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AN ANALYSIS OF SECONDARY MARKET RESPONSE IN ENERGY IMPACT SITUATIONS

by

Michelle Michot Foss

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A thesis submitted to the Faculty and the Board of Trustees of the Colorado School of Mines in partial fulfillment of the requirements for the degree of Master of Science (Mineral Economics).

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ABSTRACT

Export base theory is used both in stimulative growth policy and in planning for adverse effects of growth. The fundamental concepts are that an economy consists of basic and nonbasic sectors, and that a change in basic exporting activity will stimulate a corresponding change in nonbasic activity (the secondary market for local goods and services), via local multipliers, in the same direction. Export base theoretical concepts underlie all methods commonly used to generate projections of population growth.

In the West, demand for energy resources has spurred sharp and rapid growth cycles in the communities which have hosted much of this activity. Nonbasic response often diverges from predicted response with consequences for population growth, local public policies, and quality of life. If estimates of nonbasic employment and income are considered to be reasonable when state-of-the-art techniques are used, then other factors must account for actual nonbasic response.

A research methodology was designed to test the hypothesis that supply side economic and behavioral variables influenced nonbasic response in Evanston, Wyoming. The

primary source of growth in Evanston since 1979 has been onshore oil and natural gas development including the construction of major gas processing facilities. From documented studies of other rapid growth situations, and from economic and behavioral theories of the firm, supply side variables were identified and expressed in a conceptual model. A sample survey was devised for Evanston with the survey instrument based on the conceptual model. Using the empirical data and secondary data on economic trends, it was determined that nonbasic response in Evanston was not warranted by the level of export based final demand. Further, it was found that firms existing before the most recent rapid growth cycle commenced resisted change and were influenced by suppliers' own perceptions of the change in demand. Firms established in Evanston from the time the growth cycle commenced were influenced by economic factors. The results of the study yielded many implications for the role of information in rapid growth situations and shed light on several other variables that may have affected the decisions of suppliers.

The results of the study were generalized to suggest how local multipliers might behave in future rapid growth situations for communities like Evanston. It was concluded

that direct policy options should not be targeted at the nonbasic sectors in an effort to bring actual response in line with what is warranted by projected demand. Rather, existing channels of information exchange should be strengthened and modified and a true market for the exchange of information about growth facilitated. A unique petroleum industry impact program used in Evanston is suggested as a model for this purpose.

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...while wants are the rulers of life among the lower animals, it is to changes in the forms of efforts and activities that we must turn when in search for the key-notes of the history of mankind.

--Alfred Marshall
Principles of
Economics

You cannot depend on your eyes when your imagination is out focus.

--Mark Twain

CHAPTER 1
INTRODUCTION

1.1 Problem Statement: The Situation in The West

Many theories have been put forth to explain economic growth. Export base theory, widely accepted and used, has as its premise that growth is related to the volume of products exported from a region. Growth in the export market creates jobs and wealth that is in turn expended on local goods and services--the so-called secondary market--creating more jobs and wealth. Some of the increased income to households in exchange for supplying inputs to basic and secondary activities is spent again on local goods and services. This chain of transactions as a result of the interdependence of the basic and secondary sectors is termed the multiplier effect. Large, diversified regions with self-sufficient secondary markets have high multiplier values since more money is spent locally. Smaller, less diversified, less self-sufficient regions, from which money "leaks out" to purchase goods and services that are not provided locally, have smaller multiplier values. This latter scenario is typical of regions, counties, and communities in the western United States.

In the West, a major stimulus to the export market in recent years has come from the production of energy resources. For the most part, resource extraction has been a boon to the predominantly rural, stable, or declining communities which have hosted much of the growth related to extractive industries. As the export base expanded, the secondary market responded to the perceived increased demand for local services. In many cases, the expansion of the secondary market, which may have been slack or undeveloped, has contributed a significant portion of total new employment and income in affected communities. In Wyoming, for example, mining activity was thought to be directly responsible for 25 percent of total personal income when only the export market was considered and as much as 50 percent when the secondary market and multiplier effect were included (Peirce and Hagstrom, 1983). Changes in the secondary market can infer significant changes in total population. Halstead and Leistritz (1983) reported that only 10 percent of individuals responding to a survey in Uinta County, Wyoming, were local residents holding jobs in local retail and service outlets. Their findings suggest that a large number of workers migrated into the area to fill jobs in a secondary market that had expanded in

response to oil and gas industry activity.

Export base theoretical concepts are used for two purposes. One might be called "stimulative policy" in which the policy maker wishes to determine the level of growth that might occur if exports are stimulated. The other involves prediction of negative effects that might occur if growth in the export and secondary markets does not mesh. In the case of the secondary market it is the population component in rapid growth situations, and not merely the quality of life that the availability of local goods and services affords to old and new residents, that is of concern when socioeconomic impacts are evaluated.

Negative impacts of rapid growth in western communities have been addressed by an increasing array of laws and policies at both the state and local levels. The Wyoming Industrial Siting Act passed in 1975, for instance, requires that in-depth assessments of affected communities be conducted and mitigation programs designed should adverse impacts be anticipated. A primary thrust of the Act, therefore, is to place substantial responsibilities on resource project operators (Bleistein, 1979).

For operators in Wyoming and other western states the responsibilities designated by regulatory policy generally

translate into financial assistance with the front end costs of public services and infrastructure in impacted areas. This increases the investment risk of an energy project since its total cost and possibly its profitability are altered. Likewise, local communities and governments also face substantial risk in financing public sector goods and services.

Policy and planning activities undertaken to mitigate negative impacts of rapid growth are thus based on the multiplier effect. The export base multiplier provides an estimate of the increase in nonbasic activity which would be expected as a result of a given change in basic activity (Leistritz and Murdock, 1981). Total population growth is then the sum of the basic and nonbasic components. This is, however, only an estimate of potential growth.

Obviously, the price tag placed on mitigation programs that rest on estimates of growth can become a sticky issue. According to Moen (1984), differing opinions about the extent of growth have been a source of dispute between firms and governments. Politics and hidden agendas strongly influence prevailing philosophies and attitudes. State, county, and local governments may use projections to discourage, induce, accommodate, or fund growth. Communities

that expect growth may use projections and mitigation funding tied to those projections to insulate themselves from boom-town symptoms. Industry may support inflated estimates of growth to ensure that investment in affected areas is made in order to guarantee worker productivity and minimize turnover among employees who must live in high-stress, boom-town situations. Other goals may be to intimidate competition, draw a larger labor force to the area, or obtain federal funds. With often huge reservoirs of mitigation funding available, most governments may lean toward higher growth estimates supporting a patronage system associated with impact mitigation funds derived from inflated projections (Moen, 1984).

Who is right and who is wrong? Perhaps it is not so much a question of accuracy in prediction as a problem in that the mode of prediction rests on theory which cannot, and should not, account for all factors that influence a market or an economy. Projections of growth based only on changes in external demand, as explained in export base theory, assume that a logical, progressive relationship between the export and secondary markets exists. Actually, growth in the secondary market and thus total growth in an impacted area may diverge, sometimes widely, from what was

predicted. However, the sophistication in state-of-the-art assessment models and practices is such that projections of growth based on demand are assumed to be reasonable. The problem posed is thus: if demand side factors are held constant, what then can account for differences between predicted and actual secondary response? A possible answer is: supply side factors that affect the decisions of individuals and firms operating in the secondary market about how to respond to perceived changes in demand.

1.2 Scope of Research

The research described here centers on the local business sectors in western communities impacted by rapid growth a consequence of natural resource production. The research specifically involves secondary market response in a community affected by onshore oil and gas development--Evanston, Wyoming, in Uinta County. The questions raised and studied have to do with the fundamental economic and behavioral factors that influenced decisions by suppliers in the nonbasic sectors.

The economic and behavioral decision factors influencing local businesses are evaluated within the broader context of macroeconomic, regional export base theory.

The central theme is one of how real situations differ from theoretical designs, so that this research is as much a reflection of classic economic debate as it is an attempt to answer some questions about what has happened in Evanston and western communities like Evanston. It is recognized throughout this research that theory is merely a means of explanation and prediction and should not be a reproduction of reality. The task here is not to challenge the predictive power of theory or to call theory erroneous. The major task of this research is to define real world variables not accounted for in theory and to explain their role in determining actual events.

In analyzing how decisions by local businesses in a rapid growth situation are made and the consequences of those decisions, a key component of this research is the role of information and uncertainty about changes in demand. Microeconomic theory of perfect competition assumes perfect knowledge. This extends to export base theory where in the macroeconomy the idealized response of the secondary market to changes in the export market can only come about if all firms have reliable information. Cyert and March (1965) viewed information as a crucial variable in decision making and proposed that how a firm

obtains information, whether it obtains the information needed, and at what cost will influence the amount of uncertainty under which the firm must operate and therefore the effectiveness of its decisions. These authors attributed much of a firm's organization and behavioral characteristics to the information-getting process.

Particular attention is placed on this aspect of the energy impact situation in Evanston. Information is treated as a link between demand side and supply side factors. The effectiveness and structure of that linkage may have much to do with secondary market efficiency--i.e., whether secondary market response is in line with actual, effective demand--and with policy approaches in impact situations.

The question of policy is well within the scope of this research. How, and if, an understanding of supply side factors should be incorporated into assessment and mitigation planning are considerations that must be dealt with if the conclusions of this research are to be relevant to future situations in Evanston or elsewhere.

The following graphical presentation (Figure 1.1) illustrates the research components of this thesis. Development of the hypothesis stems directly from the

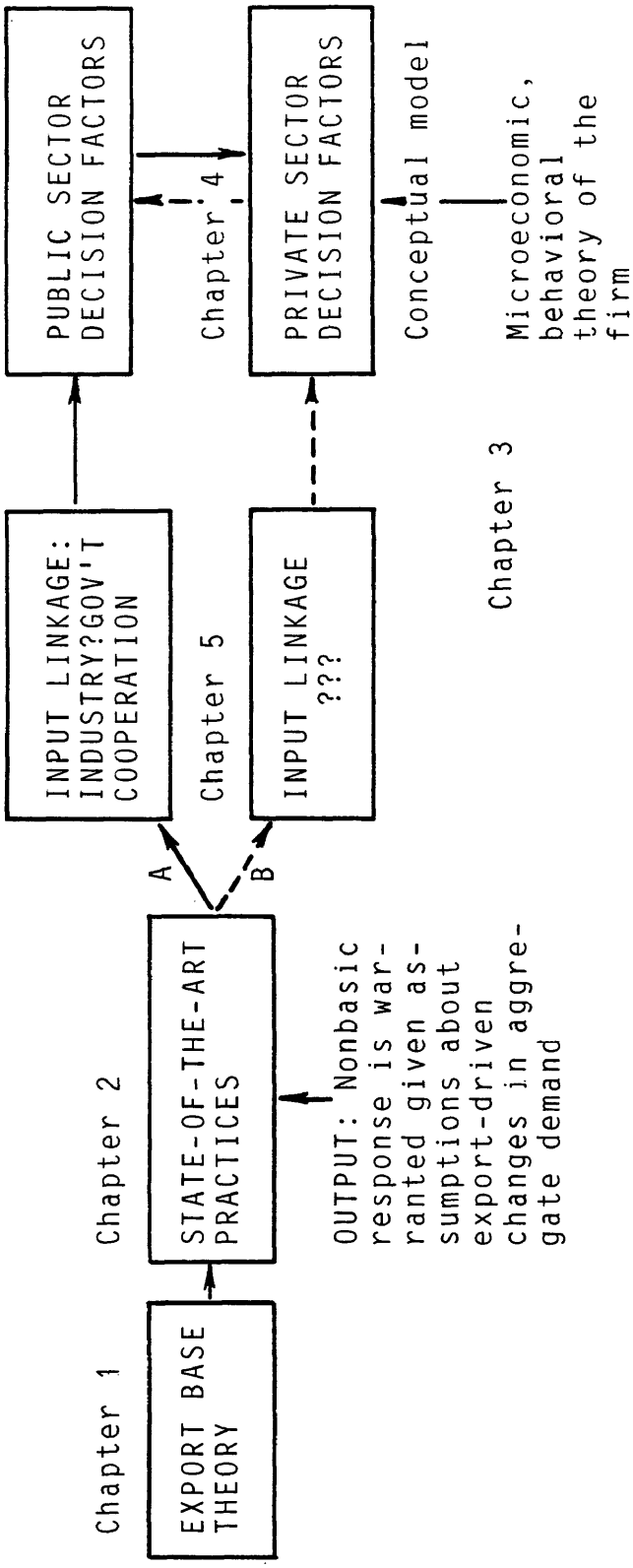

Figure 1.1

Research Components

relationships addressed in the above introductory section. Export base theoretical concepts are the foundation of all stages of the research process outlined here; the problem statement is drawn directly from these concepts and their application to real world situations. A thorough discussion of export base theory (research component 1) and its extension to state-of-the-art practices (research component 2) is undertaken in Chapter 2. Selected previous works and studies are reviewed for this purpose. Note in the above illustration that the second component repeats a condition stated earlier, that the sophistication in current assessments and modeling techniques generates demand side estimates of growth that are reasonable. Shortcomings and criticisms about the assumptions underlying demand side factors and the multiplier are discussed for their relevance to the problem statement. Chapter 2 develops and states the hypothesis that supply side, behavioral and economic decision factors strongly influence nonbasic activity in energy impact situations and largely explain the divergence between actual and demand side predicted response in Evanston, Wyoming. The hypothesis is researched by addressing three questions. At the conclusion of Chapter 2, arguments are presented in justification

of the research.

Chapter 3, which corresponds to research component 3, details the research methodologies designed to evaluate private sector decision factors in the case study secondary market. Key stages are development of a conceptual framework, description of the case study area, and design of a field survey based on the conceptual framework and case study description. While explanatory and predictive powers of conceptual frameworks are limited, they are most useful for directing systematic empirical research (Nachmias and Nachmias, 1981). The conceptual framework for this research brings together variables from both economic and behavioral decision-making principles to define nonbasic activity as a function of the demand side factors that are normally considered and supply side factors that are not normally considered. Design of the conceptual model is accomplished by first discussing microeconomic (profit maximizing) and behavioral (non-profit maximizing) theoretical principles and integrating these principles with export base theory and its applications. As the model is constructed, each variable that is defined is examined from the perspectives of documented studies of secondary markets in impact situations. The study area description includes a

review of oil and gas industry activity that has affected Evanston and economic conditions in the secondary market before, during, and after accelerated oil and gas activity. The field survey methodology is thoroughly documented. Selection of a time frame for empirical data collection from the economic data and trends recorded in the case study description is discussed. Research boundaries and assumptions, definition of the universe, sampling techniques, identification of respondents, questionnaire design, jury evaluation, pilot testing of the survey instrument, and field survey format are all detailed.

Chapter 4 is a rigorous analysis of the survey and sampling methodologies used, the results obtained, and the conclusions reached. Both quantitative and qualitative empirical data are analyzed, but normative judgments are not understated--qualitative observations are not sacrificed in order to emphasize quantitative techniques and results. Within the content of Chapter 4, the validity of the hypothesis and conceptual framework is discussed.

Chapter 5 (research component 4) applies the results and conclusions of this research to policy. Results of this research are generalized. The proposition of establishing a direct input linkage such as Process B

illustrated in Figure 1.1 to transfer information about the export market to the secondary market is discussed.

Chapter 6 outlines the benefits of the research and makes suggestions for future research efforts. In this section, the results and conclusions are extended to other growth impact situations and replication of the research methodology used here is addressed.

1.3 Definitions

Several terms have already been introduced and, along with others that will be used throughout this document, merit immediate description. Basic, synonymous with direct, describes those economic activities that produce goods and services for export, or for consumption outside of a defined region. Basic, direct, or export activity might also be thought of as that which imports personal income. A subcategory is indirect basic activity, which is linked to the export producing activity. Indirect activity encompasses the production of intermediate goods and services that are consumed as inputs by basic industries. Depending on a researcher's philosophy about how regional economic growth should be described, indirect activity may

be combined with direct activity or treated separately (Isard, et al., 1960).

Nonbasic, indirect, secondary, and induced are terms that describe economic activity in the local retail and service sectors that is influenced by direct activity. This entails production of goods and services for consumption within a region. The base-service ratio indicates the proportion of nonbasic activity with respect to basic activity, using employment or income as the variable. As stated above, the change in employment and income as a result of change in basic exporting activity generates an increased demand for local retail and service capacity. In this research, the variables of basic employment and income (external demand) that induce nonbasic employment and income are referred to as demand side factors. Economic and behavioral variables that influence the capacity of nonbasic activity, and thus influence nonbasic employment and income, are referred to as supply side factors.

A multiplier or nonbasic multiplier or employment multiplier is a mathematical expression of the relationships delineated above. The multiplier is simply the base-service ratio plus one. It describes the multiplicity of transactions that take place within an economy as one

dollar of basic employment or imported income is used to purchase local products and thus generates some fraction of nonbasic employment income, adding to total income in the market area.

Market area refers to a spatially designated area of economic and trade activity. Spatial orientation is a key consideration in socioeconomic assessments and is accommodated in state-of-the-art practices. Within a market area, which may be a region or some smaller boundary, primary and secondary impact areas may be defined. As used by Chase and Leistritz (1982), both counties and communities were defined in this manner. Primary impact areas were those most strongly affected by energy development-related growth. For communities this term was used to identify regional trade centers. Here, Evanston, Wyoming, is considered a primary impact area. The role of Salt Lake City, Utah, as a regional trade center which attracts local spending away from smaller communities like Evanston, is an issue that will be dealt with in Chapters 3 and 4.

The concepts defined above are elements of the theory that regional economic growth is export based. The term warranted is used to describe the level of secondary activity that is merited based on demand side predictions

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of nonbasic employment and income. A fine line exists between the concepts of "predicted," "warranted," and "actual" secondary market response. For purposes of this research, warranted is assumed to be equivalent to predicted response.

A sector is used here to represent separate commercial activities. For example, nonbasic service sectors include personal services, legal services, health services, and the like. Nonbasic retail sectors include food stores, automotive dealers and gasoline service stations, and the like. The differentiation of sectoral activities is based on Standard Industrial Classification Manual codes. In describing business activities in Evanston, existing nonbasic firms are those that were established prior to 1979. New nonbasic firms are those that were established during 1979 and after. This is the time frame for this research.

CHAPTER 2
THEORY AND APPLICATIONS

In their comprehensive review of socioeconomic impact assessments and methodologies for assessment, Leistritz and Murdock (1981) stated that "export base concepts underlie all the techniques commonly employed in economic impact assessment." Richardson (1973) also made that observation and did so in light of inherent weaknesses in export base theory:

> Despite their long ancestry, export base models would not be worth attention were it not for the fact that export base notions still crop up repeatedly in other, particularly econometric models.

Glickman (1977) echoed this sentiment in his evaluation of the use of econometric models to study growth in Philadelphia, Pennsylvania. Econometric models, which provide a sophisticated means of linking regional growth performance to GNP (Richardson, 1973), often adapt export base concepts (Glickman, 1977). To Glickman, with export base models alone, theory is a constraint. Export base models are "simple," produce inaccurate forecasts, and pose many technical, theoretical problems.

The concern here is not with the fine detail of export

base models but the broad applicability of export base concepts via any modeling technique. The notion that increased exogenous demand will drive an economy is a powerful one. Richardson (1973) went further to term it "heroic." At the national level, this notion is countered with arguments about the effect of supply side factors and is a focal point of debate. However, in a situation where it is desirable to have some idea of how an economy will grow, change in external demand is a relatively easy point of reference.

In this chapter, the origins of export base theory, its central concepts, and how it has been applied generally and specifically in energy impact situations are examined. A critique of theoretical concepts and their application will demonstrate that key factors are ignored that exert a strong influence on the behavior of economic agents in the nonbasic sector. This will be framed as a hypothesis. The critique and arguments presented also serve as justification for this research and set the stage for the integration of microeconomic theory of the firm with export base theory of regional growth.

2.1 Theoretical Origins

For all of its similarity to Keynesian income theory,

the parallelism between export base theory and Keynesian income theory was not fully grasped until the 1950s. Prior to Keynes' seminal theoretical contributions, work by Ohlin initiated the new field of regional economics (Richardson, 1970). Ohlin showed that trade theory, wherein partners exchange according to comparative advantages over one another for specific goods and services, is only a part of general location theory which states that economic agents will locate where the greatest return on investment and maximum profit are realized. Ohlin theorized that markets could be spatially delineated if it was assumed that some factors of production were geographically immobile. Transportation costs then distinguish commodities among markets and equilibrium is promoted either by interregional trade or a combined movement of goods and factors (Richardson, 1970).

In 1936 Keynes published The General Theory of Employment, Interest and Money, which proposed that aggregate income and employment in the short run are determined by consumption and investment spending. General Theory incorporates the idea that the effects of a change in spending on income are multiplied throughout an economy. Keynes assumed that the propensity to consume at each level

of income is held constant so that autonomous changes in investment or government spending must explain changes in income. The multiplier, a concept developed by Keynes's colleague, R. F. Kahn, is a measure of this effect (Lekachman, 1959; Oser and Blanchfield, 1975).

Richardson (1970) wrote:

> With the growth of interest in regional economics as distinct from the much narrower economics of location, the development of regional income theory was a logical next step. . . . Regional income analysis stems from the integration of Keynesian economics with international trade theory.

Richardson further noted that regional income theory had been developed separately in a different context--economic (export) base theory. He cited several works that distinguish between what are now referred to as "basic" and "nonbasic" activities. Hoyt was credited with developing the modern theoretical framework in 1936, using an urban setting in which he suggested that a city's economy depended on its base or export activity. In later studies that dealt with smaller areas, Hoyt and Alexander independently refined techniques for estimating base and service activities. The association between the Keynesian multiplier and export base theory was finally brought out by Hildebrand

and Mace in 1950 and Tiebout in 1956 (Richardson, 1970). Tiebout later in 1962 expressed base theory in terms of income and suggested that community income analysis replace export base theory. Tiebout's models are emphasized in many recent works.

2.2 Theoretical Concepts

From the historical perspectives outlined above the fundamental concepts of export base theory may be isolated. They can be summarized from Leistritz and Murdock (1981) as follows:

1. An area's economy can be divided into the basic sector, which produces goods and services for export to markets outside of the area, and the nonbasic sector, which supplies goods and services to customers within the area.
2. The level of nonbasic activity is uniquely determined by the level of basic activity, and a change in the level of basic activity will bring about a predictable change in nonbasic activity (the multiplier effect).

Isard, et al. (1960) held that the first premise can be applied to communities and small resource regions at one

extreme or huge metropolitan areas and resource regions at the other. The second premise is the basis for Hoyt's base-service ratio which can be used to express total proportions or changes in proportions between basic and service employment (Isard, et al., 1960).

Honoring the Keynesian tradition of looking at things in the aggregate, net regional income is

$$Y = G + I + C + X - M - T,$$

where

Y = net regional income,

G = income from government spending in the region,

I = income from investment spending in the region,

C = income from consumption expenditures in the region,

X = income from the region's exports,

M = payments for imports to the region,

T = payments for taxes.

