaking point, after which farming will become more difficult even on existing EFU lands because the necessary facilities, processors, distributors, and retail outlets may no longer exist.

The EFU Reports distinguish among a number of dwelling types. For purposes of this analysis, primary farm dwellings are analyzed separately, and all other farm dwellings (accessory, lot of record, seasonal housing, worker units, family help housing, temporary hardship, and non-farm dwellings) are considered together.[16]

[16] Lot of record dwellings (O.R.S. 215.284) and legislatively defined "non-farm" dwellings (O.R.S. 215.705) are considered dwellings which are not farm related. Accessory (O.R.S. 215.283(1)(f)), seasonal housing and worker units (O.R.S. 215.283(1)(e)), and family help dwellings (O.R.S. 215.283(1)(p)) are considered farm related (DLCD 1998, 6-7). Before 1993, farm-related dwellings were those that had some connection to the primary use of the land (i.e. agriculture). Lot of record dwellings represent those dwellings that post-1993, were no longer considered farm related (Eber 2007).

Graph 4 compares trends for primary farm dwelling approvals in the Willamette Valley to the rest of Oregon,[17] indexed to 1994 the year in which the legislative changes took effect.[18] For purposes of comparing to the pre-1994 standard, Graph 4 combines the four post-1994 statutory standards for primary farm dwelling approvals.[19]

[17] The "rest of Oregon" consists of data for all counties in the state *except* for the nine Willamette Valley counties.

[18] Indexing to the year in which changes took effect allows for comparison of trends before and after the date against which effectiveness is judged. Graph 3 therefore indicates the relative, not absolute, number of approvals for the Willamette Valley and the rest of Oregon, which are separately indexed to their own 1994 amounts. This graph does not indicate how many *total* dwellings were approved in the Willamette Valley and the rest of Oregon, but rather how many *in comparison* to 1994.

[19] In 1993, the legislature changed the requirements for primary dwellings to four statutory standards:

(1) high-value farmland using an $80,000 income test (O.A.R. 660-33-135(7));

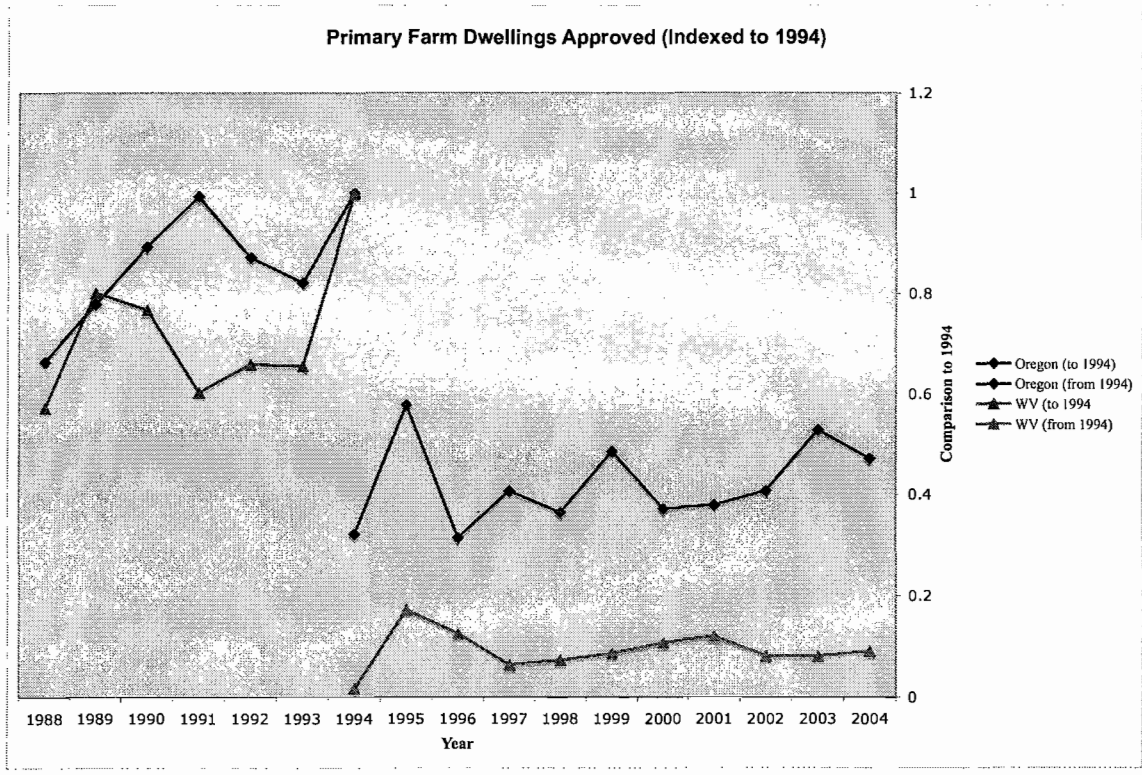
(2) acreage test (O.A.R. 660-33-135(1));

(3) non-high-value farmland using a $40,000 income test (O.A.R. 660-33-135(5));

(4) capability based on the land's potential for gross farm sales (O.A.R. 660-33-135(2)) (DLCD 1998, 5).

In March of 1994, the DLCD promulgated rules to accord with the new 1993 requirements, leading to approvals in 1994 under both the old and new standards (Eber 2007). 1995 was the first full year that the new rules were in place, and so provides the point of demarcation for comparing pre-1994 rules to the new, presumably more stringent, rules.

Graph 4. Primary Farm Dwellings Approved (Indexed to 1994)

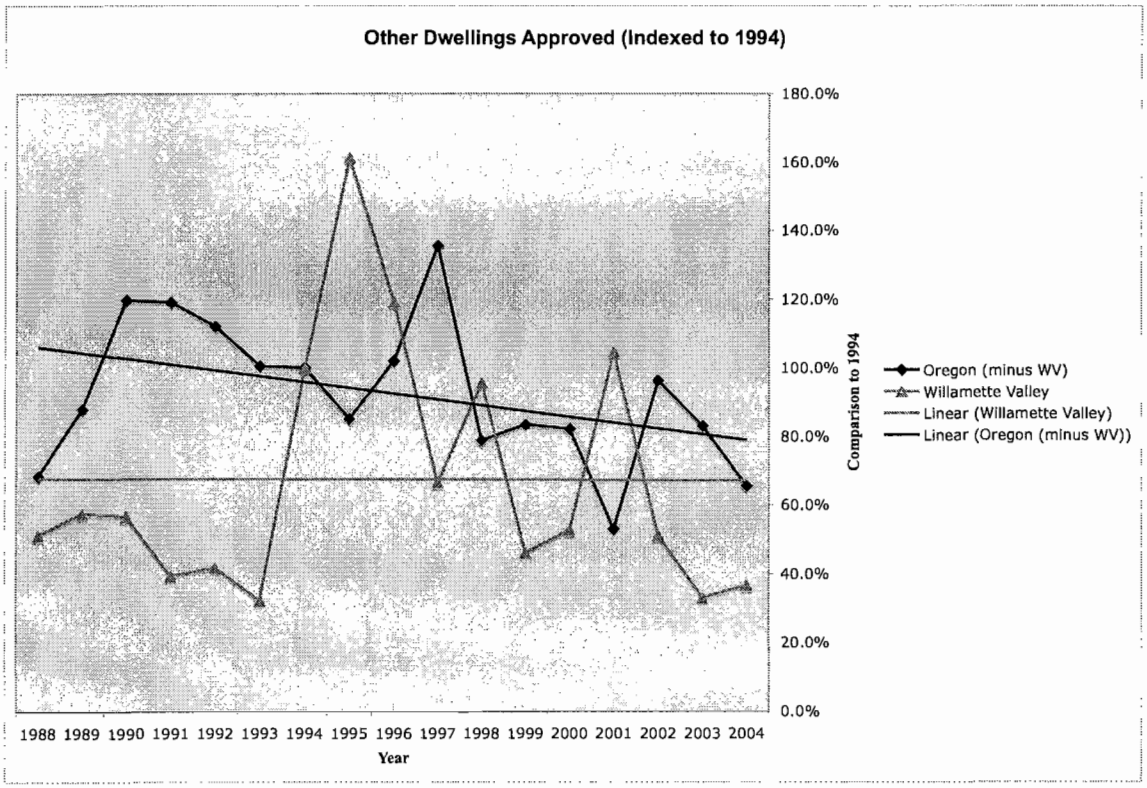


Graph 4 demonstrates that both the Willamette Valley and the rest of Oregon saw a decrease in primary farm dwelling approvals after the implementation of the 1994 statutory standards. The Willamette Valley, however, saw a greater decrease relative to the number approved in 1994, maintaining a relatively consistent level of around 10% of its 1994 approval level from 1996 to 2004. The rest of Oregon, on the other hand, fluctuated between roughly 40 and 60% of its 1994 approval level. Interestingly, the Willamette Valley shows a greater spike in approval rates in 1994 than does the rest of the state. Although the new standards were put in place in the middle of 1994. Such an increase may represent a "last-minute" attempt by landowners to gain approvals before

the new, stricter statutory standard would prohibit them. It appears that the statutory standards did effectively decrease primary farm dwelling approvals throughout the state, but even more so in the Willamette Valley.

Graph 5 compares trends for other (i.e. non-farm) dwelling approvals in the Willamette Valley to the rest of Oregon, indexed to 1994. (See footnote 16 for categories included under "other dwellings.")

Graph 5. Other Dwellings Approved (Indexed to 1994)