Investment and government spending represent sources of Keynes's autonomous demand, determined outside of the area. Consumption and import expenditures are determined by the level of local income; income from consumption expenditures within the region represents nonbasic income. Imports and taxes are leakages of income that would otherwise be

available for spending within the region. Basic income, according to Tiebout, is derived from exports and investment (Nourse, 1968; Bendavid, 1974; Leistritz and Murdock, 1981).

The above relationship can also be expressed as

$$Y = a + bY_D + \bar{x} - c + mY_D + I + G$$

with

$$C = a + bY_D,$$

$$M = c + mY_D,$$

$$X = \bar{x},$$

where

Y_D = disposable income, $Y - T$,

a = autonomous consumption expenditure when $Y = 0$,

b = marginal propensity to spend,

c = autonomous import expenditure when $Y = 0$,

m = marginal propensity to import,

and $\bar{x}$ = exogenously determined level of exports,

after Nourse (1968), Leistritz and Murdock (1981), and Froyen (1983). This is depicted graphically in Figure 2.1. Equilibrium income is designated as $\bar{Y}$. The slope of the aggregate expenditures curve is equal to b, the marginal propensity to consume. The slope of the import schedule is m, the marginal propensity to import. If the above model

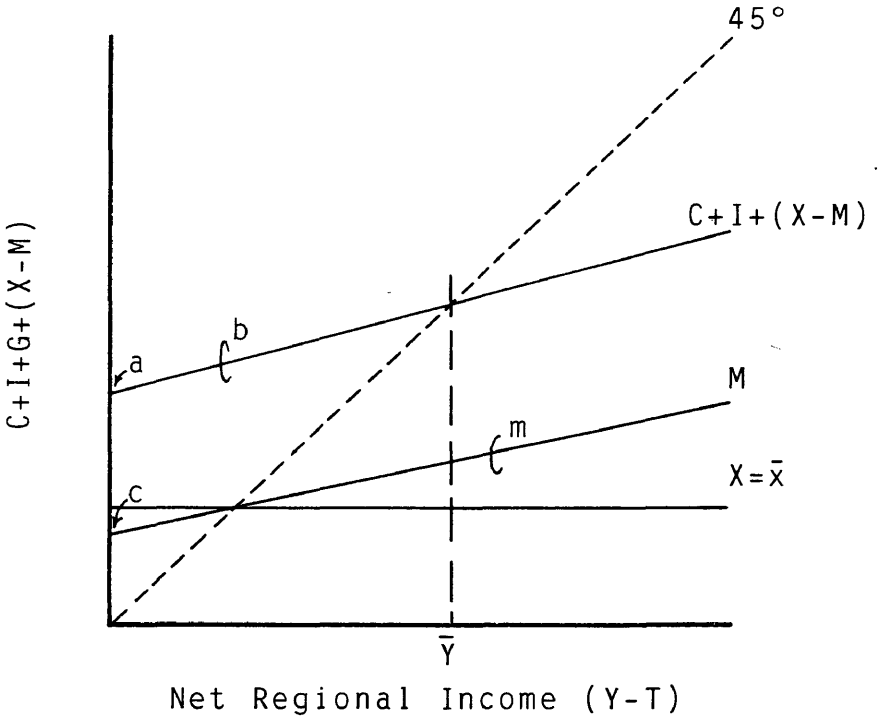

Figure 2.1

Regional Aggregate Demand

is manipulated further using equilibrium income $\bar{Y}$, the Keynesian multiplier is obtained:

$$\bar{Y} = \frac{1}{1 - (b - m)} (a + \bar{x} - c + I + G).$$

In export base theory, equilibrium income $\bar{Y}$ changes with a change in exports, $d\bar{x}$. Assuming this change is an increase in exports, the graphical analysis might alter as follows in Figure 2.2. The amount by which income changes to $\bar{Y}'$ with a change in exports is initially equal to the amount $d\bar{x}$. As the increase in exports is manifested throughout the economy in local purchases and increased income to households, the total increase is the sum of an infinite geometric series. If s represents b - m, this series becomes $d\bar{x} + sd\bar{x} + s^2d\bar{x} + s^3d\bar{x}$ and so on. The sum of the series can be expressed as

$$\bar{Y}' = \frac{1}{1 - (b - m)} (d\bar{x}) = \frac{1}{1 - s} (d\bar{x})$$

where

$$\frac{1}{1 - s}$$

is the nonbasic multiplier. Export base models may express these relationships in even simpler terms, as

$$Y_T = Y_B + Y_{NB},$$

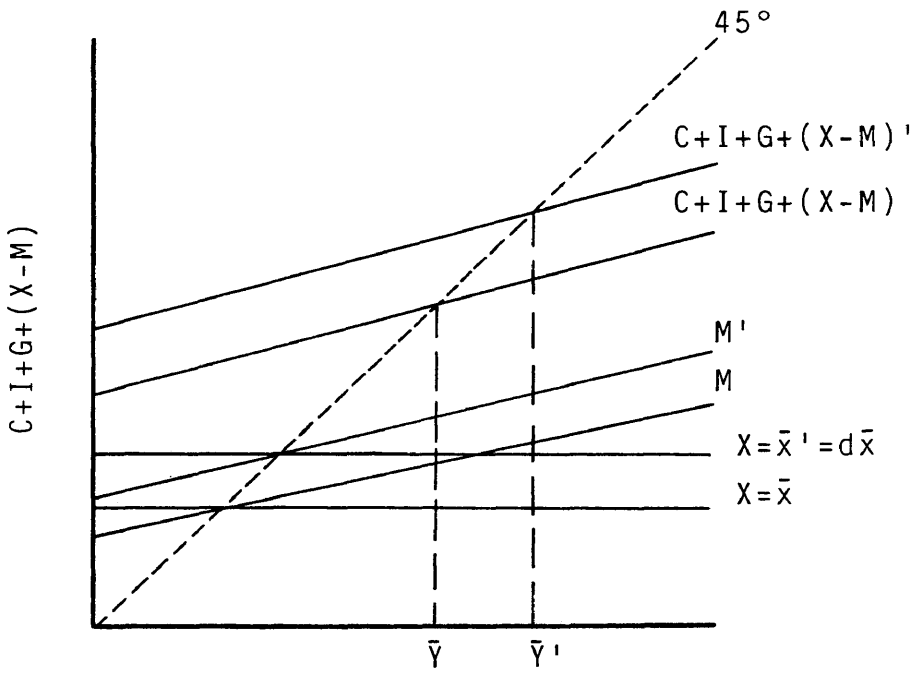

Figure 2.2

Regional Aggregate Demand with a Change in Exports

$$k = Y_T / Y_B = 1 + Y_{NB} / Y_B,$$

where

T = total (employment or income),

B = basic (employment or income),

NB = nonbasic (employment or income),

k = nonbasic multiplier,

Y_{NB}/Y_B = base-service ratio.

Total change in the economy can then be shown to be

$$dY_T = (1 + dY_{NB}/dY_B)(dY_B)$$

or $$dY_T = \left(\frac{1}{(1 - dY_{NB}/dY_T)}\right)(dY_B)$$

after Nourse (1968), Bendavid (1974), and Leistritz and Murdock (1981). Alternatively, the multiplier may be expressed as a proportion of changes in the base-service ratio, rather than an average, which is considered to be a better estimate of the effect on income. As developed by Leistritz and Murdock (1981), the multiplier becomes

$$1 + dY_{NB}/dY_B.$$

The extent to which a change in exports and the resulting change in income induces a change in regional consumption that is greater than a change in imports depends on the relative values of b and m. The higher the value of b, the greater is the tendency to spend locally

and the higher is the value of the multplier (Leistritz and Murdock, 1981).

2.3 Theoretical Applications

In practice, export base models are much more complex than what has been briefly presented above. Disaggregated multipliers have been developed for regions affected by more than one basic industry (Weiss and Gooding, 1970; Leistritz and Murdock, 1981). The Tiebout model can also be disaggregated into six smaller sectors, such that

$$X = X_p + X_g,$$

$$I = I_{rb} + I_{rh} + I_{rg},$$

$$G = G_{rg},$$

where

X_p = income from private exports,

X_g = income from exports to the central government,

I_{rb} = income from regional business investment,

I_{rh} = income from regional housing investment,

I_{rg} = income from government investment in the region,

and G_{rg} = government spending which maintains current government operations in the region,

after Nourse (1968) and Bendavid (1974).

Further, Tiebout argued that only the export sector is basic or independent in the long run. With time, investment and government expenditures are also dependent on income. Thus the model becomes

$$dY_B = d(X_p + X_g)$$

and

$$dY_{NB} = d(C + G_{rg} + I_{rb} + I_{rh} + I_{rg}),$$

where

$$dY_T = dY_{NB} + dY_B,$$

again after Nourse (1968) and Bendavid (1974).

The variable s, or b - m, then becomes the sum of the marginal propensities to spend in each of the smaller sectors (Nourse, 1968).

As noted in the introductory paragraphs above, beyond export base models, export base theoretical concepts underlie other analytical techniques. Input-output (I-O) analysis, utilized extensively in regional impact studies, is based on analysis of the interdependence of a region's industries and households as suppliers of inputs and purchasers of products (Leistritz and Murdock, 1981). Developed by Leontif in the mid-1930s, I-O provides a format in which general equilibrium theory can be presented

empirically (Oser and Blanchfield, 1975). In I-O models, a region is divided into sectors with the interdependencies among the various sectors providing the basis for tracing multiplier effects of an exogenous shock. Sectors are still defined according to whether inputs are direct (basic) or indirect (nonbasic) (Bendavid, 1974; Leistritz and Murdock, 1981). Leistritz and Murdock (1981) remarked that regional I-O models

> can be viewed as a disaggregation of the export base model which allows for consideration of a large number of local industries with varying proportions of basic activity and for consideration of several sources of exogenous demand for the region's products.

For example, the North Dakota Economic-Demographic Assessment Model (NEDAM) incorporates I-O analysis for economic projections from changes in basic activity. Interdependence coefficients (base-service ratios, which are used as multipliers) are used to extrapolate the effects in the nonbasic sectors (Leistritz, et al., 1982). Another model, the Planning and Assessment System (PAS), relates inputs to outputs but uses several modules linked to a data base management component to do so. The Basic Activity System (BAS) stores information on basic activities, associated employment and income, worker

demographics and characteristics, and local purchases made to supply inputs to the basic activities. The level of local purchases is converted to nonbasic employment and income using regional I-O coefficients. In the County Projection Module (CPM), an economic submodel uses coefficients to determine basic, nonbasic, and total employment and income by sector at the county level. The CPM uses income as the basis and converts income to employment. The Subcounty Allocation Module (SAM) further disaggregates CPM output into subcounty jurisdictions (Mountain West Research - Southwest, Inc.). Moen (1984) reviewed PAS and critiqued its use in western Colorado regions affected by oil shale development.

A third analytical technique, receiving increasing support, which generally incorporates export base concepts is econometric modeling. These techniques employ time series data and regression analysis to estimate relationships between economic variables. The primary impetus for using econometric modeling is the ability to link exogenous changes at the national level to changes at the regional level (Leistritz and Murdock, 1981).

An example of econometric modeling which also includes export base concepts and I-O techniques is the Colorado

Forecasting and Simulation (COFS) model. It was described as one that integrates export base and I-O structures with neoclassical behavior and production theory (Greenwood and Orr, 1984). The model is linked to national economic activity in an approach similar to export base analysis. It includes regional purchase coefficients or multipliers that estimate the effects of each industry's local purchases. Exogenous demand at the national level is assumed to drive economic expansion or contraction. The model differs from simple econometric models in the type of information used; individual coefficients are estimated from a single time series only when results from more comprehensive statistical analyses are unavailable. In contrast to traditional export base or I-O models, the COFS model incorporates a production function which allows factor substitution based on relative factor prices in addition to other comprehensive features (Greenwood and Orr, 1984; Center for Economic Analysis, 1984).

The above is only a cursory review of three commonly used analytical methodologies that incorporate export base concepts. Several reviews of other models that have been used in the western states and their conceptual bases are found in the literature (Murdock and Leistritz, 1979;

Leistritz and Chase, 1982; Murdock, et al., 1982; and Murdock, et al., in press). These include, for example, BOOM-1 and BREAM, developed by the Los Alamos Scientific Laboratory and by Mountain West Research - Southwest, Inc., respectively, for the U.S. Bureau of Reclamation. Bleistein (1979) also reviewed BOOM-1 in a study of supply side factors associated with housing development in communities impacted by rapid growth. Both models have been used extensively in the West and both assume export base theoretical relationships.

The question might now be raised as to how export base concepts and multipliers are used in growth projections. In general simplistic terms, the analyst first dissects an economy into basic and nonbasic sectors and determines existing base-service ratios or interdependence coefficients (for I-O) to derive multipliers. Expansion in basic activity is next evaluated. By applying multiplier relationships of existing levels of sectoral activity to forecasts of future basic activity, future levels of employment and income for the total economy and the basic and nonbasic sectors are projected (Isard, et al., 1960; Leistritz and Murdock, 1981).

Leistritz, Murdock, and Leholm (1982) compiled

estimates of secondary response for various types of energy projects (Table 2.1, following). These estimates use the relationship $1 + E_T/E_B$, which is similar to the export base multiplier in Section 2.2 above, but substitute employment (= E) for income (= Y). The authors observed, as did many other researchers in published accounts, that secondary effects are smaller during project construction than during operation. Additionally, the multiplier estimates in Table 2.1 are derived for multi-county trade areas so that secondary effects in individual counties or communities may be less.

Several retrospective studies have been conducted in attempts to determine and explain how nonbasic sectors in energy impacted communities did indeed respond. Gilmore and Duff (1975) found that nonbasic employment in Sweetwater County, Wyoming did not keep pace with rapid growth between 1970 and 1974. Total basic employment increased by 5,475 and total local service employment by 2,520 for a base-service ratio of 0.46 (or a multiplier of 1.46 using the form $1 + E_{NB}/E_B$ where E = employment). Population increased from 18,391 to 36,900. These effects were attributed to growth in the trona and coal mining industries and construction of the Jim Bridger Power Plant.

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Table 2.1

Estimated Indirect Employment Associated with Energy Development Projects

Project Type	Project Location (County, State)	Project Phase	Direct Employment	Indirect Employment	Employment Multiplier (Total employment divided by direct employment)
Electric generating/coal gasification complex with surface mine	Mercer, North Dakota	Construction	3,240	1,004	1.31
		Operation	1,314	1,449	2.10
Coal surface mine	McLean, North Dakota	Construction	270	139	1.51
		Operation	225	194	1.86
Oil shale mining and refining	Rio Blanco, Colorado	Construction	1,200	450	1.38
		Operation	1,050	975	1.93
Coal-oil-gas complex and coal surface mine	Slope, North Dakota	Construction	5,050	1,010	1.20
		Operation	2,630	1,972	1.75
Coal-oil-gas complex and coal surface mine	Oliver, North Dakota	Construction	5,050	2,525	1.50
		Operation	2,630	3,682	2.40
Uranium mine and mill	Converse, Wyoming	Construction	230	253	2.10
		Operation	220	330	2.50
Coal surface mining (multiple mines)	Campbell, Wyoming	Construction	2,727	1,013	1.37
		Operation	2,788	2,034	1.73
Electric generating plant with coal surface mine	McLean, North Dakota	Construction	1,270	622	1.49
		Operation	485	622	2.28
Electric generating plant with coal surface mine	Grimes, Texas	Construction	550	385	1.70
		Operation	250	175	1.70

Sources: Toman, Dalsted, Wieland, and Leistritz, 1978; Colony Development Operation, 1975; Gilmore, Giltner, Coddington, and Duff, 1975; Jackson, 1977; Hayen and Watts, 1975; Toman, Dalsted, Leholm, Coon, and Leistritz, 1976; and Resource Communities, Inc., 1977.

From: Leistritz, F. L., S. H. Murdock, A. G. Leholm, "Local Economic Changes Associated with Rapid Growth," in Coping with Rapid Growth in Rural Communities, Westview Press, 1982.

The authors noted that for a typical, stable, small Rocky Mountain community affected by new resource development, the base-service ratio will be between 1 and 2, thus supporting their conclusion that the local service sector failed to meet the needs of growing communities (primarily Rock Springs and Green River).

Leistritz, Murdock, and Leholm (1982) reported the findings of an analysis of growth associated with electric power plants in McLean County, North Dakota (Coal Creek Station), and Platte County, Wyoming (Laramie River Station), by Thompson, Blevins, and Watts in 1978. Multipliers of 2.2 and 4.6, respectively, were estimated. The high values, relative to what is ordinarily used in many impact projections, were attributed to limited data on the analytical side. In part, the high values were also thought to be a result of accelerated growth during construction phases of the power plants as improvements in housing and public facilities were made. Leistritz and Maki (1981) concluded that in the case of McLean County, secondary effects were underestimated in pre-project impact assessments. They observed that construction of the Coal Creek Station provided a substantial stimulus for the expansion of retail and service facilities in the impact

area. However, Leistritz and Maki noted that the impact area included the larger municipalities of Bismarck (Burleigh County) and Mandan (Morton County). As a consequence, local businesses in communities proximal to Coal Creek appeared to have served primarily a convenience function resulting in lower growth effects for those smaller communities. Several businesses were established in the primary impact communities of Washburn and Underwood. The authors determined that most of the new or expanded businesses were operated by local people or natives who had returned to the area in response to new opportunities. Concerns about competition for labor between the basic and nonbasic sectors and consequent higher prices for local goods and services were cited by local leaders interviewed for the study.

A supplemental note here is that hiring practices and preferences obviously can have an impact on growth projections and growth management in the impact situation. If hiring for basic and nonbasic sectors can all be done locally, then inmigration, local population growth, and subsequent impacts on public services can all be reduced (Leistritz and Murdoch, 1981).

In contrast to the analysis by Thompson, Blevins, and Watts, Gilmore et al. (1982) found base-service ratios for

McLean and Platte Counties to be much lower. Their findings, in fact, influenced the conclusions reached by Leistritz and Maki. The research by Gilmore, et al., was part of a comprehensive review of 12 power plant projects located throughout the United States. A summary of their findings with respect to western and midwestern project sites was compiled by Leistritz, Murdock, and Leholm (1982) and is shown in Table 2.2. In general, the case studies revealed that during construction phases of the energy projects the base-service ratio does not exceed 0.2 (or a multipler of 1.2), much less than anticipatory impact studies projected. Gilmore, et al., theorized that this is due in part to a lack of local response to peak construction workforce changes. The base-service ratio was higher with respect to plant operations personnel that settled in the immediate communities. The short-term (5 years) ratio appeared to be in the range of 0.4 to 0.8 (or multipliers of 1.4 to 1.8) depending on the economy of the area. The authors recognized that anticipatory studies for the 12 sites did not include sophisticated modeling techniques, and this may have contributed to the inaccuracy of growth forecasts. It was also recognized that the case studies did reveal a number of weaknesses in currently used impact assessment techniques.

Table 2.2

Estimates of the Ratio of Local Service to Construction and Operating Employment, Selected Power Plant Sites[a]

Case study (State)	Ratio of local service employment to construction workers residing in the impact area for: Peak construction employment	Ratio of local service employment to construction workers residing in the impact area for: Annual average construction employment	Ratio of local service employment to operating workers[b] residing in the impact area for: Annual average operating employment	Ratio of local service employment to operating workers[b] residing in the impact area for: Annual average immigrating operating employment
1) Coal Creek (North Dakota)	0.4	0.4 - 0.5	0.8	0.8 - 0.9
2) Clay Boswell (Minnesota)	0.6	0.6 - 0.7	0.7 - 0.8	0.8
3) Boardman (Oregon)	0.1 - 0.2	0.2 - 0.3	0.2 - 0.3	0.3
4) Laramie River (Wyoming)	0.1 - 0.2	0.2 - 0.3	0.6 - 0.8	0.8
5) Newton (Illinois)	0.2	0.2 - 0.3	0.6 - 0.8	0.8
6) Fayette (Texas)	0.2 - 0.3	0.3 - 0.4	0.6	0.6 - 0.7
7) Bellefonte (Alabama)	0.6	0.6 - 0.7	0.7	0.7 - 0.8
8) Coronado (Arizona)	0.1 - 0.2	0.2 - 0.3	0.6	0.6 - 0.7
9) Cholla (Arizona)	0.2 - 0.3	0.3 - 0.4	0.6	0.6 - 0.7

Source: Gilmore, Hammond, Moore, Johnson, and Coddington, 1981.

[a] Estimates presented in this table are of the form E_s/E_b, where E_s = change in secondary employment and E_b = change in basic employment (e.g., construction or operation workers). To make these estimates comparable to the employment multipliers presented in Table 2.3 and elsewhere, add 1.0 to each estimate.

[b] As a rule, estimates of the operating workforce multipliers were made during the buildup of the operating work force. Operating workforce multipliers will probably be higher under steady state conditions.

From: Leistritz, F. L., S. H. Murdock, A. G. Leholm, 1982 (see Table 2.1).

Leistritz, Murdock, and Leholm (1982) also summarized overall conclusions by Gilmore and his associates (Table 2.3). Based on findings of the 12 case studies, a range of ratios was developed that suggest what secondary effects might be expected to occur for various impact areas. The data support observations reported in Chapter 1 that the less developed an existing commercial sector is, the smaller the secondary effects appear to be.

With respect to growth impacts related to oil and gas industry activity, the subject at hand here, Chase and Leistritz (1982) reported substantial effects in the North Dakota portion of the Williston Basin. For the five primary impact counties studied (Billings, Dunn, McKenzie, Stark, and Williams) employment grew by nearly 4,000 between 1970 and 1979 in the combined sectors of finance, insurance, and real estate (FIRE), retail trade, and services. The nonbasic multiplier was estimated to be 1.2. When counties were disaggregated, it was found that growth was not evenly distributed. Since the majority of purchases were made in the regional trade centers of Dickinson (Stark County) and Williston (Williams County), with Dickinson benefitting the most, growth in other primary impact counties and communities was negligible. It

Table 2.3

Estimates of the Relationship Between Site Area (Impact Area) Characteristics and Secondary Employment Ratios[a]

Type of Site Area	Ratios of secondary employment to immigrating basic workers and immigrating construction workers		
	Immigrating Construction Workers		Immigrating operating employees
	Ratio to peak	Ratio to annual average	
Rural, sparsely populated, no trade center within impact area	0.1 - 0.2	0.2 - 0.3	0.3 - 0.5
More urbanized impact areas, population densities moderate	0.1 - 0.2	0.3 - 0.4	0.4 - 0.6
On the fringe of a metropolitan area	0.2 - 0.3	0.4 - 0.5	0.6 - 0.8

Source: Gilmore, Hammond, Moore, Johnson, and Coddington, 1981.

[a] As in Table 2.2, estimates are in the form E_S/E_B. To compare to employment multipliers in text, add 1.0 to each.

From: Leistritz, F. L., S. H. Murdock, and A. G. Leholm, 1982 (see Tables 2.1 and 2.2).

should be noted here that the method used by these authors to define nonbasic activity (FIRE plus retail plus service) is not followed in this research.