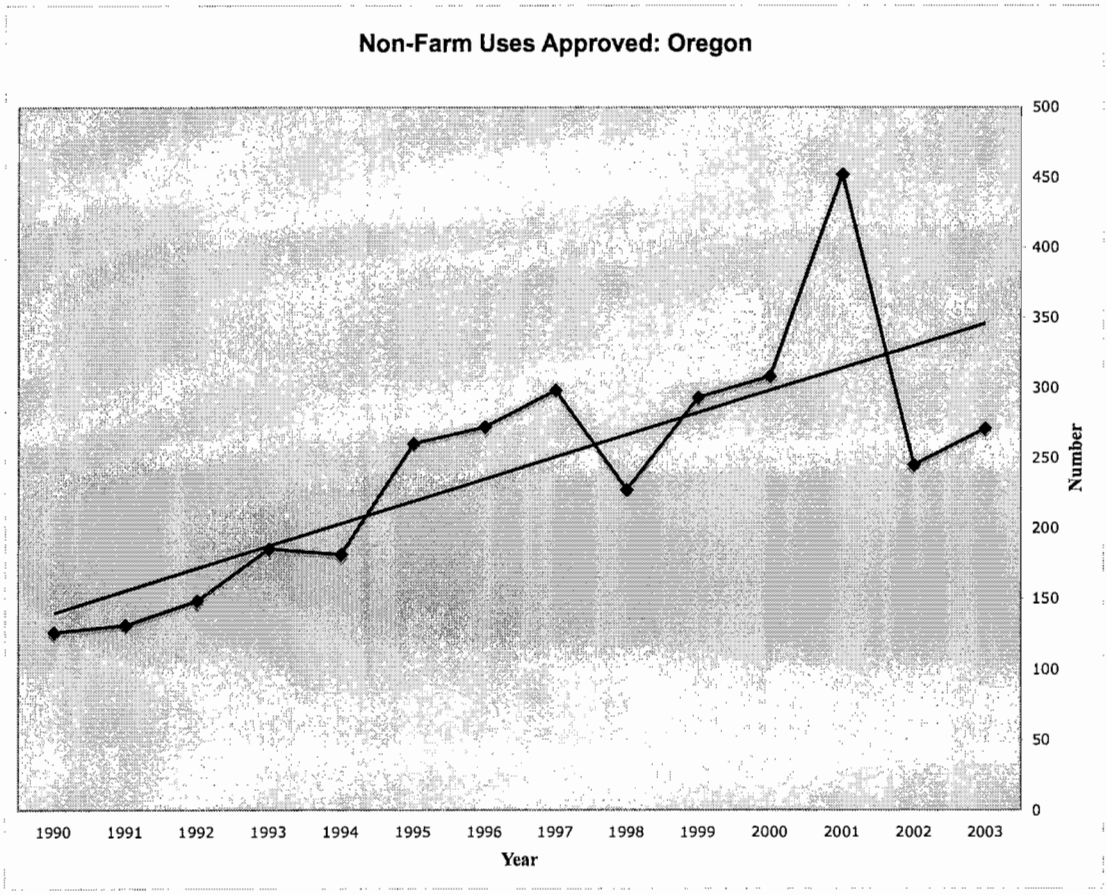
As Graph 5 demonstrates, neither the Willamette Valley nor the rest of Oregon saw as significant a decrease in other dwelling approvals as compared to farm dwelling approvals. In the Willamette Valley, in fact, the approval rate has increased somewhat over time – with 1995 approvals at over 160% the 1994 level (which itself was substantially greater than pre-1994 levels). Approval rates in the Willamette Valley eventually decreased to pre-1994 levels. It is possible that approvals of other dwellings spiked after the implementation of the stricter farm dwelling standards; the 1995 increase suggests that this may be the case, since this is the first full year in which the new standards were in place. In this sense, it is possible that in the Willamette Valley other dwelling approvals substituted somewhat for dwellings that formerly fell within the pre-1994 farm dwelling standard. While this may also have occurred in the rest of Oregon, especially in 1997, the increase compared to 1994 is not as dramatic as in the Willamette Valley.

It therefore appears that, although the new farm dwelling standards dramatically and effectively decreased the number of farm dwellings approved, their implementation may have led to increased other dwelling approvals, especially in the Willamette Valley. Such an effect may somewhat negate the effectiveness of the stricter farm dwelling standards, although it is unclear from these data the extent to which this might have occurred.

2. How Many Non-Farm Uses Have Been Permitted on EFU Lands?

Analysis of non-farm uses approved in the state of Oregon addresses the question: how did the legislative changes in 1989 affect the number approved? This question seeks to understand the extent to which, even if land has not been divided or its contiguous nature threatened through construction of dwellings, other approved uses on the land may have an impact on the ability of the land to maintain its agricultural character. Because the Exclusive Farm Use Reports do not contain non-farm use approval data for individual counties, this information is only available for the state as a whole. Differences between the Willamette Valley and the rest of the state can therefore not be analyzed, but some sense of effectiveness can be gauged from the state's general trend after the legislative changes. In addition, data is available only from 1990 on (after implementation of the law), so there is no chronological baseline with which to compare. Graph 6 shows the trend for the number of non-farm uses approved.

Graph 6. Non-Farm Uses Approved: Oregon



As Graph 6 demonstrates, the number of non-farm uses approved on EFU lands has increased significantly since 1990. 2001 saw a high of 452 approvals, compared to 126 in 1990 – a 359% increase. The number of approvals for 2002 and 2003 did drop down to roughly 250, however. Although it does not appear that the 1989 changes were particularly effective in limiting the number of non-farm uses approved, these data do not provide any insight into the acreage affected or the extent to which the non-farm uses may have fragmented EFU lands. While a geospatial analysis would likely provide more

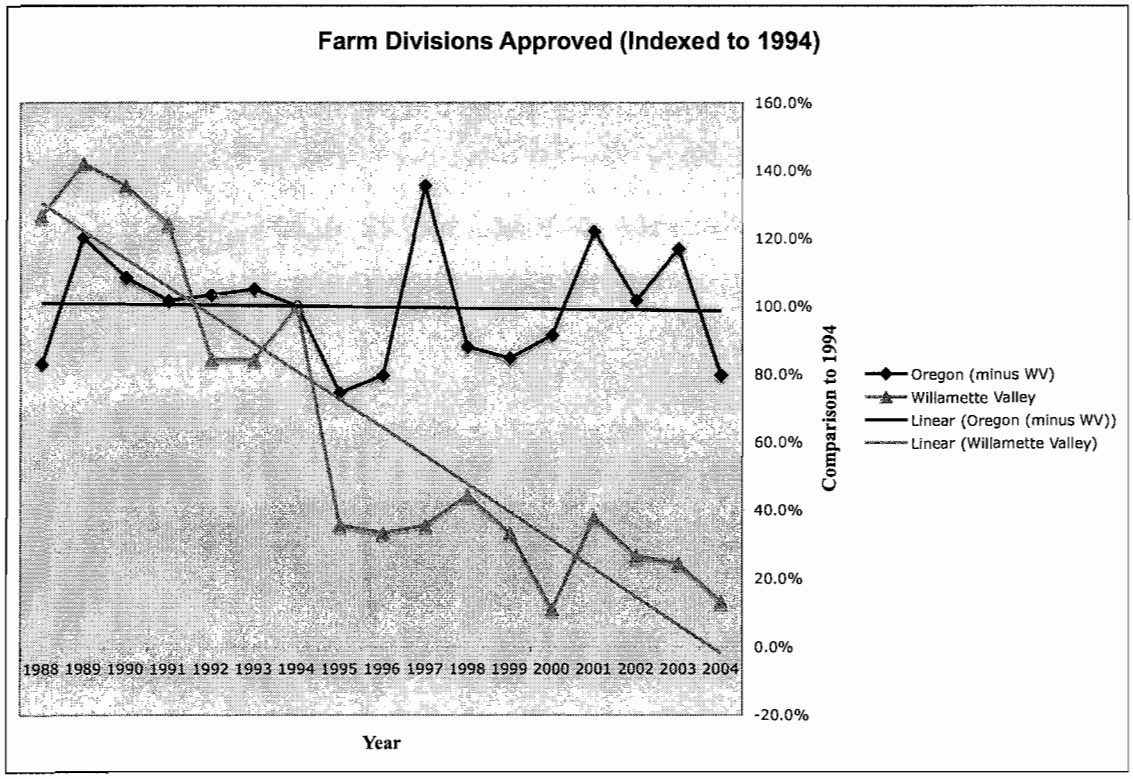
information in this regard, the data may not be sufficiently accurate or detailed on the county level to make such an analysis possible (Eber 2007).

3. How Many Divisions on EFU-Zoned Lands Have Been Approved?

Analyses of the number of farm and non-farm divisions approved in the Willamette Valley and the rest of Oregon address the questions: has the number of divisions approved changed over time? Do differences exist between the Willamette Valley and the rest of Oregon? The answers to these questions provide another perspective for the policy's effectiveness at preserving "large blocks" of agricultural lands, for each division of such lands necessarily decreases parcel size.[20] Graph 7 shows the number of farm divisions approved, while Graph 8 shows the number of non-farm divisions.

[20] This analysis does not consider data regarding distribution of parcel sizes for farm and non-farm division approvals, although such information could be helpful in determining the extent of any consequent land fragmentation. According to Ronald Eber of the DLCD, differences in county reporting, or even differences in how county data were interpreted at the DLCD level, have led to discrepancies and lack of reliability. The DLCD has, over time, endeavored to fix this data, but it has been left out of this paper's analysis because of these concerns (Eber 2007).

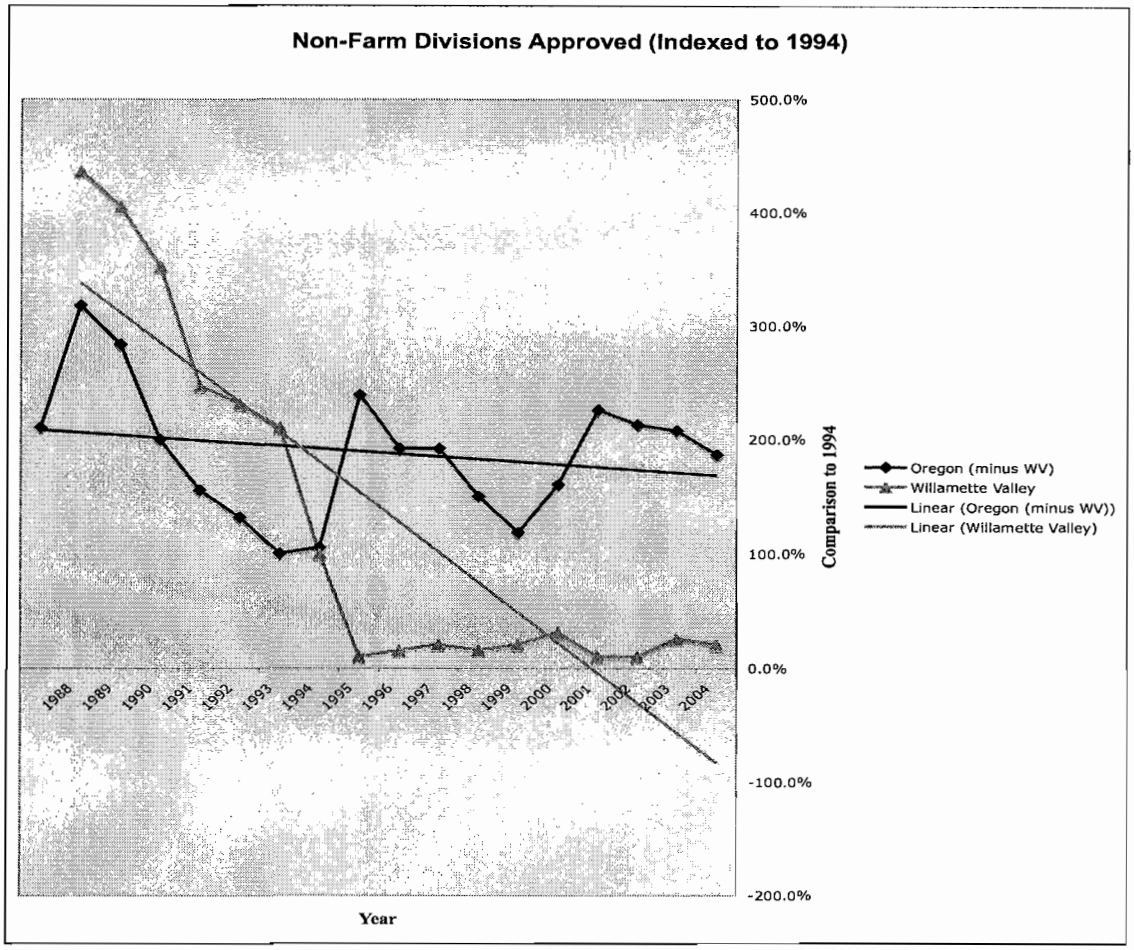
Graph 7. Farm Divisions Approved (Indexed to 1994)