2.4 Issues in Theory and Applications

Critiques and arguments abound about export base concepts, extension of these concepts to export base models and other analytical techniques, and reliability of the results. Traditionally, comments have been directed to both the theoretical side and the empirical side, and are based on observations such as those for the retrospective studies reviewed above about how the secondary market actually behaves.

On the theoretical side, several points have been put forth. Exports are implied to be basic to growth of a region when, in fact, exports are not the only source of growth. Export base concepts are good only in the short run: they neglect changes in output due to inherent changes in productivity, they neglect the contribution of property income, and they assume the variable s, is stable and constant over time (that is, that base-service interdependency relationships do not change over time) when in fact it may be unstable, rendering empirical

observations invalid (Nourse, 1968; Weiss and Gooding, 1970). Export base concepts consider only the aggregate effect on an area's nonbasic employment or income and are only indications of change on the average. They assume that all basic activities have the same local multiplier effect (ignoring variability in input purchasing patterns, wage rates, or worker spending patterns associated with different industries) and do not account for timing of growth impacts (Leistritz and Murdock, 1981). Finally, it is difficult to obtain data and distinguish between basic and nonbasic activities, unearned income is not captured, spatial geographic delineation of impact areas is not considered, lag effects which may distort the multiplier effect are not considered, the problem of "linked" or indirect basic activity is not resolved, and value added locally through production of intermediate inputs is not addressed (Isard, et al., 1960). Many of these shortcomings are corrected in state-of-the-art modeling techniques such as those described. In PAS, for instance, basic employment earnings are weighted to adjust for different spending patterns among local and nonlocal workers to ensure that the multiplier effect is not overestimated, as nonlocals will make fewer local purchases

(Mountain West Research - Southwest, Inc.).

One overriding concern about export base concepts and their application is the focus on demand encouraged by their use (Isard, et al., 1960; Nourse, 1968; Richardson, 1973; Bendavid, 1974; Leistritz and Murdock, 1981). Leistritz and Murdock (1981), annotating Richardson (1978), stated that a major conceptual limitation of export base concepts is that they emphasize changes in external demand for an area's products and completely ignore the factors affecting the area's ability to supply those products. Retrospective studies like those cited above and reviews of socioeconomic impact assessment methodologies have revealed an array of factors that are thought to influence actual secondary market response. Examples from studies quoted in Section 2.3 and others are: (1) the "lag effect," related to uncertainty about growth, which results in delayed response when expanded capacity is needed; (2) the "construction accelerator effect" wherein construction activity in the community induces overexpansion; (3) a more "realistic" viewpoint about long-term potential of growth so that actual response falls short of projected response; (4) constraints such as capital formation, higher wage levels that must be paid in competition for labor, and

shortage of experienced labor; (5) the influence of the level of nonbasic capacity that already existed in the impacted community and whether it was efficient; (6) the level of diversity of goods and services to meet the needs and desires of new residents; (7) the proximity of major trade areas to small impacted communities; and, (8) the lack of effective communication about growth to private sector decision makers (Gilmore and Duff, 1975; Murdock and Leistritz, 1979; Leistritz and Maki, 1981; Chase and Leistritz, 1982; Leistritz, Murdock, and Leholm, 1982; Gilmore, et al., 1982; Halstead and Leistritz, 1983; Halstead, et al., 1984).

Thus, in the process of growth, some of the changes that come about--or some of the reasons why expected changes do not come about--may be due to supply side factors. This is not an argument for including these variables in analytical modeling techniques. Rather, this is an argument for augmenting the established methodological framework with a conceptual analysis of supply side factors and their effects. Siebert (1969) in a footnote remarked that a totally neglected problem in regional growth assessment is the integration of regional growth theory and theory of growth of the firm. This should extend beyond those firms that make up a basic industry, to the economic

rationale for decision making by firms in the nonbasic sectors. Gilmore and his fellow researchers (1982) stated that impact assessment methods should give more attention to the supply side of the local economy rather than just the needs or demand side. Thus, assessments should incorporate an analysis of the factors that affect economic decision making. According to Gilmore and his associates greater attention should be given to the information requirements of private as well as public decision makers. As the retrospective reviews demonstrated, information is a key variable in when and how nonbasic sectors respond. Finally, impact assessments should not only provide an understanding of economic considerations like costs and resource availability on the supply side, but should provide other, more elusive concerns as well. Richardson (1973) observed:

> If social, political, and other non-economic factors are accepted as relevant to a discussion of regional growth differentials, then, inevitably, we will be less satisfied with the content and orientation of our models of regional growth.

2.5 Statement of the Hypothesis

It has been shown that export base concepts have strongly influenced the methodological approaches taken to determine socioeconomic impacts of energy resource

development. Central to export base theory is the notion that changes in external demand, manifested as changes in basic exporting activity, induce changes in nonbasic sectors of an impacted area. It was argued in this chapter that the emphasis on demand side factors has precluded consideration of factors on the supply side that may affect how the nonbasic sectors do indeed respond. This argument and its policy implications could be tested for a typical, western, energy impacted community. It is hypothesized that:

> Supply side, behavioral and economic decision factors strongly influence nonbasic activity in energy impact situations and largely explain the divergence between actual and demand side-predicted response in Evanston, Wyoming. Understanding these factors is a necessary approach to providing the information that will encourage or make possible warranted nonbasic response.

In effect, it is suggested that current assessment techniques which rest on export base theory, oriented as it is to demand side factors, provide only a partial framework for analysis and that a better understanding is required of how local firms in these situations make decisions. To test the hypothesis, key research questions must be posed.

1. What nonbasic response is warranted (i.e., was the actual response in Evanston greater than,

equal to, or less than the predicted response), given a change in basic activity, and in what terms does the output from state-of-the-art practices need to be stated (i.e., what information about demand side projections influenced private decision makers in Evanston, was useful, or would have been useful)?

2. Do supply side factors trigger, constrain, or determine nonbasic response to a change in basic employment income, and in what ways do they create divergences between actual and predicted response?

Depending on the conclusions reached, a range of policy implications may exist that embrace several possibilities of information management and even direct intervention in the secondary market. To generalize the results obtained and to suggest improvements in future socioeconomic assessment and mitigation programs, a final question must be raised.

3. If nonbasic response is to be managed based on information about supply side factors and their importance, what would the policy maker look for when examining the characteristics of old and new residents and businesses and supply side factors

such as financing, and what policy "levers" should be used--what to do, with whom, and when?

This last area addresses how information is channeled from the export market to the secondary market. The adequacy of existing policy linkages, improvements or creation of new policy linkages, and whether secondary effects can be or should be managed are ideas that, when considered, will enhance the research results and establish relevance of the hypothesis.

The hypothesis rests on several critical assumptions. First, nonbasic employment and income projections obtained from state-of-the-art models and practices are considered to be as accurate as estimates of growth can be when based fundamentally on changes in external demand and thus changes in basic activity. Second, simulated forecasts of changes in basic activity are considered to be as reliable as possible, given that they are based on industry data and given the great amount of uncertainty that surrounds oil and gas markets. Third, the delineation of nonbasic sectors in Evanston is considered to be reliable when based on the best possible sources of data. Lastly, it is assumed that Evanston represents a typical western energy impact situation and that the local business sector is representative of what may be encountered in similar western

communities.

2.6 Justification for the Research

At the beginning of this chapter, it was mentioned that the critiques and arguments presented would also serve as justification for the research. In every review of export base theory and socioeconomic assessment methodologies, mention is made of the need for greater understanding of the secondary market. In economics as a discipline, researchers are constantly looking for ways in which to incorporate real world variables into practical analyses and to determine the real world variables that explain departures from theory. Therefore, this research is consistent with both of these objectives of translating the principles of economics into useful tools for society.

Conflicting philosophies about prediction and theory provide fertile ground for inquiries. Cyert and March (1965) credited Milton Friedman with being the foremost proponent of the view that the only crucial test of a theory is its predictive power. Friedman maintains that concern over descriptive accuracy has led to a misunderstanding of economic theory. To Friedman, the function of economic theory is to build propositions with which the

world can be analyzed and not to reproduce the world. In general, this researcher accepts that viewpoint. The practicality of Friedman's viewpoint is what is questioned. Gilmore (1980) quoted Martin Greenberger to this effect:

> The first principle of modeling is that "models are to be used but not to be believed." In other words, the modeler who believes literally in his model, when he should be questioning it, is driving recklessly with his head in the clouds. . . . a second principle of policy modeling . . . is that the political setting in which a model is presented may be decisive in how the model is received by policy makers.

In stressing the importance of continued emphasis on, and understanding of, socioeconomic impacts of western energy development, Gilmore went further to quote Jim Morgan, manager of Wyodak Power Plant in Gillette, Wyoming.

1. Any organization or person who thinks socioeconomic impact problems are overrated--is wrong.
2. Any organization or person who thinks everyone in the community will welcome his project--is wrong.
3. Any organization or person who thinks that impacts can be handled ad hoc--is wrong.
4. Any organization or person who thinks they're not going to have to spend dollars [dealing with impact problems]--is wrong.
5. Any organization or person who thinks they can plan for <u>all</u> impact problems requiring action and money--is wrong, and is in the wrong field of endeavor.

The focus on oil and gas industry activities provides an opportunity to contribute toward the expanding volume of knowledge about the effects of growth associated with those resources. Chase and Leistritz (1982) commented that few socioeconomic impact assessments have been conducted of on-shore petroleum activity. Recent efforts include work in the portion of the Overthrust Belt that extends into Wyoming, the general locale for Evanston. These authors highlighted several factors, such as the multi-faceted nature of the industry, and methodological problems that make analysis of socioeconomic impacts particularly difficult.

Isolating Evanston for analysis rather than embracing the larger primary impact area of Uinta County or the Overthrust Region is consistent with the focus of this research--defining and understanding the economic and behavioral factors that influence suppliers of nonbasic goods and services. Restricting the hypothesis and analysis to the one community is good research. A thorough analysis of the secondary market in Evanston, using scientifically sound empirical methods, will generate results that can then be more broadly applied and tested in other situations. In contrast, a generalized research

approach with broad assumptions made about the range of energy impact situations in all communities would generate results that are too undefined for practical use. The most sound research approach is one that targets specificity with the universality of results achieved through repeated applications.

Apart from research considerations, the focus on Evanston allows for discussion of policy measures and information dispersal activities undertaken by the Overthrust Industrial Association, a coalition of petroleum industry firms which contributed to impact management in the region. The OIA is an important vehicle for outlining the many policy issues and options that arise from this research and are addressed in Chapter 5.

The significance of the secondary market is repeatedly emphasized in literature. In Chapter 1, the implications for population growth, public infrastructure and services, and public policy have been stressed. Chase and Leistritz (1982) remarked that estimating the magnitude of secondary economic activity is an important aspect of any comprehensive social and economic impact assessment. They further stated that accurate estimates of petroleum development's secondary economic effects are critical to several aspects

of growth management planning, central to the evaluation of total change in a market area and realistic projections of population growth.

The selection of the methodology used in this study--design of a conceptual model to describe the secondary market and identify supply side variables, and subsequent design of a scientific survey instrument using the conceptual model as a framework--was based on documented commentaries of empirical research methodologies. In particular, use of the conceptual model (developed in Chapter 3) was examined and implemented by Bleistein (1979). It was found to be a convenient way of identifying factors to be analyzed in a case study, a systematic basis for assessing housing related impacts in Gillette, Wyoming, and indicative of the kinds of information that are useful in analyzing a market, particularly from the supply side. In addition, Bleistein suggested the conceptual model may be useful for policy analysis.

Personal interviews with several individuals who have made significant contributions to the field of socio- economic study have revealed the importance of establishing the need for and level of an information-policy linkage to the private sector in energy impact situations. A side

light of this is the framework it provides for analysis of impact situations even among different cultures and countries. The notion of a linkage that incorporates the uniqueness of regions and communities everywhere extends from one of the most important lessons of socioeconomic mitigation programs in the West. That is the realization that not all communities and populations in the United States or western states are the same. Regions are not homogenous, and the expanding data base and experience in dealing with different attitudes and situations will reduce risk to the resource firm (Gilmore, 1981).

CHAPTER 3

THE SECONDARY MARKET

The key points from Chapters 1 and 2 can now be related as shown in Figure 3.1. Export base theoretical concepts on the first level incorporate shortcomings and weaknesses even though they underlie all predictive techniques. Level 2 demonstrates the assumed linkage of the basic and nonbasic sectors via the multiplier effect. Again, all shortcomings and criticisms of this relationship are implicit. Level 3 embraces the fundamental issue of what actually happens in the secondary market in rapid growth situations. Here, the hypothesis suggests that actual response is influenced by variables on the supply side, given the underlying assumptions as stated in Chapter 2. Finally, Level 4 consists of the working part of this research, describing secondary response in Evanston. A methodology is developed in this chapter that provides a means of testing the hypothesis and discussing the related research questions. In addition to assumptions to the hypothesis the research methodology rests on assumptions that are outlined in this chapter.

It has already been emphasized that the progression

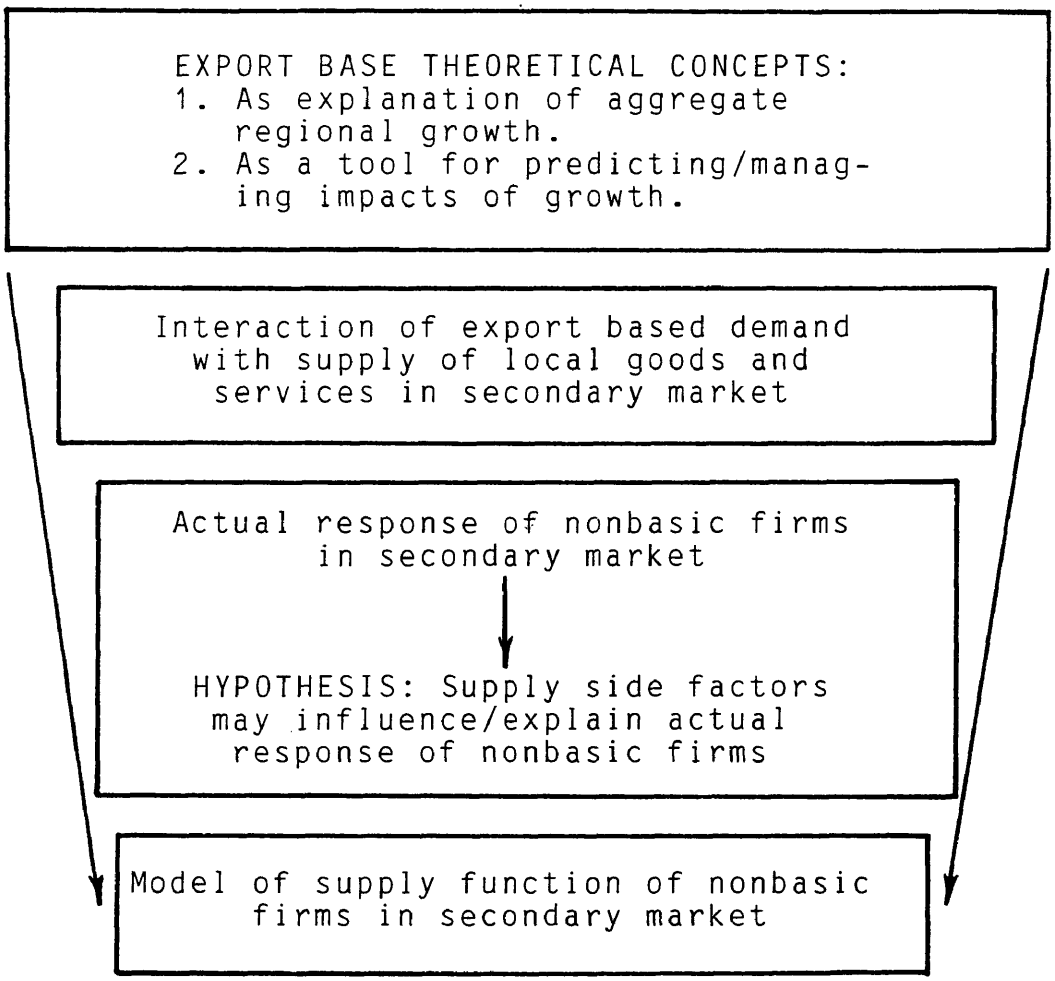

Figure 3.1

Key Research Points

from a change in basic activity to a change in nonbasic activity hinges on information. The interaction of supply and demand in the secondary market depends on how well information about demand is transmitted to supplier of local goods andervices. Obviously, the better the information, the more efficiently the market performs. Similarly, the more accurate perceptions about that information are, the greater market efficiency is. The closer both "real" information (information based on facts) and "perceived" information (impressions or attitudes about real information) move to perfection, the closer the market moves to the idealized equilibrium that microeconomic theory suggests. Thus, the essence of this research is to suggest market supply curves for nonbasic goods and services in Evanston and how and why those curves changed.

In examining how and why, the analyst must define and evaluate decision factors on the supply side and their effect. Some of these are purely economic, some are tied to the attitudes and perceptions of individuals operating in that market. Some, perhaps the majority, of these factors are themselves altered by demand side changes. In the aggregate, all of the variables may have a strong effect on the supply curve. Following the previous line of

reasoning in reverse, the farther real information or perceptions about information are from perfection, the farther from idealized performance the secondary market moves. This is the essence of the hypothesis, expressed differently.

The purpose of Chapter 3 is fourfold. The first task is to link the assumptions and conditions of economic base theory to microeconomic theory by describing a theoretical secondary market and how profit maximizing firms in that market might function given export-based changes in demand. Second, theories of firm behavior other than profit maximization are discussed. Some of the factors thought to be responsible for actual secondary responses, introduced in Sections 2.3 and 2.4, are used to embellish components of the conceptual model developed in steps one and two. Third, the particular situation, events, and economic trends in Evanston are described for the case study. Last, the methodology of applying the conceptual framework to the case study example is described.

3.1 Economic Characteristics of Retail and Service Firms

The theoretical concepts presented below have been couched in terms of firms operating in the secondary

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market. This includes firms which sell retail merchandise for local consumption--from groceries to auto parts to personal clothing and new vehicles--and firms which provide a variety of services for local consumers. These include repair, legal, medical, and personal improvement services. Finance, insurance, and real estate services (FIRE) and wholesale trade are excluded. All retail and service sectors or industries exclude any activities that exist solely to serve the basic industrial activity of oil and gas production. This distinction, as well as a review of the organization of nonbasic activities in the secondary market, was discussed in Chapter 1, Section 1.3.

At this point, some characteristics of these types of businesses must be remarked upon. The output of nonbasic activity consists of the goods and services made available to local consumers. The difference between a retail firm and a basic manufacturing operation, for example, is that the former sells finished goods and adds to its inventory by ordering goods rather than by producing goods. This is the firm's output (Cyert and March, 1965). Supply for that firm is thus partly a function of the availability and cost of wholesale finished goods which the retailer then makes available to consumers. Demand for the retail firm's

output is represented by inventory turnover (Cyert and March, 1965). What the retailer facilitates is an exchange in property rights to goods to final consumers. The activities associated with this exchange in ownership include buying, selling, storage, promotion, merchandise presentation, inventory control, pricing, and financing (Rosenbloom and Schiffman, 1981).

The service sector is characterized by intangibility, simultaneous production and consumption, and the potential for service variability. A service is a performance and is not something that can be possessed by the consumer. Production and consumption occur in the same time frame but the service is usually sold first. Because of this condition, the provider of the service is often present when consumption takes place and, therefore, how the service is distributed may greatly influence the customer's perception of the service. The conduct of the service provider is a key consideration. As a consequence, service industries vary as to the degree to which they are "people based" or "equipment based." Tne outcome of the latter is generally more standardized and uniform. Firms that sell services may also sell goods that are part of, related to, or independent of the service offered. Service firms may be

further described by the amount of contact between firm and customer which can effect marketing the service (Berry, 1981).

3.2 Theoretical Model of the Secondary Market

When developing models to predict the behavior of firms in a market, it is usual to take as the underlying assumptions those of the "pure" or "perfect" competition market model. As stated in any microeconomic text, these conditions are that no one buyer or seller can influence market price, so that there must be many buyers and sellers in the marketplace. The product must be homogenous, so that buyers are indifferent to the many sellers offering essentially the same product. Perfect mobility of resources must exist; firms must be able to enter or exit the industry according to favorability of profits, and resource inputs used by firms must be able to move smoothly among users to where price is highest. Finally, all participants in the market must have perfect knowledge of all relevant economic variables--product costs, factor prices, production technology, product demand, and market price for the product. All producers thus face the same production function and have the same cost curves (Miller,

1982; Freeman, 1983).

3.2.1 The Meaning of Perfect Competition

One of the earliest definitions of perfect competition is attributed to Cournot (Lekachman, 1959). In 1838, Cournot published a work which, among other things, laid out the definition for this type of market which was to become the foundation of marginalist theories. As developed by Jevons and his peers, Walras and Menger, and comprehensively presented by Marshall in his Principles of Economics (Lekachman, 1959), the conditions for perfect competition laid out the "rules" by which firms behave economically in marginal analysis. The producer's problem is to find the output- maximizing combination of inputs, given a cost constraint, or to find the least-cost combination of inputs to produce a given output (Randall, 1981). The producer does so given a market price for the product and looks to output maximization/cost minimization at the margin, or where each additional unit of production takes place. The firm that manages to do this will force other firms to at least imitate its behavior if they wish to survive. This is the strictest application of perfect competition. It does not allow for rivalry among either sellers or buyers. For sellers, this would take the form of advertising,

improvement of product quality, sales promotion, development of new products--in other words, "real world" attributes (Miller, 1982).

Much criticism has been levied against the strictures of perfect competition. Oser and Blanchfield (1975) regard Wicksell's recognition in 1935 of the inadequacy of perfect competition as anticipating by several decades the better known proposals of imperfect competition by Chamberlain and Robinson. Wicksell developed his theories by studying retail markets about which he noted that retailers usually have a fixed circle of customers. This enables them to have fixed rather than fluctuating prices which respond to changes in wholesale prices only after a time lag and in a modified form. Wicksell (1935) wrote:

> Practically every retailer possesses, within his immediate circle, what we may call an actual sales monopoly, even if, as we shall soon see, it is based only on the ignorance and lack of organization of the buyers. He cannot, of course, like a true monopolist, raise prices at will--only in places remote from trade centers can a considerable local rise in prices occur --but if he maintains the same prices and qualities as his competitors, he can almost always count upon his immediate neighborhood for customers. The result is not infrequently an excess of retailers, apparently for the convenience, but really to the injury, of the consumers.

Wicksell observed that with localized pools of customers, competition from a new retailer in the market area will cause a decrease in sales to existing retailers as customers seek out the perceived improvement in convenience. If the existing retailers cannot correspondingly reduce overhead costs, they will gradually be forced to raise prices. Wicksell believed the correct remedy would be for buyers to organize among themselves.

> But so long as such an association [of buyers] does not exist . . . the anomaly must remain that competition may sometimes raise prices instead of always lowering them, as one would expect.