Graph 7 demonstrates that farm division approvals in the Willamette Valley decreased sharply after 1994, ranging roughly between 10 and 40% of the number of 1994 approvals. Although the rate of approvals had been decreasing prior to 1994, 1995 saw a sharp decrease, after which approvals remained relatively low in comparison to 1994. In the rest of Oregon, however, the rate of divisions approved remained relatively constant over time, with fluctuations above and below the number of 1994 approvals. These data suggest that the 1994 statutory changes did significantly decrease the number

of farm divisions in the Willamette Valley, especially when considered in comparison to the rest of the state.

Graph 8. Non-Farm Divisions Approved (Indexed to 1994)



The Willamette Valley also saw a significant decrease in the rate of non-farm division approvals, as demonstrated by Graph 8. As with farm divisions, although the

number of non-farm divisions approvals had been decreasing in the Willamette Valley prior to 1994, the rate dropped sharply in 1995 and remained relatively low through 2004. The rest of the state, however, did not experience a similar decrease – again, as send with farm division approvals. Although Graph 8 shows a slight overall decrease for the rest of the state, approval rates actually rose significantly in 1995 (the year after the policy changes took effect) and then fluctuated around a relatively constant rate. Similarly to Graph 7, the Graph 8 data suggest that the 1994 statutory changes significantly decreased the number of non-farm divisions in the Willamette Valley, especially when compared to the rest of the state.

Both Graph 7 and Graph 8 indicate that the 1994 legislative changes were relatively effective in maintaining agricultural lands in "large blocks" in the Willamette Valley. Given the legislature's recognition of the unique value of the Willamette Valley's farmland, the 1994 changes for farm and non-farm division approvals appear to have met the policy-makers' goals.

C. Do Trends in Population, Number of Farms, and Acreage in Farms Provide Further Insight into the Policy's Effectiveness?

Analysis of population trends, based on United States Census data,[21] answers the questions: how has the population of Willamette Valley counties changed over time? How do these trends compare to the rest of Oregon? This information addresses the issue of the regional growth rate and, consequently, the extent of regional population pressure

[21] Population data from the United States Census are compiled each decade.

on EFU lands. Graph 1 compares trends in population from 1980 to 2000 in the Willamette Valley and the rest of Oregon.

As Graph 1 in Chapter IV demonstrates, the population of the Willamette Valley is more than double than of that of the rest of Oregon, and it has increased at a more rapid rate. While both the Willamette Valley and the rest of the state saw an increased growth rate from 1990 to 2000, the rate was greater in the Valley. The three counties in the region with the highest growth rates were those surrounding the city of Portland – Marion, Multnomah, and Washington – followed by Lane, the county surrounding the cities of Eugene and Springfield. Graph 1 indicates that population pressure is indeed greater in the Willamette Valley than in the rest of the state. These data appear to support the reasoning behind the legislature's expressed desire specifically to protect the region's farmland from urban expansion.[22]

The population data also suggest that, since population pressure is much greater in the Willamette Valley than elsewhere in the state, any apparent effectiveness demonstrated by the DLCD data may be even more significant because the region faces greater pressure to convert its agricultural lands to residential uses. Along the same vein, even where the policy seems relatively ineffective in the Willamette Valley, it may be more effective in reality than it appears. Especially given the lack of any baseline, pre-implementation data, it is difficult to know the extent to which the region might have experienced even higher conversion or fragmentation trends than are evident in the data.