Wicksell further indicated that with complete monopoly the volume of sales is artificially restricted to the point that yields maximum profits. As price rises, demand decreases. If the decline in demand is less than proportionate to the increased profit per unit as a result of higher price, then total net profit will increase. The reverse also holds, so that further increases in price are disadvantageous. To Wicksell, only variable costs are considered in setting the most profitable monopoly price for retail goods (Oser and Blanchfield, 1975). It is worthwhile to note that strong evidence of monopolistic tendencies in a market must be isolated before perfect

competition can be generally abandoned. Wicksell's observations will surface again in Chapter 4.

Information is just one ingredient for an effective market to exist. It is a key ingredient in that it guarantees that communication exists between buyers and sellers, necessary for voluntary exchange, and is a condition for perfect competition. The quality of information is easy to criticize in terms of its effect on market efficiency and effectiveness. As Miller (1982) pointed out, however, for the price mechanism to work information on relative prices does not need to be known with perfect accuracy by every individual acting in the marketplace. This is a marginalist principle, since it is only marginal buyers who do need accurate information, not average buyers.

The condition that all actors in the marketplace take price as a given does not always apply. Some firms may be called "price searchers"; they look for customers willing to pay the prices that are set, rather than setting price according to apparent market demand. These firms will succeed if customers find it inconvenient and costly to go elsewhere (Silk, 1978). This situation complements Wicksell's explanation of monopolistic behavior by retailers.

Perfect mobility of factors is a substantial assertion. Siebert (1969) in his analysis of regional growth raised many arguments that point to the limitations on mobility of factors of production. Migration of factors is directly linked to growth in output levels of regions or market areas because of the production function (discussed in the following Section 3.1.2).

For labor, mobility is dependent on the sociological behavior of each individual supplier and his or her willingness to migrate. This is linked to information again since the supplier of labor must base decisions on knowledge of variables in the market area to which he or she might migrate. This is dealt with to some extent in Baker's (1984) discussion of labor migration as it affects productivity risk associated with large energy resource development projects.

Capital can migrate in monetary (more mobile) or physical (less mobile) form. New capital units can be considered more mobile until they become affixed to land which, of course, is not at all mobile.

Technical knowledge needed to alter and improve production processes must be communicated across regional boundaries. For technical knowledge to migrate into a

region, the region must have: a large number of problems for which existing production procedures are insufficient, a high level of existing knowledge (as an input for finding new knowledge), access to a variety of information in a communication system which will bring different sets of information together, ability to use its resources in a search effort for new knowledge, the presence of large firms which are able to use more resources than small ones, and the presence of government supported research institutions.

An important argument made by Siebert is that if the mobility of factors of production is reduced, then consumption goods (or, as Siebert calls them, commodities) rather than factors will be traded between market areas. This takes place if factors are completely or partially immobile. It is the mobility of consumption goods that is the central criteria for economic or export base theory. Thus, in questioning the adequacy of one of the conditions for perfect competition, Siebert established the grounds for debating the question of whether change in exogenous demand and the associated income and multiplier effects are a sufficient explanation for expansion of interregional movements of consumption goods. This is associated with

the propensity to import consumption goods, presented in the discussion of export base theoretical concepts in Chapter 2.

Many other criticisms and defenses of the conditions of perfect competition could be cited. Miller (1982), like many other authors, has noted that the difficulty in applying perfect competition to real world situations because one or more of the conditions is violated, does not diminish its usefulness. It is recognized that, to some extent, the conditions of perfect competition must be relaxed in order to apply that market model in reality.

For the purposes of this research, the organization of the conceptual model of firms in Evanston's secondary market and subsequent analyses rest on the perfect competition market model.

3.2.2 Competitive Supply of Output

Siebert (1969) approached the problem of how a regional economy grows by first defining determinants of internal growth, factors on the supply side that create a region's potential output and factors on the demand side that determine a region's actual output. Siebert then defined external determinants of growth, the effect of factor mobility

(discussed above), and mobility of consumption goods in lieu of factors. In the case of the latter, change in interregional or exogenous demand as described in economic base theory is the stimulus for increasing growth in a region. The discussions in this and the next section somewhat replicate Siebert's organization. Theoretical presentation is prepared from Miller (1982) and Freeman (1983).

It is assumed that in the aggregate, all firms (both basic and nonbasic, although subsequent discussions deal only with nonbasic firms) in a market area have production functions like that proposed by Siebert. That is,

$$Q = f(K, L, O, Tr, T, So)$$

where

Q = regional output,

K = capital,

L = labor,

O = land,

Tr = transport resources,

T = technical knowledge, and

So = social system.

Transport resources can be further defined into transport capital, transport labor, and transport land. These are

considered to be derived rather than original factors of production since they are used for the movement of commodities and labor over space. Siebert defined a transport output as being realized if, for given states of technical knowledge and social system, transport services of land and capital goods are combined with services of labor.

All inputs were considered by Siebert to be variable except for the social system. This incorporates social structure, institutional setting, behavioral patterns, and attitudes of the members of a regional economy. Technical knowledge, as it is used in this research, includes business management practices and level of ability of operators in the secondary market. This would include any of the activities undertaken by nonbasic firms to actually implement the process of exchange with the consumer-- merchandising, savvy marketing, methods of inventory control, ordering, record keeping, staff performance, use of advance control and information systems, and the like. It also incorporates the ability of the firm, because of how well it is operated, to cope with the pressures of a rapid growth situation. Importantly, social system and technical knowledge, or information on production processes at a

moment in time, influences the combination of the other four inputs. Variability in social system is, for purposes of this research, assumed to increase with time.

It is assumed that the above production function is typical for the nonbasic sectors. If it is further assumed that firms behave individually in a way that is close to the aggregate, the production function can be regarded as the same for individual retail and service firms as it is for a nonbasic sector as a whole.

Optimal production requires a tangency condition between the level of factor inputs and a budget constraint. Along a locus of such tangency points for all firms in an economy, the necessary conditions for efficiency in production are met. To maximize profits, each nonbasic supplier must select a combination of inputs such that these conditions are met. In this way, the properties of cost curves derive essentially from the characteristics of the underlying production function. The cost function gives the minimum possible total cost of production as a function of the prices of factors and the level of output.

From the cost function, the supply curve for any firm in a nonbasic sector and, ultimately, the market supply curve can be derived. For a perfectly competitive nonbasic

firm which seeks to maximize profits, marginal revenue (MR) is equal to price (P). Efficiency requires that the firm produce where MC equals MR and P. For a short run planning horizon, one in which the firm cannot change the scale of its plant, the firm's supply curve is that portion of the marginal cost (MC) curve that lies above the shutdown point, or where MC is equal to the minimum average variable cost (AVC), as shown in Figure 3.2.

The short run industry supply curve is the sum of the supply curves of all firms in a nonbasic sector. Using the convention established in Chapter 2, "NB" refers to the particular nonbasic activity or product considered.

In the long run, the nonbasic firm still produces where P = MC. In this planning horizon, the firm can change its physical plant. Because of this, the long run average total cost (LATC) curve becomes an "envelope" of short run average total cost curves (SATC), representing all of the different levels of fixed plant capacity for various price-demand scenarios. For every SATC curve there is a short run marginal cost (SMC) curve that intersects it where the SATC and LATC curves are tangent. For the LATC curve there is a long run marginal cost (LMC) curve. In the long run, optimal and efficient output occurs where,

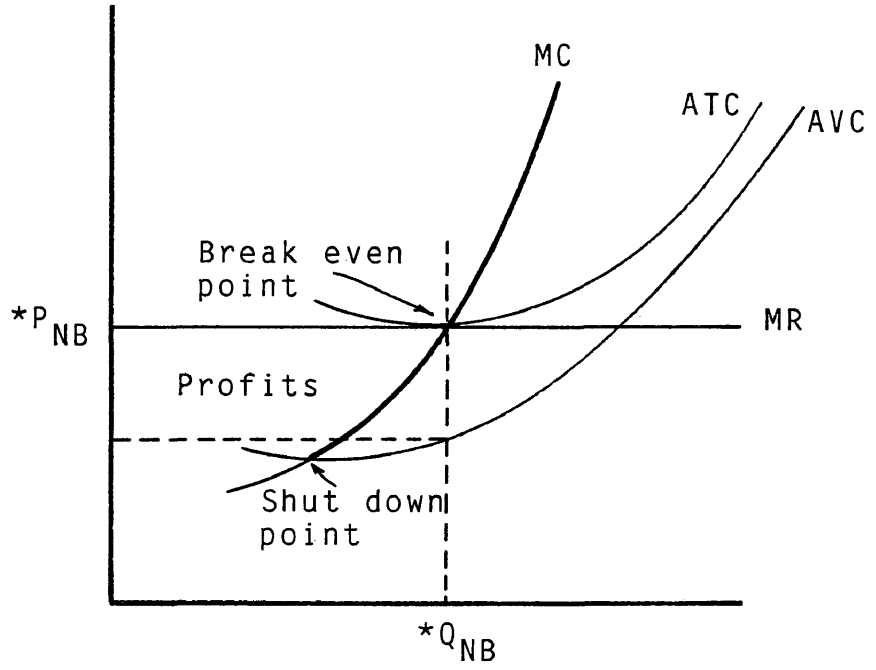

Figure 3.2

Supply Curve for Individual Nonbasic Firm

for a given price, the nonbasic firm expands until the SMC curve intersects the minimum SAC curve at this tangency point with the LATC curve. Here, long run equilibrium requires that SMC = minimum SATC = LMC = minimum LATC = P.

The long run industry supply curve is the locus of equilibrium points for individual firms in nonbasic sectors such as that shown in the previous figure. Whether the long run industry supply curve is horizontal, upward or downward sloping depends on supply conditions in the markets for factor inputs. A constant cost industry would have a horizontal long run supply curve. In this case, a change in demand for an input does not result in a change in cost since the supply curve for that factor input is infinitely horizontal. An upward sloping long run supply curve signifies an increasing cost industry. The supply curves for factor inputs in this case are also upward sloping. As the industry expands its costs increase--it is an increasing cost industry and at the same time experiences decreasing returns to scale or external diseconomies, since the prices of factors increase as the industry expands, and output falls along with price. The reverse of this is a decreasing cost industry which experiences increasing returns to scale or external economies related to falling

factor prices.

Many studies have reported that factor input costs (wages, commercial property rents and buildings, and the like) increase during rapid growth as the nonbasic sectors expand. Thus, for purposes of constructing a conceptual model, it is assumed that the long run supply curve for each nonbasic sector is upward sloping.

3.2.3 Secondary Market Supply Curves and Dynamics

When the short run and long run industry supply curves for firms in each nonbasic sector are drawn against demand, they become secondary market supply curves and are subject to the forces associated with exchange in addition to internal dynamics. Siebert regarded demand in two ways. One was demand for local production that is inherent in a market area and which determines actual regional output. Variations in this regional aggregate demand determine the potential growth of a market area. Change in regional income is thus viewed by Siebert to be a function of both the change in output and the change in demand, measured in constant prices. Two constraints exist, that the increase in actual real income cannot exceed the increase in potential output or be greater than the increase in demand,

again measured in constant dollars.

A question that might be raised here is the extent to which firms in the secondary market might expand apart from what is induced by the basic activity. The argument that nonbasic firms undergo a certain amount of autonomous expansion has been put forth by Leistritz and Maki (1981), Gilmore, et al. (1982), and Leistritz, Murdock, and Leholm (1982). Gilmore and his associates developed this idea more fully in their case studies of 12 electrical utility sites.

The other way that Siebert analyzed demand was in terms of export base concepts or the effect of exogenous demand on local markets. In Chapter 2, Figure 2.2 showed the effect of a change in exports from a market area. This resulted in an increase in regional income as the aggregate expenditures curve shifted upward in response to the change in exports. The amount of change in local consumption that occurs depends on the values of the propensities to consume locally (b) and to import (m).

In this section, the conceptualized secondary market is first established assuming some level of endogenous demand. The effect of changes in demand due to exogenous determinants--increased oil and gas industry activity--on

the supply of nonbasic goods and services is then examined for the immediate, short, and long run planning horizons. Three additional criteria must be emphasized. First, the values of b and m are assumed to be given so that all changes in the supply of nonbasic activities represent the actual proportion of dollars spent on local consumption as a result of change in export based demand. Second, with a change in demand as a result of increased petroleum industry-derived income, the change in supply of local goods and services is assumed to reflect the changing base/service ratios. Third, equilibrium of demand and supply in the secondary market implies efficiency in exchange.

The first situation that may face suppliers of nonbasic goods and services is that of the immediate run, in which there is no time for any adjustment to an increase in demand. In this case, the supply curve is perfectly inelastic and only a fixed quantity of nonbasic goods and services can be provided. The prices of those commodities will rise, with the extent of the increase dependent on the elasticity of the demand curve (Figure 3.3).

Figure 3.3 could indicate both a change in demand and a change in quantity demanded. Subsequent illustrations will depict the same conditions. This implies a more

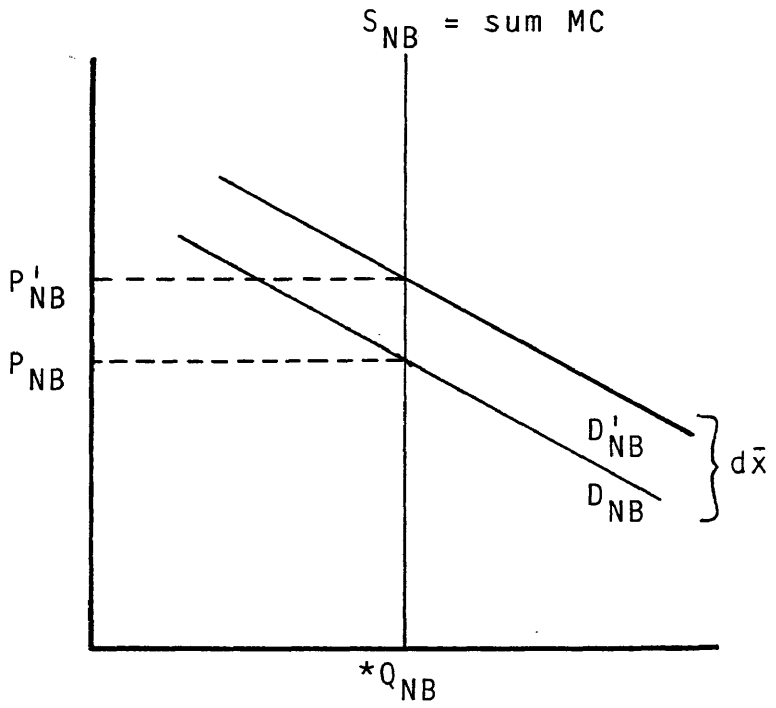

Figure 3.3

Supply of Nonbasic Activity in the Immediate Run

substantial change on the demand side than simply an increase in basic employment income. And, indeed, a significant trend in impact situations has been in terms of changing tastes and preferences for local goods and services with the influx of new customers. This commences in the immediate run and involves both a greater quantity and variety of goods and services than existing outlets can supply (Halstead and Leistritz, 1983). How suppliers in the secondary market perceive and respond to this change is a point of interest to this research.

The immediate run is considered to be a very brief period of time. In the short run, given the production function stated earlier, firms in the nonbasic sectors can vary some of the inputs, at least labor, to provide greater quantities of goods or to serve more customers. The supply curve is thus more elastic, but not as elastic as it is in the longer run. With a change in demand in the short run, the quantity supplied will change. This is manifested by a movement along the supply curve in response to increasing price (Figure 3.4).

In economic theory, this situation can alter the profit earning potential of an individual firm. In the short run, with market price given for the competitive

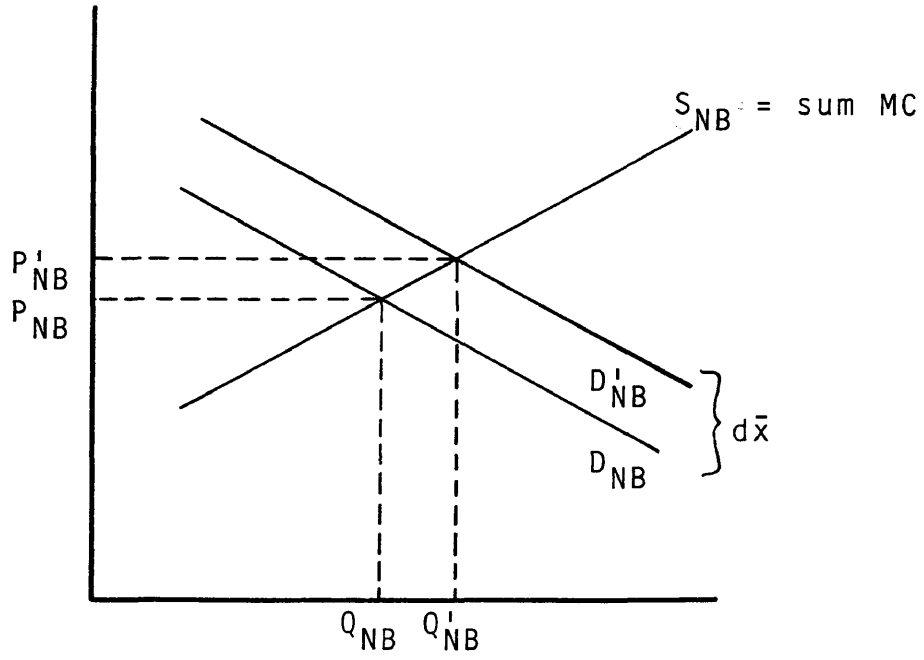

Figure 3.4
Supply of Nonbasic Activity
in the Short Run

firm, the MR curve is the demand curve that the individual firm faces. The firm's ability to earn economic profits therefore depends on the position of the ATC curve. The firm which operates with the minimum point of its ATC curve below MR enjoys economic profits. With the change in demand and an upward shift in the MR curve, this firm will earn above normal profits. The firm that initially experienced losses may now become profitable. If demand were to increase sufficiently, this firm could also experience above normal profits.

In the short run, the ability of suppliers to increase output of local goods and services while maximizing profits will depend on the costs and availability of variable inputs. Labor is generally treated as the only significant variable input in the short run in marginal economic analysis. As indicated in the review of the study by Leistritz and Maki (1981) in Section 2.3, labor commitment by firms in the secondary market and competition for labor between basic and nonbasic sectors is of great interest in explaining and interpreting employment multipliers. Gilmore and Duff (1975) and Chase and Leistritz (1982) also reported that increased basic activity appeared to lure workers away from jobs in the local secondary markets in

Sweetwater County and the Williston Basin region of North Dakota, respectively. In the case of Sweetwater County, this resulted in an initial decline in the ability of firms to supply goods and services until those workers could be replaced. The ultimate effect of the labor shortage is to raise the cost to firms of wages that must be paid (Halstead and Leistritz, 1983; Leistritz, Murdock, and Leholm, 1982; Leistritz and Murdock, 1981; Gilmore, et al., 1982). Increased labor costs shift average variable cost curves upward, reducing profits. This may be relieved somewhat by an expanding labor pool. In a seven-county study of secondary markets, Halstead and Leistritz (1983) did not find increased employee turnover or attracting quality workers to be a problem among the businesses surveyed. They speculated that inmigration of workers to the impact area was the mitigating factor, but one which, as seen earlier, has implications for population growth.

As firms in the secondary market expand, employment opportunties may attract not only newcomers to the area but spouses or other family members of basic employees and other area residents (Murdock and Leistritz, 1979). Also, as cited earlier from the study by Leistritz and Maki

(1981), former residents may return to work in or operate firms in the nonbasic sectors. Whether labor really becomes available in this manner, however, has been questioned (Halstead, et al., 1984). It may be that expansion of the labor pool would not occur quickly enough to satisfy the short run requirements for increasing the quantity of local goods and services supplied.

In the long run, many more variables than simply price can change supply. Firms outside of the market area perceive the profits that individual firms in the market area are earning and will enter the sector. Existing firms have time to expand and change fixed inputs. The existing level of technical knowledge and social system might alter. In sum, in the long run any variable in the underlying production function can adjust to the change in demand. The ultimate result is an outward movement of the supply curve; a change in supply occurs. Price levels fall and individual economic profits are competed away (accounting profits still exist for the firm as well as economic profits for some resource owners). A new secondary market equilibrium is established at the original price but a greater quantity of output from the nonbasic sector.

Long run adjustment of firms in the secondary market,

as shown in Figure 3.5, is dependent on many factors. Discussion will focus first on cost-related factors. Labor availability may continue to vary. In the long run, as firms are able to adjust physical inputs, fixed costs may rise as well. Speculation can raise commercial land or rental costs.

Financing for plant and inventory expansion may become more difficult and costly to obtain. The availability of financial capital has been regarded as a serious constraint to expansion of the supply of nonbasic goods and services as well as to the ability of firms to maximize profits. The pervasive uncertainty about future events in rapid growth situations may generate unwillingness on the part of financial institutions to make capital available (Leistritz, Murdock, and Leholm, 1982).

Often, a community formerly self-sufficient in capital may experience a demand for money that outstrips savings. Commercial businesses, especially small, locally owned enterprises, and residential housing are most heavily affected. The response of lenders in these situations can be either demand constricting or supply expanding. Outside financing can be a solution unless it is offered at a much higher cost to compensate for risk and uncertainty. This

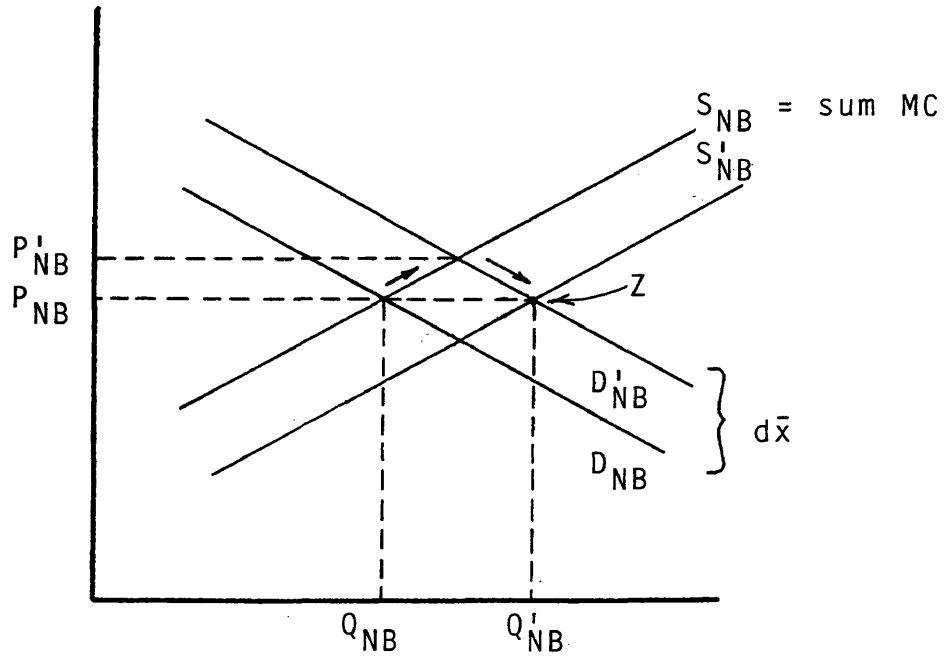

Figure 3.5

Supply of Nonbasic Activity
in the Long Run

phenomenon has been termed the "Craig Factor" because of its role in economic growth of the northwestern Colorado community in response to energy development (Halstead, et al., 1984).