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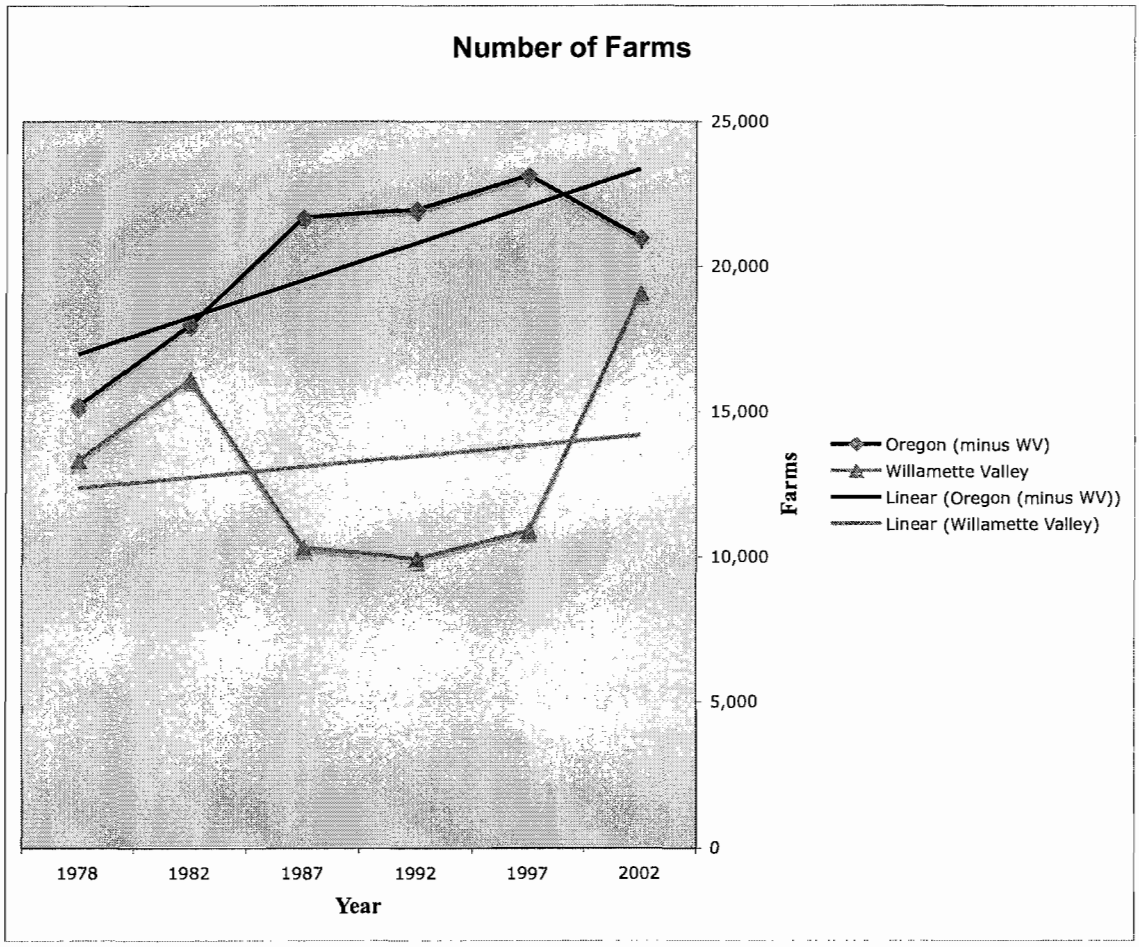
[22] Although the data support the legislature's assumptions about population pressures, it makes no judgment regarding the merit of the policy decision itself.

Analysis of the number of farms and acreage in farms answers the question: has the amount of agricultural acreage or number of farms changed over time in the Willamette Valley or in the rest of Oregon? This provides another perspective for considering the effectiveness of Oregon's agricultural lands preservation policy, as the data look at the entire agricultural land base rather than simply at the rate of dwelling construction or land divisions. However, it is worth noting that farms as defined by the USDA do not correspond to Oregon's legislatively defined EFU zones. Some USDA-defined farms and farmland most likely exists on non-EFU lands (Eber 2007). Graph 9 compares the number of farms in the Willamette Valley to the number in the rest of Oregon.