In their discussion of financing, Halstead, et al. (1984) did point out that capital is only part of the problem in an expanding secondary market. The presence of capital cannot make up for deficiencies in markets or management or in overcoming the high costs of labor or land. Much of this is associated with the firm's level of technical knowledge, the variable T discussed in Section 3.2.2, and how it changes with time.

Costs associated with the outward shift of market supply curves for nonbasic goods and services are also subject to exogenous, government policy influences. Revenue raising policies that increase taxes on real property or the sale of goods and services result in increased costs to firms (Leistritz, Murdock, and Leholm, 1982). Tax costs can prevent the full expansion of supply of output from nonbasic sectors indicated in Figure 3.4. On the other hand, policies which reduce costs of operation, in effect subsidizing the output of firms, will encourage an outward shift in supply (Miller, 1982). In

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Evanston, industrial revenue bonds were issued to encourage growth of certain commercial activities such as motel lodging and retail grocery outlets. In this case, the lower lease rates acted as a subsidy. The impact of policies that raise or lower costs to firms on supply is dependent on elasticity of the supply curve.

A factor in the adjustment to a new long run equilibrium was stated to be the entry of new firms into nonbasic sectors in the secondary market. Thus, the quantity of nonbasic output supplied depends in part on the number of firms operating in the market. This is not, however, restricted to the immediate market area. In Section 2.3 results were cited from retrospective studies that showed that local business outlets in smaller communities in McLean County served more of a convenience function and, likewise, businesses in smaller communities in the Williston Basin lost customers to larger, regional trade centers. Therefore, a significant factor related to the number of firms operating in the market may stem from activity outside of the immediate impact area. Generally, this is treated as a demand side factor related to consumer spending patterns. It is argued here that it be treated as a supply side factor because of the implications for

pricing and profit and ability of firms to correctly judge the market.

Leistritz and Murdock (1981) observed that with a rapid increase in growth and its effect on import substitution (variable m in Section 2.2 of Chapter 2), significant changes in regional trade patterns may take place and the existing hierarchy of trade centers may be altered. This could be construed to mean that larger regional trade centers would come to outweigh the local business community. Gilmore, et al. (1982) also noted that in many of the cases where growth impacts due to power plants were studied, a high percentage of potential retail purchasing power is not spent in the immediate impact area. In every case studied, basic income generated by both construction and operation phases added local retail potential. Many small communities located nearer to plant sites were, however, unable to compete with larger, albeit more distant, trade centers.

The entry of firms into the immediate impact area did not appear to substantially affect business operations in McLean County (Leistritz and Maki, 1981). Leistritz, Murdock, and Leholm (1982) suggested that while revenues in the nonbasic sectors may increase from sales, there may not

be a coincident increase in the number of establishments. A shift in the types of establishments capturing sales and market share may exact a substantial change in the makeup of the local business community. In some circumstances, such as those reported in the seven-county study, establishments that are chains or branches of larger enterprises may capture the larger volume of business in the impacted area even though they may be fewer in number (Halstead and Leistritz, 1983).

Another aspect of long run adjustment to a new equilibrium is the downward pressure on prices. This was described as coming about as existing firms expanded and new firms entered the market. How far prices fall and over how long a period of adjustment will depend on the forces of competition, a complex set of relationships as just demonstrated, upward pressures on prices from other sources, or whether monopolistic tendencies like those described by Wicksell exist. A change in demand already has the effect of stimulating supply via price. As suppliers begin to perceive higher prices, they begin to make the adjustments that eventually conclude with a new long run equilibrium. But market price also accounts for the producer's side. In impact situations, to offset higher costs, firms may

increase prices (Leistritz, Murdock, and Leholm, 1982; Leistritz and Maki, 1981). A condition of localized inflation may result, with higher prices both to the supplier for inputs and the consumer, to the detriment of the community. Additionally, depending on how elastic demand is, income and substitution effects may occur to which the producer must be sensitive.

A producer may raise prices for the goods and services supplied not only because of costs. A well recognized tenet in economic theory is that expectations of price also influence supply (Miller, 1982). That is, firms make pricing decisions partially based on their anticipation of future sales. Price expectations among nonbasic firms and their effect on the economy of the impact area are more difficult to evaluate. In situations where areas have experienced repeated growth cycles the effect could be substantial.

This last point leads to the final topic for discussion in this section, the influences of time and information on secondary response. In Chapter 2, Sections 2.3 and 2.4, it was noted that several studies had revealed the effect of various stages of resource development on secondary response. To a large extent, if not entirely, the

immediate, short, and long run planning horizons for non-basic firms are tied to those of firms in the basic sectors, in this research oil and gas operating companies. Several possibilities were mentioned--secondary response may be minimal during the construction phase of a project, or it may be stimulated by local construction activity, and it may be stronger during the operational phase.

To elaborate, Leistritz and Murdock (1981) depicted three scenarios of what might actually occur:

1. A lag in secondary response is typical and occurs because time is required for the local multiplier process to work itself out and a new equilibrium to be achieved.
2. During a construction phase, secondary employment growth is further retarded because existing firms perceive the stimulus of basic activities to be temporary and rapidly growing boom towns are not viewed as attractive sites for new business investment.
3. The impact area might display a construction accelerator effect--basic activity brings in new residents, and construction of support facilities for basic employees leads to an additional influx

of workers with their own multiplier effect on the economy. The overall effect is a major increase in secondary employment in the early years of the resource project, followed by declining employment levels as the local economy reaches a new equilibrium.

These scenarios are tied to the perceptions that operators of nonbasic firms may have about what the resource project could mean to the community. An important consideration for secondary response is lead time for expansion and investment. Time is a scarce resource which influences the value of capital and returns on capital. Time thus influences elasticity; the responsiveness of the supply of nonbasic activity is assumed to be greater as time progresses and more factors of production become variable. With reference to Figure 3.5, this is manifested by downward rotation of the supply curve about point Z. This explains why exogenous government policies may have a greater effect on supply at one point in time or under certain conditions rather than others.

The change in elasticity of nonbasic output is exemplified in observations of actual responses. Murdock and Leistritz (1979) observed that during early stages of plant

construction, increases in sales went primarily to existing businesses rather than to new establishments. Gilmore, et al. (1982) felt that the tendency of local, private decision makers was to gear their response to the level of demand that develops post-construction. In the view of Gilmore and co-authors, most businesses appeared realistic in assessing the long term need for increased demand for local goods and services. Additionally, these authors concluded that response at the operational phase of a research project depends on the economic characteristics of the area. Halstead and Leistritz (1983) in their seven-county study found that most businesses expanded during the ten-year survey period. More than half of the businesses surveyed had been established within the ten-year period. The dilemma over how responsive the supply of nonbasic output might be is framed in two contradictory statements. Gilmore (1981) remarked that supply side market mechanisms may be quite inelastic even if there is effective demand for the output. Silk (1978), on the contrary, wrote that the general public and most politicians underestimate the elasticity of supply.

The hesitation of nonbasic firms to build up for change in demand associated with energy projects is

connected with uncertainty. Gilmore and Duff (1975) commented that for firms that expand in response to construction phases, it may be difficult to realize adequate returns on the investment if it was made to accommodate a one time construction increment with an ensuing drop-off. In Evanston, the major stimulus to basic activity was the construction of two sour gas plants, even though petroleum activity is continuous and differentiated under strong market conditions. This is detailed in a later section. Therefore, the probability at any point in time that non-basic activity will achieve a certain level of response is tied to uncertainty suppliers may have about the energy project.

Uncertainty is reduced by information, for which non-basic firms may be willing to pay either outright in actual dollars or in opportunity cost or, if information is provided for impact mitigation, there may be no cost. In Section 2.3 the observation was made that the lack of advance information was responsible for the lag in secondary response in Sweetwater County. Gilmore and Duff (1975) maintained that balancing basic and induced capital investment depends on communication. For example, the effectiveness of efforts to inform the public and local firms about

development of the Laramie River Station is credited with the overall orderliness of secondary response in Wheatland (Gilmore, et al., 1982).

3.2.4 Behavioral Theory of the Firm

For the purpose of developing the first component of the conceptual model--economic decision factors that determine the supply of nonbasic goods and services--the secondary market is based on the perfect competition market model. The interaction of market supply curves for firms in nonbasic sectors with export based demand for the output of those firms in the immediate, short, and long run planning horizons reflects the conditions of perfect competition. The graphical analyses in which supply curves for an individual firm and all firms in a nonbasic sector are derived assume profit maximization.

Actually, the secondary market may not completely satisfy the conditions of perfect competition. This is because not all firms may act to maximize profits or they may not act to maximize profits all of the time. A firm operating under relaxed conditions of perfect competition and profit maximization may view costs, select inputs, perceive information, and respond to planning horizons and

market changes very differently than a firm operating under full force of those conditions. Without invalidating the components of the model reviewed above or straying too far from the conditions of perfect competition, some flexibility must be built in to the conceptual model to account for individual behavioral preferences of firms that may effect the extent to which they maximize profits, since, in the aggregate, individual behavior may play a significant role in determining secondary market response. By incorporating a "behavioral" component that influences how a firm, as an independently or collectively owned enterprise, does business this flexibity can be achieved.

The focus of this section is the discussion of goals, other than profit maximization, that a firm might target and the process by which those goals are achieved. The latter has to do with how goals are set, choices are made, expectations are recognized, and information is obtained. In the model itself these goals and processes are considered along with profit maximization. This will allow both profit maximizing behavior and departures from profit maximizing behavior to be tested in Evanston.

This section begins with an argument for profit maximizing behavior in much the same way as the first

section in this chapter began with an argument for perfect competition. In defending profit maximization as a reasonable assumption for describing the economic performance of firms, Freeman (1983) noted that it is "by a process of natural selection [that] only those firms that try to maximize profits or act as if they do will survive." Cyert and March (1965) stressed the notion that profit maximization may be only one of many goals a firm may have, including "sex, food, and saving souls." An entrepreneur in the secondary market may have many other motives for being in business or for how the business is operated. They could range from the feeling of personal accomplishment associated with being one's own boss to providing business opportunities to future generations, with no ties, or very weak ones, to profit as a measure of the firm's success. Any of these behavioral modes or those described below may occur with equal frequency among larger firms or smaller, more closely held enterprises. Freeman maintained that entrepreneurs honoring such business practices would not succeed, but that in less than perfectly competitive markets such behavior may be commonplace.

An often cited notion is that a firm will act to "satisfice" rather than to maximize profits. In this case,

a firm may strive for a minimum standard of performance, for instance to achieve a satisfactory level of profit, and then "slack off." No consistent attention is given to minimizing costs for a given level of output (Miller, 1982). Satisficing is a result of what Freeman (1983) terms "bounded rationality." That is,

> entrepreneurs and other decision makers must make choices in a world characterized by ignorance, uncertainty, costly information and limits to the ability to perform complex analyses in search for optimal solutions.

The result, according to Freeman, is that

> rational response to the complexities of real-world decision making is to economize time spent on analyzing alternatives by examining a limited number of alternatives in sequence and stopping the search when an alternative has been found that is good enough.

The implication of satisficing behavior is that a firm is not likely to be at its true optimum at any point in time, creating the "slack" that was mentioned earlier. Organizational slack can provide an important pool of unexploited opportunities for reducing costs and/or increasing income when a firm faces challenges to its survival. Cyert and March (1965) viewed slack as vital to the firm in the face of adversity, playing both a stabilizing and an adaptive role. In the case of nonbasic firms in rapid

growth situations, slack that exists at the time growth accelerates may "buy time" for the community as well as decision makers, and thus is an important concept in estimating nonbasic response.

Firms may act to maximize staff, especially if ownership of a business is separate from control. The number of staff would be increased until diminishing returns to profits were experienced, or a trade-off between profit and the budget for staff were reached. Firms may act to maximize sales rather than profit. Again, this would depend on potential personal gain to members of the organization rather than gains to the organization as a whole. Similarly, maximizing the rate of growth of the firm also leads to larger gain for individuals in the firm. The prestige of the firm may be an underlying argument for these types of behavior (Miller, 1982; Freeman, 1983).

Cyert and March delved extensively into the motives under which firms may operate. A summary of their contributions is made here for application to nonbasic firms in a rapid growth situation. These authors developed a process model for explaining how a firm behaves in the marketplace based on several observations that questioned conventional concepts. Among these, Cyert and March noted that firms do

not equate marginal cost and marginal revenue in making pricing and output decisions, but, rather, fall on one or another of a series of rules of thumb. As a typical example, on the price side a retail firm may use the full cost (mark up) method of pricing based on average variable cost. Some profit and overhead cost will be included in the mark-up. On the output side, as mentioned in Section 3.1, inventory turnover is used to estimate demand; inventory turnover repesents the firm's output. Cyert and March maintained that very seldom do firms frequently use conventional marginal calculation of costs in planning. Another key point in the arguments made by these authors is that in the presence of organizational decision making standard business procedures will influence the content of these decisions.

In constructing their model, Cyert and March suggested that a firm first makes some choices about goals, which may be related to production, inventory, sales, market share, and profit. The firm then develops some expectations about those goals. Here, Cyert and March again departed from conventional notions by observing that a firm only makes gross comparisons of marginal advantages of alternatives in allocating resources and that search activity is hampered

by lack of knowledge about the probability of outcomes from all alternatives. Furthermore, the firm's expectations are not independent of the hopes, wishes, and internal bargaining needs of members of the firm. Because information about outcomes is hard to obtain and may be unreliable, there may be an unconscious or semiconscious adjustment of perceptions to hopes.

Cyert and March proposed that in making choices the firm's decisions depend on information, estimates, and expectations that usually differ appreciably from reality. The firm's perceptions are influenced by characteristics of the organization and its procedures. Additionally, the firm very likely will consider only a limited number of decision alternatives. Finally, not all firms are alike; firms vary with respect to the amount of resources they devote to overall organizational goals versus the goals at various levels or among individual members of the organization. Thus, the concept of standard business procedures is a convenient one. Besides making economic decisions somewhat simpler, it is an adaptive mechanism. The firm adapts over time by learning a number of simple decision rules and procedures. This allows the firm to respond to constraints, changing its behavior in response to short run

feedback about its operating environment and changing its business rules in response to long run feedback. In their process model, Cyert and March assumed that in making choices the firm avoids uncertainty, maintains its rules for standard business procedures (abandoning those rules only under duress), and uses simple rules. By using rules that emphasize short run responses to short run feedback the firm avoids the requirement that it correctly anticipates future events. The overall result is that conventional "good business practice" is standardized, with firms using decision rules that avoid uncertainty while allowing the firm to obtain a return on investment that satisfies its goals for profit, sales, market share, and so forth.

In the beginning of this chapter, the role of information in a perfectly competitive market system was raised. Much of what Cyert and March concluded in their study centered on information and the search process a firm might undertake to get it. The notion that a firm operates with perfect knowledge was continually criticized by these authors. They argued that information is not given to a firm but must be obtained at a price (which may be an opportunity cost to the searcher). Alternatives are searched for and discovered sequentially, therefore the

order in which the environment is searched determines to a substantial extent the decisions that will be made. Search theory holds that search competes with other scarce resources; money is spent to the point where the marginal cost of information search equals the marginal expected return.

Cyert and March found from their case studies that, to the contrary of theory, information search activity is not viewed simply as another use of internal resources. Firms will allocate responsibility for securing particular information to subunits that have regular contact with the source of information and special competence in getting information. Several stages to motivated search activity within a firm exist with all parts of the firm involved, no matter how complex its organization is. Cyert and March pointed out that not only are firms looking for alternatives, alternatives are looking for firms. The effort to avoid uncertainty is reflected in a firm's search activity. It will attempt to develop decision methods that do not require reliable information, other than the simplest, most easily checked information. The overall search process is motivated, simple-minded, and biased, a process that while satisfactory to the firm will not approach perfect knowledge.

Included in the behavioral component of the model are elements that exert a subtle but fundamental direction on decisions made by suppliers of nonbasic goods and services. They are incorporated into the factor So from the production function--attitudes, social characteristics of the impact area, and existing economic setting which includes "business climate." All of these elements are considered in this research to be part of a more dynamic process than that allowed by Siebert because of the nature of the change in demand. That is, they interact and modify, or are modified by, secondary changes in the impact area.

Sierbert's assertion that So is a constant variable can be challenged by citing observations made by Leistritz and Murdock (1981) of energy impact situations in the West. It is evident that prevailing social structures and institutions are affected by growth, changing over time and creating new pressures on actors in the secondary market. For example, the interactive patterns that influence how key groups (such as landowners, merchants, and new residents) respond to one another may be significantly altered. Closeness to the cultural mainstream, the type of existing economic setting, existing leadership, satisfaction with the community, and pre-development perceptions are some of

the elements of the social fabric of the community. That fabric dictates the type of business community in existence before resource development, and how the fabric changes dictates the type of business community likely to evolve with resource development. Likewise, secondary changes might in turn alter the social setting. Leistritz and Murdock described some common implications of this process to be increased exposure of residents to information on outside areas, increased interaction between residents and actors outside of the impact area, and a heightened awareness within the impact area of social class differences.

To comment on attitudes, it should be clear that they are directly tied to the level of uncertainty associated with the resource development project. In their study of Sweetwater County, Gilmore and Duff (1975) felt that uncertainty and confusion existed about the roles, responsibilities, and future plans of resource firms with respect to growth, community development, and community relations. Combined with the memory of the downsides of previous growth cycles, these feelings led to the assumption that the growth boom being experienced was temporary and related problems were equally so. The authors described the attitude of malaise that evolved in Sweetwater County: the

lack of commitment to the future welfare of the community among residents, the unwillingness to get involved, and conflicts that arose between new and existing residents. These traits were regarded as probable causes for the slow response in both commercial and public services during a very difficult adjustment to rapid growth in the county.

Leistritz, Murdock, and Leholm (1982) supported this conclusion about the link between uncertainty and attitudes. They speculated that cognizance of past boom-bust cycles in the West may explain why local businesses are often reluctant to make investments until it is clear that growth is a fact and seems to be relatively permanent. Not to be discounted are positive attitudes and perceptions that then encourage profit-seeking firms or firms seeking other goals and opportunities to act in an optimistic way. Moen (1984) observed that in all energy communities in Region II of western Colorado, local businesses expanded and remodeled and new stores, motels, housing developments, and recreation facilities were opened with the anticipation of an oil shale industry finally coming to fruition. Any traveler to that part of Colorado will be aware of the effects on private industry when the shale industry bubble burst in the early 1980s. It could be speculated, based on

the references cited here, that after that experience existing private investors would act with extreme caution should activity increase again.

Business climate and economic setting account for the nature of existing enterprises and conditions which make private investment in a growth impacted area favorable or unfavorable. These elements can play a role in directing the extent to which change in the secondary market takes place. Gilmore, et al. (1982) observed that small, less diverse commercial sectors offered fewer opportunities for local purchases. This characteristic has already been mentioned as an explanation for lower multiplier effects in small market areas. The dynamics are such, however, that entrepreneurs could move into this type of setting and capture sales or expect to capture sales leaking out to other trade centers, creating upward pressure on the local multiplier.

Similarly, excess capacity in the local nonbasic sectors will absorb new basic income, creating downward pressure on secondary response. This was found to be the case in Wheatland associated with the Laramie River generating station. The existing condition there was one of depressed retail sales (lower than the state average in Wyoming at the time) and sufficient existing capacity for

local purchases (Gilmore, et al. 1982). If such a case were to be repreated, increased profits to existing firms could entice entry of new entrepreneurs, creating a different situation than what developed in Wheatland.

3.2.5 The Conceptual Model Expressed

To describe nonbasic response in Evanston and determine the influence of supply side factors on that response, a model has been developed that rests on the assumptions of perfect competition (many buyers and sellers, homogenous products, perfect mobility of resources, no barriers to entry of firms, perfect knowledge among buyers and sellers). Nonbasic firms are assumed to maximize profits. In the immediate run, a change in demand brings about a change in price but not quantity supplied of local goods and services. In the short run, firms can vary some inputs so that a change in the quantity of supply results in response to new demand (price). In the long run, nonbasic firms can vary any input so that a change in supply results. Eventually, profits are competed away and a new equilibrium is reached at the original price level but a greater quantity of local goods and services.

The secondary market can now be described in

a functional form for ease of notation and to clarify relationships and variables. It is necessary to first equate supply and demand, assuming attainment of some long run equilibrium, so that

$$S_{NB} = D_{NB}$$

where

S_{NB} = supply of goods and services from firms operating in nonbasic sectors, and

D_{NB} = demand for local goods and services.

The functional form of demand is expressed so that the role of export based employment income is established:

$$D_{NB} = f(D_B, P_{NB}, T_p, P_r, P_e, P_o)$$

where

D_B = basic (imported) employment income,

P_{NB} = market prices of nonbasic goods and services,

T_p = tastes and preferences of consumers, including the effects of changes in basic activity,

P_r = prices of related nonbasic goods and services (substitutes and complements),

P_e = demand side expectations of future prices of nonbasic goods and services, and

P_o = population and demographic factors that influence consumption of local goods and services, such as residential patterns.

The variables in the demand function and the underlying factors that influence them are the "demand side decision factors" that influence consumers in the secondary market. They are the factors that are normally considered in estimating nonbasic response to a change in basic activity. Changes in these factors due to change in basic exporting activity are taken as given, in accordance with the conditions outlined in Chapters 1 and 2 regarding the information output from growth projection models: for sophisticated demand side projections of growth to be accepted, then it is assumed that demand side factors are known with reasonable confidence.

Table 3.1 summarizes the supply side decision factors identified and discussed in Sections 3.2.3 and 3.2.4. Variables in the supply function are all considered to adjust with time. The variables and factors that influence supply side decisions in the secondary market can be expressed as:

$$S_{NB} = fE[P_{NB}, I(C), P_e, T, No, A, B_m, So)^e$$

where

Table 3.1

Summary of Supply Side Decision Factors

Costs (availability of resources):
- Labor--Scarce? Competition between nonbasic firms? Increased by inmigration? Increased by population demographics?
- Financing--Scarce? Available from outside the market area?
- Physical Setting--Commercial land or rental space.
- Government Policy--Increase or decrease costs to nonbasic suppliers?

Technical Knowledge--Business management practices, level of ability.

Number of Firms--Outside, inside market area.

Prices of Local Goods and Services--Inflated?

Price Expectations--Inflated?

Autonomous Expansion--Tendency for growth in nonbasic capacity that is not induced by export based change in demand.

Elasticity of Supply--Ability of existing firms to respond? Entry of new firms (attractiveness of community for investment, local construction accelerator effect)?

Information (Uncertainty Avoidance)--Availability of "real" information about energy project.

Behavioral Preferences (affect extent to which nonbasic firms maximize profits):
- Satisficing--Slack.
- Staff Maximization
- Sales Maximization
- Standard Operating Procedures (rules of thumb, not oriented to MC = MR)--goal setting, (variety of goals, may/may not be related to business parameters); expectations (adjustment of perceptions to hopes, influence of organization on perceptions, consideration of limited number of alternatives); adaptive mechanism (change in behavior in response to short run feedback about operating environment, change in rules in response to long run feedback); information search (motivated, simple-minded, biased towards methods that do not require reliable information).

Table 3.1 (Cont.)

Information--"Perceptions" of real information about demand side factors (extent of change, characteristics of new/old consumers, duration of change), supply side factors (economic factors, affect of growth on economic factors)

Attitudes--Prevailing (cultural mainstream, leadership, satisfaction with community)? Change in response to growth? Cognizance of previous growth cycles?

Business Climate, Economic Setting--Prevailing (interaction of business groups and consumers, existing level of business activity)? Change in response to growth?

P_{NB} = market prices of nonbasic goods and services,

I(C) = supply of inputs as a function of costs of inputs, which includes labor, financing, physical setting, and effects of government policies,

P_e = expectations of future prices,

T = technical knowledge or business management ability,

No = the number of firms operating in each nonbasic sector (inside/outside market area),

A = the portion of secondary response attributed to autonomous growth,

B_m = behavioral and managerial preferences of firms that effect the extent of profit maximization,

So = social setting: attitudes, economic setting and business climate,

E = subjective probability about the change in nonbasic activity based on the supplier's real information about export based change in demand (demand side factors),

e = elasticity of supply of nonbasic activity

related to timing of response. Each factor in the supply function would have some value of elasticity associated with it.

As explained previously, the variability of these factors and the ability of firms to realize economic returns from the combination of factors are tied to the planning horizon for energy resource development and the associated influences of time and uncertainty.

3.3 Description of the Case Study Area

Decision factors in the conceptual model of nonbasic suppliers were drawn from economic and behavioral theory and observations of actual changes in nonbasic activity in energy impact situations in the West. In order to test the model and hypothesis in Evanston, an understanding of the case study area is necessary. A description of the case study area will also provide a time frame for this research and a basis upon which to eventually judge the effectiveness of the conceptual model. Oil and gas activity in the region will be described first, followed by an examination of events that have taken place in Evanston since 1979.

3.3.1 Overthrust Petroleum Activity

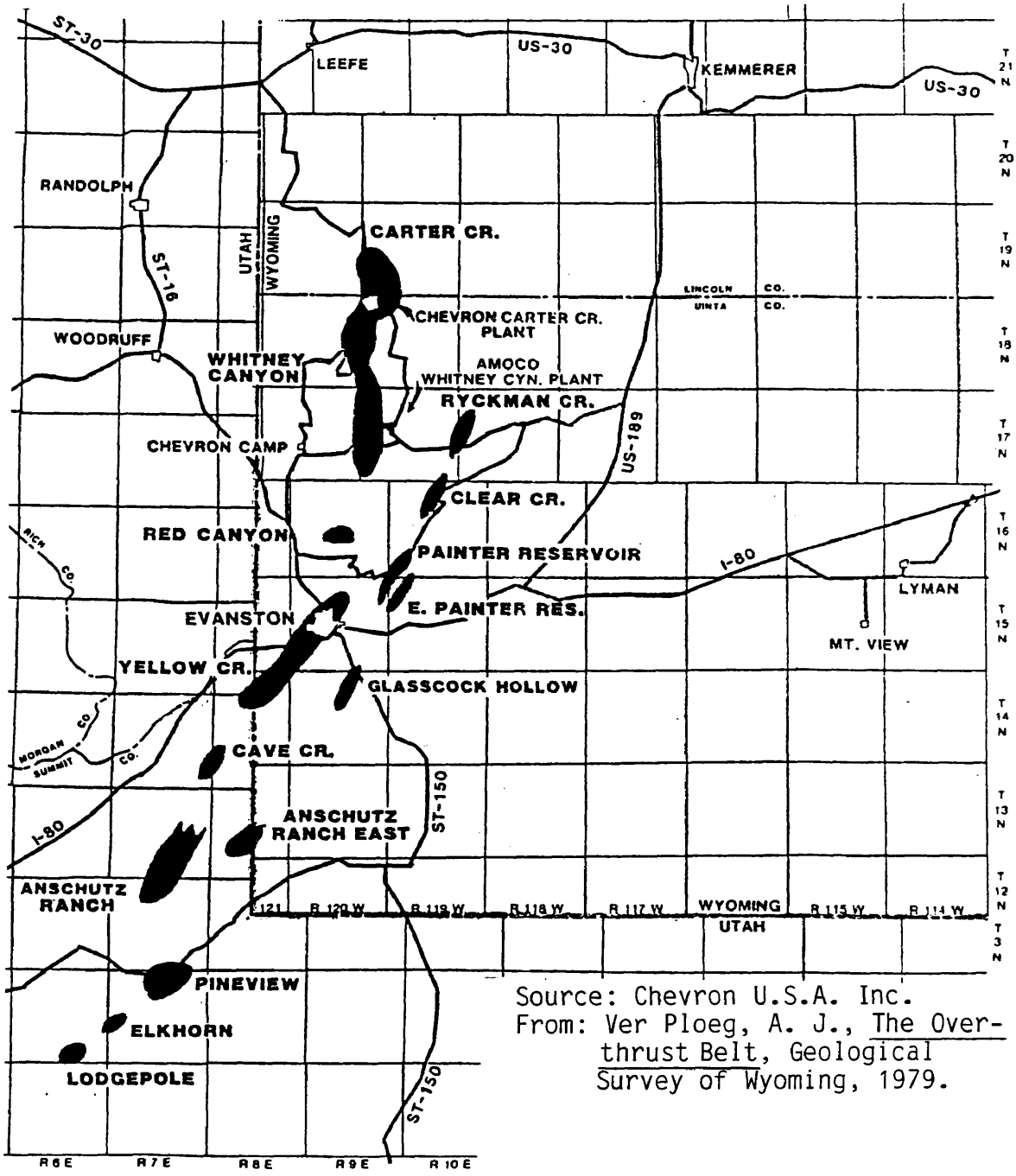
The Wyoming energy frontier opened when the Union Pacific Railroad entered the southern part of the state. The decision in the 1860s to locate the major east-west route in southern Wyoming was influenced by the abundance of sub-bituminous coal that had been discovered. The towns that grew up along the railroad were home to coal miners as well as to railroad construction crews. To build its railroad and fuel it locomotives, Union Pacific used land grants and mineral rights authorized by the Pacific Railway Act of 1864 (Larson, 1977). The UP land grants would play a crucial role in the emergence of the state's petroleum industry in the next century.

Petroleum was known to exist in the state by early adventurers, and many stories have been told over the years about its use by explorers and pioneers. Some of the earliest producing fields in the state were discovered from occurrences of oil seeps. Salt Creek Field, north of Casper, was one of the first. A 1,000-foot well drilled in 1889 produced a sufficient quantity of oil to merit building a primitive refinery (Larson, 1977; Hepworth and Foss, 1982). At that time, little to nothing was known about the complex geologic region just to the west, now termed the

Overthrust Belt, or its enormous potential. A USGS professional paper written in 1905 that predicted the possibility of major oil and gas discoveries in the Wyoming Overthrust was largely ignored (Hepworth and Foss, 1983).

Union Pacific discovered the first oil fields in the Overthrust in 1900 in the Spring Valley-Aspen-Sulphur Creek area east of the current producing areas. Nearly 250,000 barrels of oil were produced from that area. Between 1924 and 1970 the focus of interest was the Big Piney-LaBarge complex, which lies in the transition zone between the Green River Basin and the Overthrust Belt. The first truly significant Overthrust discovery, which confirmed the potential of the region, was Pineview Field in Utah. Since the discovery well drilled in 1975, Pineview has produced over 16 million barrels of oil and 16 billion cubic feet of gas. Reserve estimates made in 1980 were 71 million barrels of oil and 71 billion cubic feet of gas. The size of the discovery triggered activity in adjacent Wyoming and a string of spectacular discoveries was made between 1976 and the present (Ver Ploeg, 1979). The most significant fields are shown in Figure 3.6

The exploration rush was largely a result of the Union Pacific land grants. The railroad had received as its



Source: Chevron U.S.A. Inc.
From: Ver Ploeg, A. J., The Overthrust Belt, Geological Survey of Wyoming, 1979.

Figure 3.6

Overthrust Belt: Location Map

incentive to build the east-west route alternate square mile sections for 20 miles on each side of the track constructed across the western part of Wyoming, which included the Overthrust. Through its subsidiary, Champlin Petroleum Company, Union Pacific was a major participant in oil and gas exploration between 1975 and mid-1981. In the largest land-oil agreement in the United States at that time, UP in 1969 granted Amoco Production Company exclusive exploration rights to approximately 5.6 million net acres in the 40-mile railroad land grant right-of-way. By the conclusion of the agreement in 1977, Amoco and its third party operators had earned approximately 2.8 million net acres (3,906 sections) by drilling nearly 3,000 wells. Approximately 4.7 million acres reverted to Champlin (Petroleum Information, 1981).

Tables 3.2a and 3.2b describe the fields that have been established, which are indicated in Figure 3.6. Nine of the fields rank as "giants," which means that each field contains 100 million barrels of oil or more than a trillion cubic feet of gas (Hepworth, 1981). The Whitney Canyon-Carter Creek field operated by Amoco Production Company and Chevron U.S.A. Inc., ranks as a "supergiant," rivaling Saudi Arabia in reserves and thus qualifying as

Table 3.2a

Production Statistics for Wyoming Overthrust Belt Fields Through December 1980

Field	Discovery date	Producing wells	Shut-in wells	Dec. 1980 production	1980 production	Cumulative production	Average BOPD MCFPD	Incomplete wells	Producing formations	Reserve estimate*
Ryckman Creek	1976	31	1	Oil-Bbls. 259,546 Gas-MCF 864,356	2,956,984 9,004,357	6,685,882 18,528,821	261 1,637	2	Nugget Thaynes	100 MM Bbls. 200 BCF
Yellow Creek	1976	21	1	Oil-Bbls. 34,467 Gas-MCF 172,621	419,520 5,265,476	1,056,116 20,257,139	52 265	28	Twin Creek Phosphoria	40 MM Bbls. 300 BCF
Clear Creek & Painter Reservoir	1977	32	13	Oil-Bbls. 354,294 Gas-MCF 1,989,857	3,349,400 17,311,104	5,234,528 26,252,127	357 2,005	26	Nugget	198 MM Bbls. 835 BCF
Red Canyon	1980	-	1	none	none	none	-	-	Weber	-
Whitney Canyon - Carter Creek	1978/ 1979	3	6	Oil-Bbls. 4,461 Gas-MCF 130,069	24,025 133,009	28,223 133,009	49 1,398	43	Thaynes Phosphoria Weber Mission Canyon Lodgepole Darby Bighorn	115 MM Bbls. 5,300 BCF
Glasscock Hollow	1980	1	-	Oil-Bbls 1,345 Gas-MCF 9,300	1,345 9,300	1,345 9,300	- -	8	Nugget	- -
Painter Reservoir East	1980	2	2	Oil-Bbls. 5,197 Gas-MCF 600	5,197 600	5,197 600	- -	7	Nugget	98 MM Bbls. 765 BCF
Anschutz Ranch East	1980	1	-	Oil-Gas -	-	-	-	-	Nugget	800-1,200 MM Bbls. oil equivalent
Thomas Canyon	1981	t	-	Oil-Gas -	-	-	-	-	Phosphoria Madison	-
Woodruff Narrows	1981	1	-	Oil-Gas -	-	-	-	-	Bighorn	-
TOTALS		92	24	829,310 Bbls. 3,166,803 MCF	6,756,471 31,623,846	13,011,291 65,181,006	719 BOPD 5,035 MCFPD	114		

BOPD = Barrels of oil per day, MCFPD = 1,000 cubic feet per day, MCF = 1,000 cubic feet, t = testing, Bbls. = billion barrels, MM Bbls. = million barrels, BCF = billion cubic feet.

* For sources see discussion in text.

Modified from Wyoming Oil and Gas Conservation Commission

From: Ver Ploeg, A. J., 1979 (see Figure 3.6).

Table 3.2b

Production Statistics for Utah Overthrust Belt Fields Through September 1980

Field	Discovery date	Producing wells	Shut-in wells	Sept. 1980 production	Average BOPD	1979 production	Cumulative production	Incomplete wells	Producing formations	Reserve estimate*
Anschutz Ranch	1978	0	9	none reported				2	Twin Creek Nugget	15 MM Bbls. 49 BCF
Anschutz Ranch East	1980	0	1	none reported				4	Nugget	
Cave Creek	1980	0	1	none				0	Phosphoria Weber Madison	
Elkhorn	1977	1	1	Oil Bbls. 404 Gas-MCF 27	13	28,312 7,572	179,079 66,328	0	Twin Creek	14 MM Bbls. 6 BCF
Hogback Ridge	1977	1	0	Gas-MCF 64,689		2,418,839	5,258,202	0	Dinwoody Phosphoria	194 BCF
Lodge-pole	1977	4	2	Oil-Bbls. 7,432 Gas-MCF 1,324	248	90,906 26,988	257,911 65,383	0	Twin Creek Nugget	18 MM Bbls. 6 BCF
Lodge-pole South	1978		1	none					Kelvin	
Pineview	1975	30	9	Oil-Bbls. 241,670 Gas-MCF 298,449	8,056	3,872,304 4,213,109	16,247,955 16,567,596	0	Kelvin Stump Twin Creek Nugget	71 MM Bbls. 71 BCF
TOTALS		35	23	Oil-Bbls. 249,506 Gas-MCF 364,489	8,317	3,991,522 6,666,508	16,684,945 21,957,509	6		118 MM Bbls. 326 BCF

*Figures from Oil and Gas Journal, May 12, 1980. BOPD = barrels of oil per day, MCF = 1,000 cubic feet, BCF = billion cubic feet, MM Bbls. = million barrels.

Source: Ritzma (1981)

From: Ver Ploeg, A. J., 1979 (see Table 3.2a).

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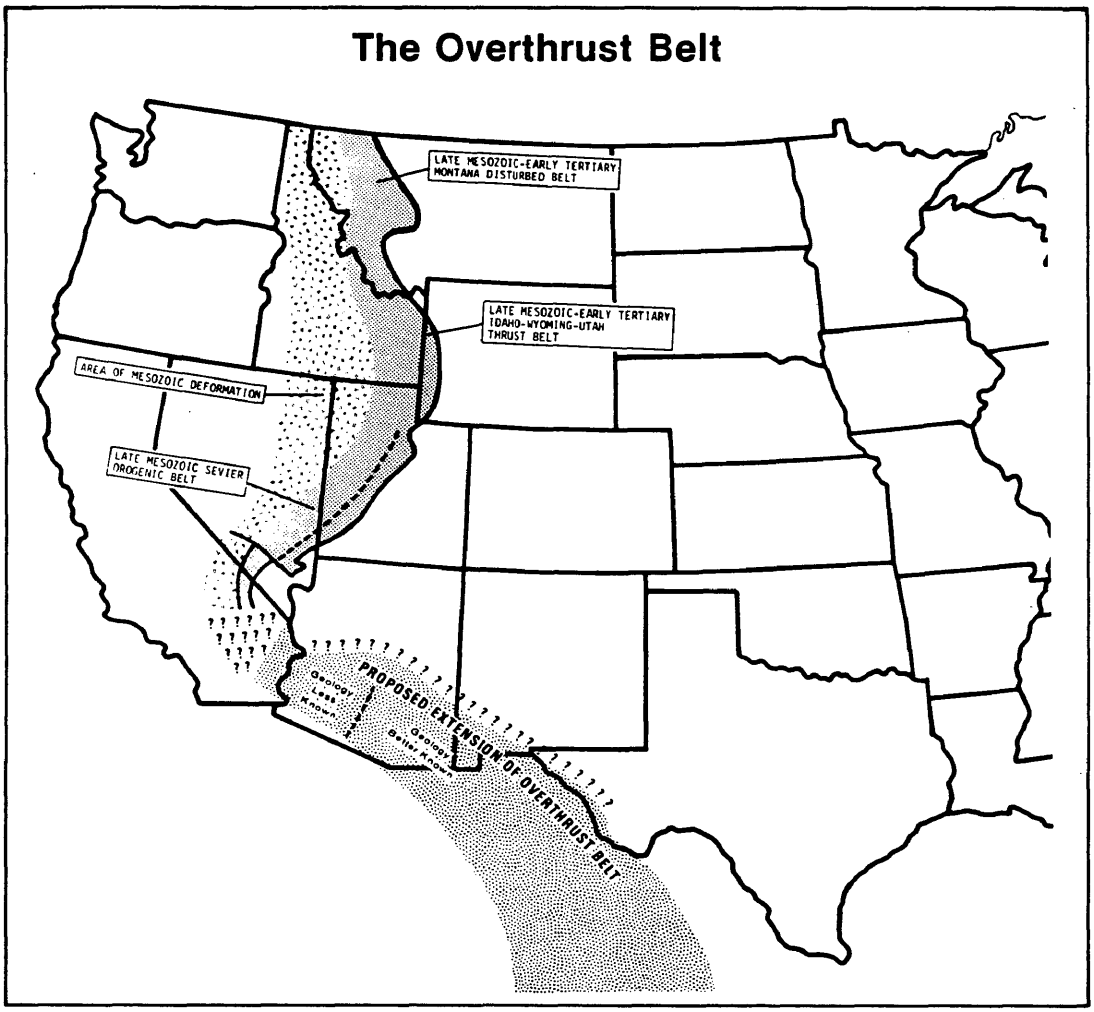
one of the ten largest producing areas in the world (Hepworth, 1981; Hepworth and Foss, 1983).

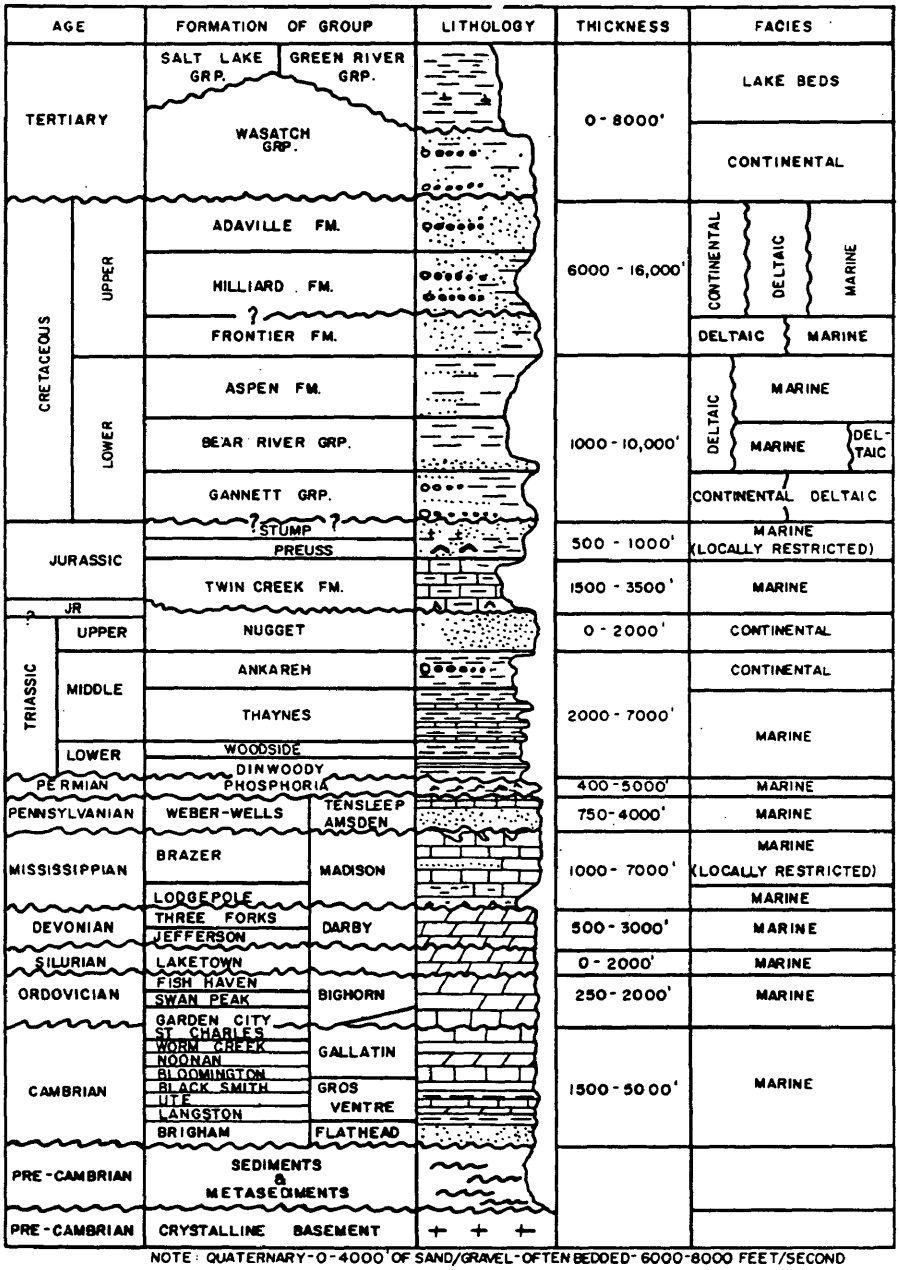
The Overthrust Belt has been termed the hottest new oil and gas province in North America (Ver Ploeg, 1979) and one of the most important exploration frontiers (Petroleum Information, 1981). The entire region extends approximately 2,200 miles from Alaska to Central America (see Figure 3.7). It is the result of plate tectonics, the collision of the oceanic Pacific crustal plate with the edge of the westward moving continental North American plate. Figure 3.6 illustrates the Wyoming/Idaho/Utah region of the Overthrust and Figure 3.8 describes the formations that occur in that region. The Wyoming portion of the Overthrust is about 135 miles long and 40 miles wide. Each producing zone in the fields that trend northeastward is 1,000 to 1,500 feet thick in contrast to production zones in the 950 Wyoming fields not in the Overthrust that average only 50 feet in thickness. Recent estimates of oil and gas reserves in the Overthrust are two to four billion barrels of oil and condensate and several hundred trillion cubic feet of gas (Hepworth and Foss, 1983). Figures 3.9 and 3.10 graphically depict Overthrust oil and gas resources and compare them to the rest of the United



From: Petroleum Information, The Overthrust Belt, PI Corp., 1981.