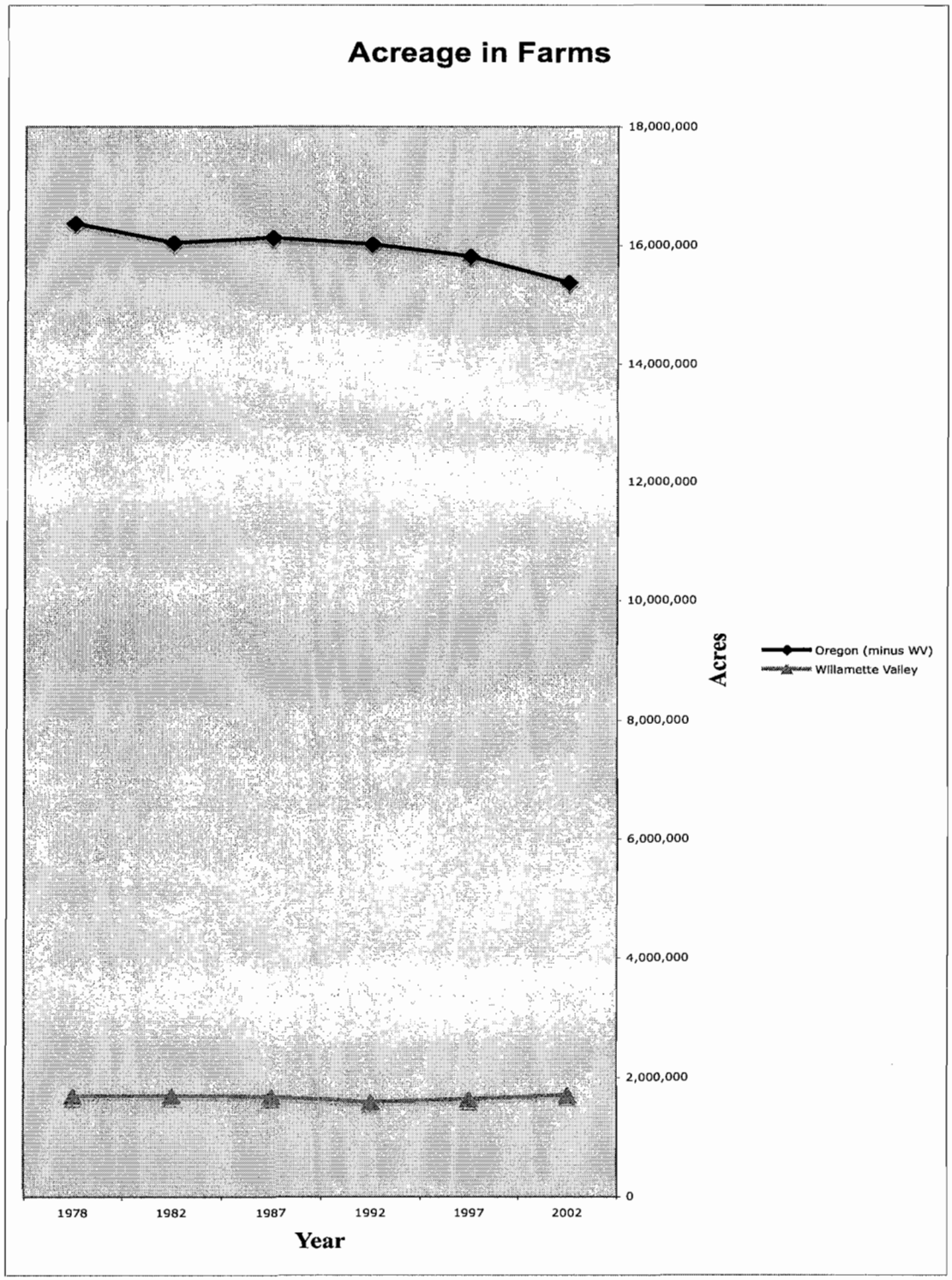
Graph 9. Number of Farms



While the number of farms has increased over time in both the Willamette Valley and in the rest of the state, the increase has been great outside the Willamette Valley than within. While the Valley saw a significant decrease between 1982 and 1987, the rest of the state saw continued growth in the number of farms. The rate in the Valley remained relatively constant until a significant increase between 1997 and 2002, the rest of the state saw a slight decrease in the final time period.

Consideration of the number of farms in relation to the acreage in farms allows for insight into the size of farm parcels. Graph 10 compares the acreage in farms in the Willamette Valley to the acreage in the rest of the state. Interestingly, while the Willamette Valley had nearly the number of farms as the rest of the state by 2002, the acreage in farms has remained consistently much lower than that in the rest of the state. While the number of farms may increase, the amount of farmland acreage does not. This suggests that the region has seen the growth of smaller farms as compared to the rest of the state. It is also worth noting that acreage in farms has decreased somewhat in the rest of the state, but has remained relatively constant within the Willamette Valley. This suggests that, even if some EFU-zoned lands have been lost to rezonings or UGB expansions in the Willamette Valley, either (1) the amount lost is not significant compared to the total or (2) the acreage in farms remains constant regardless of the amount of land zoned as EFU.

Graph 10. Acreage in Farms



CHAPTER VI

CONCLUSION

In general, Oregon's agricultural lands preservation policy and the legislative changes to it appear at least somewhat effective at preserving "large blocks" of agricultural lands in the Willamette Valley, but not as effective at maintaining total EFU-zoned lands. Perhaps inevitably, some aspects of the policy and the statutory changes appear to have been more effective than others. Specifically:

1) The policy's effectiveness in preserving total EFU-designated land is unclear.

   Rezonings from agricultural to other land uses have increased in the state, while rezonings from other land uses to agriculture have declined, resulting in an overall net loss and increasing rate of loss. However, this increase may not be problematic from a policy standpoint, as the total number of acres rezoned from agricultural use is quite small in comparison to the total number of EFU acres in the Willamette Valley. In addition, conversion of EFU lands due to UGB expansions has increased over time in the state, especially in comparison to conversion of forest lands. As with rezonings, the significance of this increased rate appears to be a policy question not answerable by the data alone: does this

trend somewhat negate the policy's effectiveness, or does it simply represent "planned" loss about which policy-makers need not be concerned?

2) The policy changes appear somewhat effective at preserving EFU lands in "large blocks" by restricting other uses on them. The number of farm dwellings approved has decreased significantly in the Willamette Valley since 1994 and has remained consistently lower than in the rest of the state – an apparent sign of effectiveness. At the same time, however, the number of other dwellings approved increased significantly in the Willamette Valley after 1995 and has only fallen back to pre-1994 levels since 2000, while approvals in the rest of the state have gradually declined over time. The rate of other dwelling approvals therefore throws into the question the true significance of decreased farm dwelling approvals; to the extent landowners substituted other dwellings for farm dwellings after 1994, the effectiveness of the policy changes may be limited. Also potentially counteracting the policy's effectiveness is the fact that the number of non-farm uses approved has increased significantly in the state since 1990, although the lack of acreage or location data makes a meaningful analysis of the true impact impossible. On a more positive note concerning effectiveness, the number of farm divisions approved in the Willamette Valley decreased significantly after 1994 and has remained consistently lower, while the rate has remained relatively constant in the rest of the state. Likewise, the number of non-farm divisions approved in the Willamette Valley decreased significantly after 1994 and has remained consistently lower, while the rate has remained relatively

constant in the rest of the state. These data suggest that the legislative changes did effectively limit divisions on agricultural lands, as intended.