Figure 3.7

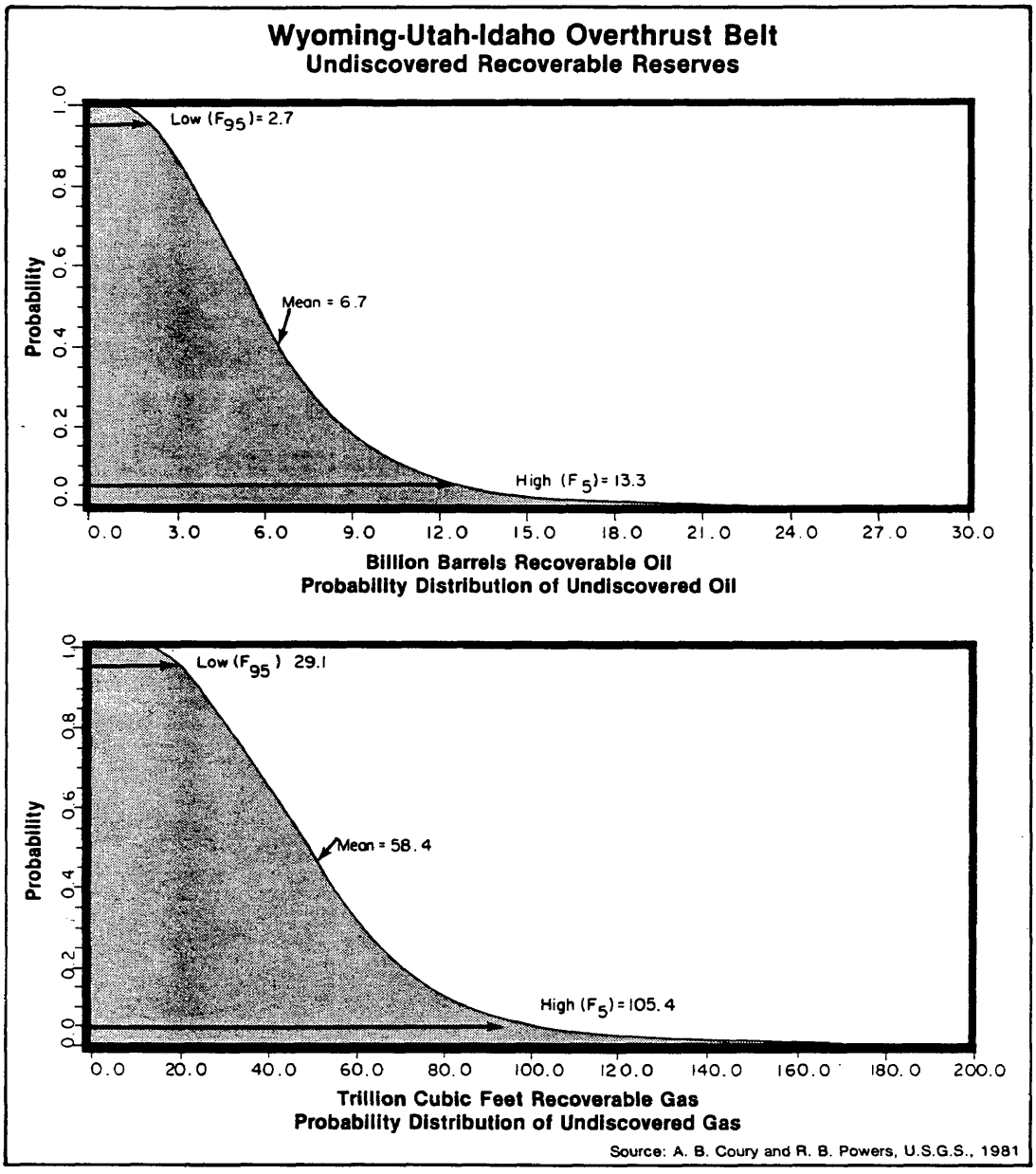
Extent of Overthrust Belt in the United States



Source: K.H. Hayes, RMGA, 1976.
From: Petroleum Information, 1981 (see Figure 3.7).

Figure 3.8

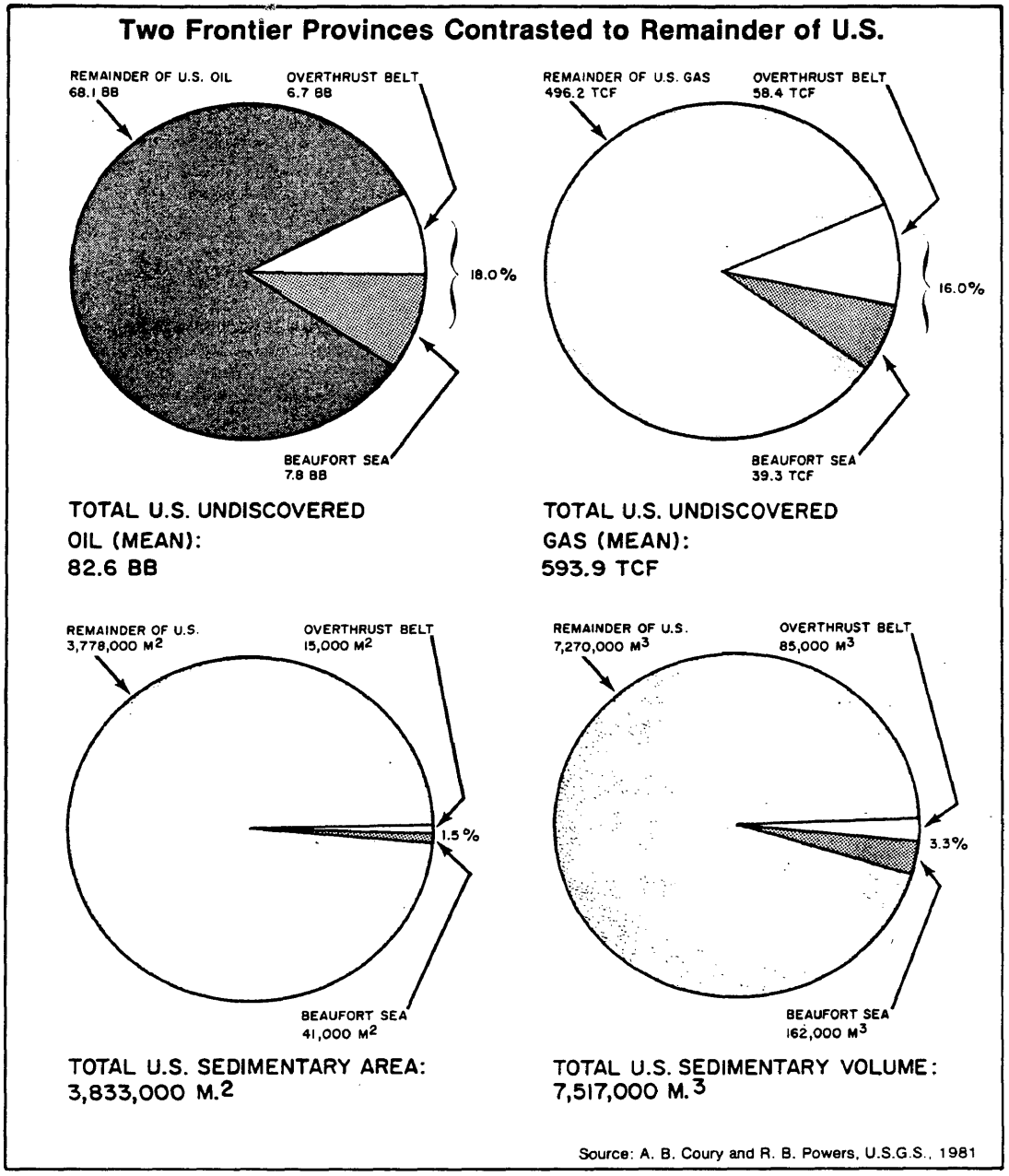
Table of Formations: Wyoming-Idaho-Utah Fold and Thrust Belt



From: Petroleum Information, 1981 (see Figure 3.7).

Figure 3.9

Overthrust Belt Oil and Gas Resources



From: Petroleum Information, 1981 (see Figure 3.7).

Figure 3.10

Overthrust Belt Resources Compared to
Remainder of United States

States.

The production history of the Overthrust illustrates the development of a true frontier province. That is, the complexity of geologic structures, costs of exploration and development, and investment commitment to produce and transport oil and especially natural gas from a very remote region are substantial and have stimulated the emergence of advanced exploration and drilling techniques. In 1979 the average well ranged in cost from $187 per foot to $555 per foot. As an example of the range in costs associated with geologic variability, in 1979 wells in Anschutz Ranch (see Figure 3.6) averaged approximately $1.5 million each and were drilled to approximately 8,000 feet; wells in Anschutz Ranch East averaged $5 million each to depths of about 14,500 feet; and Whitney Canyon or Yellow Creek wells averaged $7.5 million each with average depths of about 16,500 feet and 13,500 feet, respectively (Ver Ploeg, 1979). From 1978 to 1981 costs for the average well climbed steadily from an estimated $96.87 per foot to $235.91 per foot. Downhole problems contributed significantly to costs for deeper wells, more of which have been drilled in recent years as the vertical frontier extends. Between 1975 and mid-1981 operators cut 3,281,343 feet of hole and spent an

estimated $450 million (Petroleum Information, 1981).

High drilling costs are not the only factor contributing to the investment commitment and risk in the region. Much of the natural gas that is produced is "sour," containing high percentages of hydrogen sulfide which must be removed before the gas meets pipeline quality specifications. This led to the construction of two huge gas processing plants to service the Whitney Canyon-Carter Creek field. The Whitney Canyon plant has a capacity to process 255 million cubic feet of gas per day and is operated by Amoco. Chevron's Carter Creek plant can process 150 million cubic feet per day and was designed so that capacity could be tripled if market conditions warrant it. Both plants can produce three billion pounds of sulfur per day at a combined cost of nearly $700 million (Petroleum Information, 1981; Hepworth and Foss, 1983).

To move natural gas products out of the region, pipelines to potential markets were needed. Demand for natural gas in the Rocky Mountain region was far below the estimated reserves in the Overthrust. Pipeline construction was thus targeted at markets across the United States. The largest of these, the $548 million Trailblazer Pipeline, moves processed gas from Whitney Canyon-Carter Creek across

an 88-mile Overthrust segment to connect with the line's middle segment in Rock Springs. Total length of the Trailblazer is 800 miles. The end destination is a gas facility near Beatrice, Nebraska. Along different sections of the pipeline, owner/operator groups have covered various portions of the investment cost. Other proposed and completed pipeline systems include the $515 million Rocky Mountain Pipeline (to the West Coast), the $386 million Trans-Anadarko Pipeline (to northeastern Louisiana), the Northwest Pipeline which delivers gas from Ryckman Creek and Painter Reservoir fields to a processing facility near Opal, Wyoming, and the $100 million Mapco Pipeline to the Midwest and Gulf Coast (Petroleum Information, 1981). The $100 million Frontier Pipeline moves oil from Anschutz Ranch East to refineries in Casper (Rountree, 1983).

Several uncertainties still inhibit operators in the Overthrust. Little encouragement has been derived from exploration outside of the known producing trend in Wyoming. The biggest and best fields in the trend have likely been found and drilling smaller anomalies has yielded no or only marginal production (Rountree, 1983). Additionally, the majority of Overthrust production is gas, and operators would welcome new discoveries of oil

(Rountree, 1984). While the region is considered to be nearing maturity, the Overthrust Belt is recognized as still having great potential as operators begin to explore northward of established production (Hepworth and Foss, 1983; Rountree, 1984). Uncertainty exists even about established producing areas. The life of the Carter Creek plant with respect to production from the Whitney Canyon-Carter Creek field may be only 20 to 25 years rather than the original estimate of 50 (Hepworth and Foss, 1983). Secondary recovery techniques are underway at some of the established fields. Additionally, Exxon Company, U.S.A is progressing toward the construction of a huge facility to process gas (primarily CO_2) from its Riley Ridge field in the Big Piney-LaBarge Complex just east of the Overthrust trend in Sublette County (Rountree, 1984). The LaBarge Project, as it is called, is expected to cost $517 million and could eventually process one billion cubic feet of gas per day with all three process trains constructed. Exxon plans to have the first phase operational in 1986 (Gearino, 1984).

The emergence of the Overthrust as a target of intense petroleum industry activity has been closely tied to events and policies surrounding energy in the late 1970s and early

1980s. Prior to those years, policies were directed toward ensuring adequate, low cost supplies with a stable environment for producers (Kash and Rycroft, 1984). Oil and gas dove tail in terms of production activity and industry organization--the same companies produce both. They differ in the bulky transportation requirements for gas and the fact that gas has always been subject to much more of a politically risky environment (Davis, 1982). National policies for gas came to be directed more toward the provision of clean, low-cost fuel than adequate supply (Kash and Rycroft, 1984). The result was that natural gas shortages during the supply crises surrounding actions by the Organization of Petroleum Exporting Countries (OPEC) occurred much sooner than oil shortages. To get producers to increase the stocks of both oil and natural gas, deregulation was set into motion with the actions of the Carter Administration in 1978 and 1979 (Davis, 1982; Kash and Rycroft, 1984).

Between 1979 and 1980 both oil and gas prices were increasing, oil company profits were extremely strong, and demand for natural gas was high. A combination of factors --the Natural Gas Policy Act of 1978 which brought about deregulated prices for gas found below 15,000 feet and

events surrounding OPEC--bolstered interest and return on high cost drilling investments in the Overthrust Belt. Wellhead prices for gas increased from $0.18 per million cubic feet in 1971 to $1.60 in 1980; comparatively, drilling costs increased from $27.70 per foot to $95.16 per foot, on average for the nation, in the same time period. Contracts for gas from Whitney Canyon and Carter Creek were as high as $7 per million cubic feet (Baker, 1984).

The circuitous route of stimulative energy policies and inflationary pressures of higher energy prices brought the pendulum back. As the nation plunged into recession and suppliers increased output in response to higher prices, energy prices began to erode. The resulting recessionary soft markets caused a sharp decline in exploration in 1981 and have continued to plague industry. For example, gas processing at the Carter Creek plant in 1983 was only approximately half of plant capacity due to unfavorable markets (Hepworth and Foss, 1983). The implications of change in the petroleum industry and markets for nonbasic activity in Evanston are further detailed in Chapter 4.

Risk related to Overthrust oil and gas resources and petroleum markets is not the only source of risk to operators. The setting in which petroleum industry activity

takes place in Wyoming is proximal to some of the nation's outstanding wilderness, national park, and wildlife values. Sensitivity about the impact of petroleum resource development has resulted in increased costs to many operators, with litigation and wide public scrutiny. The extent of public land and wilderness holdings has stymied exploration in the more delicate, and highly unknown, prospective areas (Petroleum Information, 1981; Hepworth, 1981; Hepworth and Foss, 1983).

A great factor in the risk and uncertainty associated with Overthrust oil and gas activity has been the response and receptiveness of communities affected by it. The oil industry is characterized by its fragmented nature, the nature of the industry workforce, the great number and variety of service firms and enterprises involved (by both independents and major corporations), the diversity of professions, and the high mobility of both firms and individuals (Chase and Leistritz, 1982). These unique characteristics have contributed to the difficulty in assessing and mitigating socioeconomic impacts. The development of Wyoming's petroleum industry was a magnet for a new type of pioneer, the roustabout, described by Larsen (1977) as a tough individualist with a migratory way of life. These

new workers have exerted a tremendous force upon the small communities that happened to be along the roustabout's route. Accommodating and integrating this type of worker, who typically originates from Anywhere, U.S.A., is still one of the greatest challenges in socioeconomic planning.

The upshot of these unique characteristics is that by 1980, total current oil and gas employment in the Overthrust was unknown. Future trends were mere speculation. Community impacts were apparent but could not easily be allocated among numerous operators with lease interests, and with oil and gas exploration and development at various stages. In Evanston the situation was one of inadequate infrastructure to serve the existing population in 1980. Infrastructure may have been substandard in 1975 and was inadequate to serve future growth (Amoco, 1983), should the Overthrust province continue to command interest among oil industry operators. Since 1980, however, the slump in the petroleum industry has created vastly different conditions in which substantial surpluses exist in both local commercial activity and some public facilities and services.

3.3.2 Evanston, Wyoming

Throughout the recent history of Overthrust activity, Evanston has grown to be a regional service center for the oil and gas industry (Amoco, 1983). Located just east of the Wyoming-Utah border (see Figures 3.6 and 3.11), the town has been affected by oil industry activities in both states, as detailed in Tables 3.2a and 3.2b. Evanston grew from a sleepy railroad town of about 4,000 people in 1978 to a bursting 10,876 residents in 1982. Current population estimates are now approximately 11,120 for the city of Evanston and 22,750 for Uinta County, of which Evanston is the county seat (Evanston Chamber of Commerce, 1984-85). Evanston and Uinta County were areas of stagnant or declining population growth between 1930 and the beginning of recent oil and gas development (Amoco, 1983). Table 3.3 illustrates population trends up to 1980. A major factor of population growth between 1980 and 1982 was the construction of oil and gas facilities, primarily the Whitney Canyon and Carter Creek gas plants. With the completion of those plants, the work force has altered to include fewer transient construction workers and more of the stable, operational personnel (Amoco, 1983). Additionally, Evanston, as a regional service center, serves as

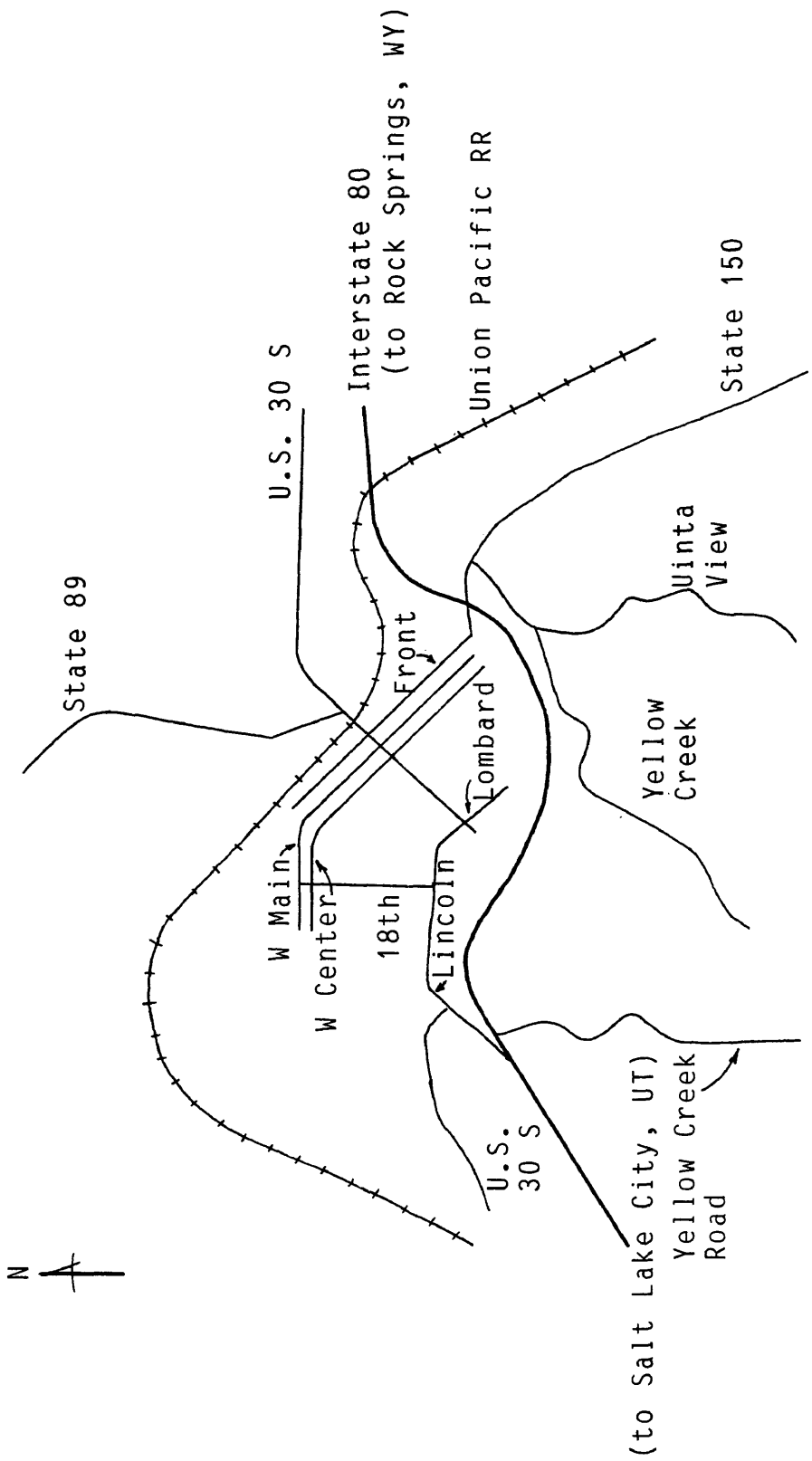


Figure 3.11

Abbreviated Location Map: Evanston, Wyoming

Table 3.3

Population Trends in Evanston, Uinta County, and Wyoming

	1940	1950	1960	1970	1980
Wyoming (in thousands)	250.7	290.5	330.1	332.4	469.9
Uinta County	7,223	7,331	4,484	7,100	13,021
% State	2.9	2.5	2.3	2.3	2.1
Evanston	3,605	3,863	4,901[a]	4,462	6,421
% County	49.9	52.7	65.5	62.8	49.3

[a] Includes annexed area with population of 689 in 1950. Population of this area in 1960 was 4,212.

Source: U.S. Census Bureau.

From: Amoco Production Co., Anschutz Ranch East, Wyoming Industrial Siting Application, 1983.

the location of many branch and regional offices for suppliers, contractors, and subcontractors in the oil industry.

Prior to the emergence of petroleum activity in the Overthrust, Evanston residents depended on a variety of economic activities for their livelihood. It is the center of cultural and governmental activity for Uinta County. The railroad, minor commercial trade, construction of Interstate 80 along the original Union Pacific route, and agriculture have provided other means of income. The interstate, however, may over the years have been a detriment to local commercial activity in Evanston by making the Salt Lake City-Ogden-Logan ("Wasatch Front") market area easier to get to and a more attractive outlet for shopping and cultural diversions. Agriculture has been a declining source of employment especially for younger residents. Between 1975 and 1982, escalating oil and gas activity, the myriad of associated industry facilities and investments, and the scale of these facilities and investments required by the complexity of Overthrust resources, provided new opportunities for existing residents, previous residents who sought to return, and new, inmigrating residents (Amoco, 1983). The stimulus of oil and gas activity

created many employment opportunities for the local labor force, particularly women. Not all of this, of course, is tied directly to the oil industry. The growth in local commercial activities and public facilities have provided substantial job opportunities. Commercial development over the past few years has been encouraged by the increased income and local spending of oil industry employees. The ability of Evanston, as a local center for commercial and retail trade services, to meet the needs of a growing population in Uinta and adjacent counties has increased significantly. It has also prepared Evanston to compete more effectively with Rock Springs and the Wasatch Front for local spending (Amoco, 1983).