3) Trends in related data suggest that population growth is significant and that farms in the Willamette Valley are becoming smaller, on average, than farms in the rest of the state. As demonstrated in Graph 1 in Chapter IV, the population of the Willamette Valley is more than double that of the rest of the state, and it has increased at a greater rate. This suggests that the concerns express over the years about population pressures in the region are well founded, as population density is indeed much higher, and growing at a faster rate, than elsewhere in the state – and is occurring on the state's most productive agricultural, Class I and II soil, lands. It may also indicate that the policy is more effective than it otherwise appears, in that the greater population pressures in the Willamette Valley make a straight comparison to the rest of Oregon unequal. In addition, the related data indicates that there were nearly as many farms in the Willamette Valley in 2002 as in the rest of the state, although the number of farms has been less consistent in the Valley. Although the Willamette Valley has nearly as many farms, the rest of the state has approximately 750% more acreage in farms. This suggests that the state of agriculture is significantly different in the Willamette Valley region than in the rest of the state. Nonetheless, since these data represent all agricultural lands as defined and reported in the USDA Census of Agriculture (and hence are not limited to EFU-designated lands), it is impossible within the scope of this thesis to correlate the number and rate of growth of small farms to EFU lands.

Unfortunately, the lack of comparable baseline data (i.e. pre-implementation data) makes it impossible to determine the true extent to which agricultural lands have been protected by means of EFU designation and the supporting dwelling, division, and non-farm use laws (Eber 2007). And since many other factors – such as laws, economic factors, and geographical and climatic conditions – differ in other states, there is no "control" case against which to judge effectiveness.

Nonetheless, based upon this thesis research, it appears probable that the legislation and related regulatory policies have been effective in limiting residential growth on the state's EFU-designated lands. One probably should not expect total effectiveness (e.g., no approved non-farm uses), and, in fact, total effectiveness may work against other policy goals, such as infrastructure needs, other economic and business goals, and maintenance of farmers' ability to achieve profit from the sale of their land. Such issues do not address the question of whether this policy was effective in achieving its stated policy goals, but rather the state should, in fact, pursue the stated policy goals at the expense of other goals.

Drawing upon this thesis research, it appears that the legislature should undertake such a weighing of alternative policy goals. Presented with the results of the Big Look Task Force and with an opportunity to reevaluate the foundational goals of the program, the legislature can address some of the concerns apparently expressed by the state's citizens in their passage of Measure 37. Oregon's land use system is a top-down, regulatory based system, but it could consider implementing something very different – such as economic "carrots" like tax incentives or subsidies for those who choose to pursue land uses desired by the state. Oregon's systems is unique in the scope of its

regulatory oversight, and the uncertainty generated by Measure 37 may allow for policy-makers to consider the experiments conducted in other states and localities. Since land use theory and understanding have grown in the decades since 1973 (e.g., the development of "smart growth" and "new urbanism" concepts), it appears prudent for the legislature at least to evaluate the relative merits of different systems and to consider what combination of regulatory "sticks" and "carrots" it may want to adopt.

To provide additional data for such an evaluation, both a GIS analysis and a full economic analysis would be quite time-intensive and expensive, but they would also be useful, especially as policy-makers and the public now consider how to proceed. It seems important to provide multiple analytical perspectives when attempting to understand the effects of such inherently complex and interrelated factors; a major goal of this thesis was, in fact, to add to the wealth of perspectives in a novel manner.

A GIS analysis of land use on the county level would shed even further light on how urbanization is affecting EFU lands. County-wide data necessarily aggregate very different areas into one county category. Certain areas of a county may be significantly more affected by urbanization than other areas, which could be better observed by means of more "on the ground" GIS data. Preservation of contiguous agricultural lands can also be better seen through GIS data than through county-wide numerical data, as dwelling and division approval rates may be more or less significant depending upon where they are occurring and what lands they are affecting. In other words, are they occurring in the middle of large contiguous areas, or on the edges? The viability of the state's agricultural economy may arguably hinge on such factors.

An economic analysis could also more closely tie the effects of land use laws to the agricultural economy. Because of the complexity of interrelating economic factors at the local, regional, state, national, and international levels (and the effects of laws and other factors at each of these levels), such an economic analysis was outside the scope of this thesis. It is impossible to correlate the land use laws to the agricultural economy without factoring out the many other independent variables that may have significant impacts on economic stability.

The data collected and analyzed in this paper, however, should add to the overall understanding of Oregon's agricultural lands preservation policy's effectiveness in the Willamette Valley. This paper represents, for example, the first published aggregation of the EFU data collected by the DLCD. Although presented to the legislature in annual Exclusive Farm Use Reports, each year's data is generally presented separately, making long trends difficult to ascertain. In addition, the Willamette Valley counties have not been clearly separated out for analysis in comparison to rest of the state. The data collected and analyzed here should provide policy-makers with new perspectives on the effectiveness of various elements of the state's agricultural lands preservation policy. The consideration of population, number of farms, and acreage in farms data should also add to this understanding and provide more context for the external circumstances in which the EFU rules have operated.

APPENDIX

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