As of February 20, 1985, 1,153 business licenses had been issued by the city of Evanston. This includes all oil industry related firms and services and does not account for businesses no longer in operation. This compares with 443 licenses for 1981-82 which reflected only about half of the permanently operating businesses and lax controls on business license reporting. In 1982-83, 873 licenses were issued. A survey of telephone business listings, revealing the make up and changes in the local commercial sectors of Evanston, is shown in Table 3.4. Between 1980 and 1983 the

Table 3.4

Consumer Services Available in Evanston, 1980-1983

	1983	1982	1981	1980	% of Growth 1980-1983
Retail					
Gas Stations	12	11	12	15	(20.0)
Restaurants	22	16	17	13	69.2
Grocery Stores[2]	12	7	7	6	100.0
Auto Dealers	3	3	4	4	(25.0)
Clothing Stores	9	9	9	8	28.6
Lumber Stores	4	5	4	3	33.3
Hardware	4	4	6	5	(20.0)[1]
Furniture	5	3	3	3	66.7
Department Stores	2	2	3	3	(33.3)[1]
Drug Stores	3	3	3	3	0.0
Sporting Goods	4	5	5	5	(20.0)[1]
Liquor Stores	9	9	6	6	50.0
Jewelry Stores	5	4	3	2	150.0
Book Stores	3	2	0	0	-
TOTAL	97	83	82	75	29.3
Services					
Doctors	12	5	6	6	100.0
Dentists	6	6	5	6	0.0
Lawyers	16	19	15	8	100.0
Hotels & Motels	21	19	19	17	23.5
Movies	1	1	1	1	0.0
TOTAL	56	49	45	38	47.4
FIRE					
Real Estate	16	12	7	5	220.0
Insurance	12	12	12	10	20.0
Banks	3	3	2	2	50.0
Savings & Loans	3	2	2	2	50.0
Mortgage Companies	5	5	3	2	150.0
TOTAL	39	34	26	21	85.7
TOTAL	192	166	153	134	43.3

Source: Evanston Telephone Directory, 1980-1983 and personal interviews.

1 The decrease in the number of outlets has been offset by the expansion of the remaining stores.

2 The new Safeway and Smiths Food King stores offers a wide variety of non-grocery items. These departments do not appear under other retail or service categories.

From: Amoco Production Company, Anschutz Ranch East, Wyoming Industrial Siting Application, 1983.

greatest change was in FIRE establishments, an expansion of 85.7 percent. General retail categories increased by 29.3 percent and service establishments by 47.4 percent (Amoco, 1983). Within the retail categories, the most substantial changes were for grocery stores and restaurants. Likewise, in the service categories, the most significant increases occurred in personal health and legal services. The change in hotels and motels is misleading. Many new establishments in Evanston are members of nationwide chains and have added substantial lodging capacity, currently 1,408 rooms compared to 943 in 1981 and a several-fold increase from pre-1981 levels.

The changes in the local commercial sectors have been qualitative as well as quantitative. An increased variety of goods and services is now available to residents. In addition to the traditional downtown shopping district, Evanston now boasts three shopping centers and ten industrial parks. One aspect of the growth in consumer services has been the effort to revitalize the downtown area in an attempt to prevent deterioration of the central district. In 1982, a Downtown Evanston Task Force was appointed to investigate the potential for revitalization. One of the recommendations from this Task Force was to set up an Urban

Renewal Authority, also carried out in 1982. Six improvements were identified by the authority: downtown merchandising; parking and traffic circulation; development of the commercial/cultural/historical properties from the centrally located railroad depot northward; development of an open space/recreational corridor between the Bear River and UP railroad through the central district; embellishment of Front Street, a main commercial thoroughfare into Evanston; and increased public awareness of the downtown and its renewal through the media. Some of these tasks have been carried out with varying degrees of success (Amoco, 1983).

The second type of employment opportunity created by the oil and gas industry is related to public facilities and services, mentioned earlier. The most visible and substantial changes to Evanston since 1979 are in public services. Safety services (i.e., police and fire protection) and human services (e.g., alcohol rehabilitation and family counseling) have all been expanded. Evanston now boasts improvements in excess of $100 million. The improvements include a new $12.6 million, 42-bed hospital; a $4 million recreational center; a senior citizens center; a city recreation park; new schools, including a high school currently under construction; a new and much larger

city hall; a new public library; a new county courthouse; and other items such as road and sewage work. A list of major employers in Evanston indicates the attractiveness of public services: School District No.1, 450 employees; Wyoming State Hospital, 425 employees; Amoco Production Company, 330 employees; City of Evanston, 130 employees; Uinta County, 140 employees; and Uinta Medical Center, approximately 150 employees (Evanston Chamber of Commerce, 1984-85; Evanston Chamber of Commerce, personal communications; Hepworth, 1981; Hepworth and Foss, 1983).

3.4 Research Methodology

The stated goals for this research are to test the hypothesis by addressing two key research questions, as described in Section 2.5, and then to extend the results of the research to other rapid growth situations and policy options. To achieve these goals, the research methodology must integrate the components illustrated in Figure 1.1:

1. Export base concepts and applications as discussed in Chapter 2,
2. The conceptual framework as developed in the preceding sections of this chapter, and
3. Observations of actual secondary response in

Evanston, Wyoming.

These components will be integrated through the analysis of data from these sources:

1. Secondary data on actual trends in the nonbasic sectors from the U.S. Bureau of Economic Analysis, (BEA), supplemented by data from the State of Wyoming Department of Administration and Fiscal Control (DAFC) and other sources,
2. Primary empirical data collected from a sample survey of businesses operating in Evanston's secondary market.

The approach is to first determine what the actual secondary response was in Evanston by comparing empirical secondary data--in essence, to suggest supply curves for nonbasic goods and services.

Empirical data from questionnaires used in the sample survey are then used to evaluate the types of information that influenced decision makers (suppliers) in the secondary market and analyze the effect, if any, of supply side factors in influencing secondary response. This approach is a direct extension of research questions 1 and 2, and is the focus of Chapter 4. Data from the questionnaires and additional sources will be used in Chapter 5 to discuss the

third research question, policy implications of this research, in light of conclusions reached about the hypothesis in Chapter 4.

3.4.1 Study Time Frame

In order to analyze secondary response in Evanston, a point of reference in time was selected. From the case study descriptions in this chapter of oil and gas activity in the Overthrust Belt and resultant growth in Evanston, 1979 was chosen as the base year. This will be further demonstrated in Chapter 4 in the discussion of secondary data. For purposes of designing the questionnaire, 1984 was selected as the end year so that most businesses surveyed would have a full prior year to reference.

3.4.2 Description of Survey Methodology

The major effort in setting up the research analysis was in designing and administering a sample survey of the Evanston business community. The methodology was developed using sample survey techniques described by Warwick and Lininger (1975) and from numerous examples of sample survey design and research. The universe defined for the study was based on the following boundaries:

1. All private firms directly involved in the production of oil and gas (i.e., basic firms) were excluded.
2. All private firms indirectly involved in the production of oil and gas (i.e., indirect basic) were excluded. This consists of firms that traditionally service the petroleum industry (such as drilling contractors, well loggers, mud loggers, mud and chemical suppliers, seismic contractors and the like) and construction firms whose services range from road and well site preparation and surveying to building and plant construction.
3. Secondary businesses were those privately operated retail and service outlets established before 1979 and still in operation and those businesses established during 1979 or afterward and still operating since time of establishment.
4. Secondary businesses included those owned locally and local franchises or branches, including members of national or regional chains. They were firms operating from private residences as well as firms located in commercial space.
5. The universe excluded businesses which had ceased

operation or businesses that were not established in Evanston before and after 1979.

Data were obtained from the Wyoming Department of Revenue that consisted of business listings in the Evanston postal zip code area. Each business listing included a statistical code (from the 1967 Standard Industrial Classification [SIC] System), mailing address, and date of establishment. The list was corrected to account for businesses which, according to the Wyoming Department of Revenue, had ceased operation (this included seasonal and transient operations). Personal listings were also removed. The refined data were then stratified by SIC code into four representative groups: pre-1979 retail establishments (PR79R); pre-1979 service establishments (PR79S); post-1979 retail establishments (P079R); and post-1979 service establishments (P079S). According to the 1967 SIC codes, this involved retail trade but excluded wholesale trade. A review of SIC codes for wholesale establishments in Evanston suggested that the majority of operators in this group serviced basic industries (farming, petroleum, construction) rather than being more closely aligned with the supply of goods and services for local consumption. Health, legal, personal, and business services were sampled

but not finance, insurance, and real estate. From each representative group, a random sample of 30 to 35 respondents was selected. The goal for the survey was to interview a minimum of 30 respondents in accordance with the central limit theorem of sample and population means.

The survey questionnaire was based on the conceptual framework and decision factors outlined in that framework, research questions, and hypothesis (see Appendix I). It was organized in a way that was felt would be most comprehensible to respondents. The opening (Section I) outlined the background and purpose of the research project for respondents and included a statement of confidentiality, important to gaining the trust and openess of respondents. Future applications of the research were stressed. It was felt that this emphasis, in addition to making the academic orientation of the research clear, would reduce bias in the responses given. Section II consisted of a series of questions that would provide information on characteristics of firms sampled, a way to verify the sampling, and a way to describe the demographics of the Evanston business community.

Sections III through VI targeted decisions made by suppliers of local goods and services that would affect the

availability of goods and services and ultimately nonbasic employment income and population growth. Respondents were asked to identify key actions taken (Section III), primary objectives for the actions (Section IV), information bases for their actions (Section V), and critical economic factors that may have influenced various stages of their decision making and the type of influence, positive or negative (Section VI). These questions stem from the conceptual framework and the underlying theoretical concepts about profit maximizing behavior and firm behavior that is not solely tied to profit maximization, detailed in the conceptual framework, Table 3.1, and Sections 3.2.3 and 3.2.4. Supplementary questions addressed whether the action taken by the supplier was in response to change in basic employment income.

In Section VII, a series of questions as constructed that sought the respondent's evaluation of business results given all inputs--the action (response) taken, objective, information, and influence of economic factors. The questions were designed so that respondents could be categorized for ease of analysis of survey data, into three typical groups based on preliminary research and impressions of the Evanston business community.

1. Respondents who felt that the overall results were successful because good judgments were made about the inputs and expectations for the business were met or exceeded.
2. Respondents who felt that the overall results were not successful because poor judgments were made about the inputs and expectations were not met.
3. Respondents who felt that the overall results were or were not successful but with caveats. Results may have been successful even though judgments about some or all of the inputs were flawed; this implies that the decision maker was able to make adjustments or that external events, i.e., actual demand for local goods and services, enabled expectations to be satisfactorily met or exceeded. The reverse would also hold, in which case the lack of success was due to negative external events even though the respondent felt good judgments were made. These examples account for the recent trend of economic downturn in Evanston related to national recession, a sluggish petroleum industry, and completion of gas plant construction, all mentioned in Sections 3.3.1 and

3.3.2.

Although respondents placed themselves in these groups, analysis of data from preceding questions and ancillary comments and remarks were used to qualify the groupings. Many of the questions in this section also rested on the conceptual framework and were designed to yield data on perceptions about information; information preferences, and the like.

Section VII of the questionnaire dealt with policy. Here, questions again targeted information and perceptions of respondents in an attempt to generate trends that would explain nonbasic response patterns among the four groups. This section also included questions that dealt with business management experience, government policy, and role playing of local business and government to determine the effect of these factors.

Development of the questionnaire progressed through a lengthy, iterative process. Editorial changes were made following several reviews by the thesis committee and outside advisors. Pilot testing of the survey instrument was conducted using a random sampling of businesses in Kemmerer, Wyoming, seat of Lincoln County which is adjacent to Uinta County. Kemmerer experienced the effects of oil

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and gas development during the same time period and from the same projects as Evanston did, although to a lesser extent. Kemmerer will probably feel more strongly the effects of Exxon's LaBarge gas plant project, mentioned in Section 3.3.1. By pilot testing the questionnaire in Kemmerer, reduction of the samples from Evanston was prevented while the point of reference was maintained.

The sample survey was conducted using personal interviews during two separate field sessions in Evanston for a total of 13 field days. Newspaper articles on the research were released in both local tabloids (Uinta Herald and Evanston Post) to prepare the community for the research effort (see Appendix I). Samples were taken in the field due to the necessity of continually adjusting the populations for each sample group. Errors were found among dates of establishment and in corrections from the Department of Revenue regarding business closures. Selecting samples became an ongoing procedure as some businesses sampled were found to be no longer operating and not reachable and so they were removed from the list and replaced. The results of the sampling are evaluated in Chapter 4 along with results of the survey data.

Interviews were scheduled ahead of time with

respondents. Response cards repeated response choices from the more complicated questions to facilitate the interview process. After the initial two days of interviewing, some revisions were made to the questionnaire primarily to shorten it. The questionnaire demonstrated in Appendix I reflects those changes. Revisions were made in a way that would not affect the randomness or meaning of the questions posed to succeeding respondents. An evaluation of the field work and questionnaire is also included in Chapter 4.

CHAPTER 4

EVANSTON, WYOMING, CASE STUDY

The groundwork laid thus far consists of several key points.

1) Predicting regional economic growth serves two purposes. One is to set a course by which growth might be encouraged. The other is to plan for the impacts that might accompany an acceleration in regional economic activity.
2) Regional economic growth can be explained in many ways, the most ubiquitous of which is export base theory. Indeed, export base theoretical concepts underlie all commonly employed techniques used in impact assessment.
3) The fundamental principles of export base theory are that the economy in a market area can be defined into basic and nonbasic sectors, and that a change in basic activity will produce a change in nonbasic activity (or secondary response) in the same direction.
4) In application, models which incorporate these principles yield multipliers which are used to

anticipate employment income, and population changes in a market area. Many issues surround these techniques. It has been proposed and hypothesized that two issues are most critical in explaining and understanding actual secondary response in market areas where the primary stimulus to growth is from basic, energy resource extraction industries. They are that information about demand side factors (those related to expenditures in the local market area as a result of basic employment income) are unduly emphasized, and consequently that supply side factors (those that are related to the capacity to provide local goods and services) and their influence on private decision makers in the secondary market are largely ignored.

5) To determine whether these assertions are valid, several steps have been taken. Economic and behavioral theories of the firm have been reviewed, key decision factors identified, and those factors discussed in light of documented observations about secondary response in energy impact situations in western states. Based on this

detailed examination, a conceptual model has been put forth that explains decisions of nonbasic firms operating in a secondary market and supplying some output of goods or services for consumption within the market area. The conceptual model forms the basis for a case study of secondary response in Evanston, Wyoming where the basic activity of interest is oil and gas production in the Overthrust Belt. The setting for the case study has been described. A research methodology has been designed to test the hypothesis and conceptual model for the case study area. The methodology integrates empirical data from a survey of the Evanston business community with secondary economic data.

In Chapter 4 the results of applying the research methodology to the Evanston case study area are presented and discussed. The contents of this chapter proceed through an overview of the field study, observations of the researcher about current conditions in Evanston, and a critique of the field interview process. Demographics of the Evanston business community are defined for each representative sample group. Prior to the detailed

analyses of data the reader is provided with a general description of how data are presented. Empirical data from the questionnaires are then analyzed in light of secondary data in a format which allows discussion of the research questions, validity of the conceptual model, and results of testing the hypothesis. Findings from the analyses are then summarized in a way that directly evaluates the apparent actual behavior of nonbasic firms in Evanston and draws some conclusions that are further developed in Chapter 5.

4.1 General Observations

Several variables mentioned in Sections 3.3.1 and 3.3.2 of Chapter 3, when the setting of the case study area was described, were demonstrated during the two field sessions in Evanston.

4.1.1 Evanston Update

With respect to the general climate within the petroleum industry, the elements of uncertainty discussed previously were very apparent. The leveling off in new field discoveries and slowdown in drilling activity as gas markets softened has impacted decision making within the industry and among local business people. Generally, many local business people in Evanston seemed optimistic that

the city would continue to serve as a regional center for the industry even though current depressed conditions may continue for some time and business failures may pervade. Among those who are optimistic, the prevailing attitude is that when conditions within the industry improve, so will local trade. Most admit that the current slack would take care of any additional growth. Not many people appeared optimistic that the LaBarge Project would mean dollars spent in Evanston.

In contrast to the problems wilderness areas have posed for the petroleum industry, outdoor recreational values have played a strong role in luring people to Evanston who seek out those opportunities. A feeling among several business and government leaders is that Evanston should emphasize those qualities in order to stabilize and provide a more steady source of growth.

In Section 3.3.1 it was stated that the unique character of the petroleum industry contributed to the difficulties in assessing and mitigating impacts. Because the industry is so fragmented and involves such a diverse group of actors, it is highly visible. This was remarked upon casually by questionnaire respondents and was personally observed during previous travels through the area with the CSM Energy and Minerals Field Institute (see Appendix II).

On several occasions, drilling activities have been conducted in such proximity to the city as to be within full view of residents. It has been speculated that this added to the feverish pitch of commerical activity that eventually occurred.

During the first field session of sample survey interviews the observations of local leaders were sought in order to get a feel for the transition that took place in Evanston since 1979. It was learned that the transition has not been an easy one and displayed most of the negative elements for which boom towns are known. During peak construction of the two gas plants, Whitney Canyon and Carter Creek, the town seems to have been a difficult place in which to live. Long-time residents for the most part did not welcome the oil industry or its work force, a most significant trend which will be discussed at several intervals. Speculators charged high rents for trailer spaces, rooms in private homes, and even the use of private yards for habitation. Friday evening lines at local banks as construction workers prepared to return home for the weekend were long and disruptive. Evanston even deteriorated somewhat in cleanliness with increased traffic and congestion. It is thought that many senior citizens and

existing residents may have left because they were no longer able to cope with the highly stressful environment. In Wyoming as a whole, however, the tendency is for older residents to outmigrate due to the harsh climate and general lack of services (Blankenship, personal comment).

It should be emphasized again that the petroleum industry was not new to Evanston in 1979. The conditions the community faced were those associated with highly escalated activity and, as noted repeatedly, the construction of the two gas plants. The change in types of basic occupations, however, is fairly evident. The declines in farm employment seem to be significant, although many individuals interviewed maintained small stocks of cattle or some acreage. Many skilled workers who lost jobs in the petroleum industry have replaced their income through self-employment or small businesses. Most prominent in this trend are the large number of welding and machine shops and automotive repair services.

In Section 3.3.2 it was stated that changes in Evanston's commercial sectors have been both qualitative and quantitative. Many more goods and services are available to residents but in some categories large surpluses are apparent (for example, motels, restaurants, retail and

convenience grocery outlets). In other categories, shortages are evident (for example, apparel and shoes). Evanston still lacks certain categories completely--for example a variety bookstore, a variety shoe store, a national discount outlet such as K-Mart (commerical space for one such outlet was being developed at the time of both field sessions).

Whether downtown revitalization has been successful to this point in time is questionable. In Section 3.3.2, it was mentioned that several outlying commercial districts have developed. The newer shopping malls appear to be appealing and well located. A new interchange off of Interstate 80 into Evanston may enhance commercial developments just south of town. The emphasis on the central district seems to have created rivalries among local business people to the detriment of the community as a whole. As an example, during the field interviews it was learned that much debate had been focused on the question of whether a new post office building should be located in the central district, where the current operation is. The ultimate effect of the revitalization program is yet to be felt.

Finally, one of the most important factors with which

local business people must contend is competition from the Wasatch Front. Easy access to the Salt Lake City, Utah area and the tendency to leave Evanston to seek out recreation and entertainment opportunities mean fewer dollars spent on local goods and services. It is a very obvious phenomenon, easily deduced from interviews with questionnaire respondents and community leaders and by simply observing traffic patterns along I-80 between Salt Lake City and Evanston. Several programs through the Chamber of Commerce are under way to attempt to support the local commercial sectors in Evanston. Additionally, a new pari-mutual horse racing track to open summer 1985, Wyoming Downs, is hoped to provide new economic activity for local businesses.

In conjunction with designing the questionnaire and prior to the first field session, telephone interviews were conducted with several community leaders in Evanston. The primary thrust of these inquiries was, given the transition that occurred in Evanston as outlined above, to generate a preliminary synopsis of how in their view the local commercial sectors in Evanston responded. This was not conducted in such a fashion that the researcher's viewpoints would be biased. It was conducted in a way that would prepare the

researcher (which is just as important as preparing questionnaire respondents and the community) for the field study and to deduce from the empirical data compiled the consequences of these trends for actual and projected non-basic employment. The comments from these individuals are summarized below. Like the personal comments cited earlier, they are kept anonymous to honor the privacy of the individuals queried.

In spite of the push by local government and the petroleum industry to improve public services as growth accelerated, reaction by local merchants seems to have been uneven. Expansion of new commercial areas, for example location of industrial parks, is not viewed to have been orderly. Speculation by landowners played a substantial role in influencing growth of the local business community. Not all business people rose to the occasion at a time when great shortages existed. Generally poor service by existing businesses and unwillingness to reinvest profits in improvements induced a backlash as new operators moved in and grabbed market share. Shortages of some items continued to persist. The overall feeling is that response by existing local businesses was slow and has hurt them since, as new businesses flooded the Evanston market and as

competition with firms backed by regional or national corporations grew.

The business climate is regarded as highly volatile with many factors affecting the ability of businesses to survive. New competition since the boom tailed off is not viewed by some factions as being entirely positive for the community. Management expertise, especially by long-time established businesses, is regarded as being a limiting variable in how they have coped with the situation since 1979. While the feeling among community leaders is that, overall, impact mitigation was necessary and successful, the delay in getting mitigation programs going may have contributed to current problems. These individuals felt that while the quality of information about petroleum industry activity was good, local business people either refused to believe it in light of the rush of growth that ensued and thus over-speculated, or did nothing (depending on the viewpoint they elected to follow), or didn't understand what industry was communicating to them.

To illustrate this, many local leaders felt business people were caught by surprise when the boom ended, even though it was primarily due to a construction phase associated with the Whitney Canyon-Carter Creek gas plants about which the community had been informed. The

anticipation of continued activity seems to have kept prices for both inputs and goods and services sold to consumers from dropping. This includes costs of commercial land and rental space. As a consequence, market share is continuing to be lost to the Wasatch Front. Mixed impressions about the accuracy of information from the petroleum industry were expressed. Some individuals indicated that they felt industry projections were incorrect and too high for the actual situation that developed, meaning the decline in population as construction activities tailed off. In other cases, it was felt that industry may have released "too much" information. One individual explained the conflict within the local business community as having two sides--there are those business people who support free enterprise and resent interference in the market and thus should simply be allowed to gamble without a helping hand, while at the same time many local government officials lack the business experience to design effective policies for businesses that do welcome them.

As interviews with questionnaire respondents progressed, much of what these leaders expressed was reinforced. These insights, as well as the observations cited throughout this section, will surface again in the subsequent analysis and serve as benchmarks for many of the

conclusions offered.

4.1.2 Analysis of Survey Methodology

In Section 3.4, it was noted that the organization of the questionnaire was designed to be most comprehensible to respondents, that is, to facilitate a flow of thought and conversation. By initiating the interview with questions about real, easily identifiable actions taken by the decision maker and then moving to objectives, information, economic decision factors, and so forth it was hoped that the respondent would be more adept with the task at hand. The last sections of the questionnaire encouraged respondents to "chat" with the researcher, and they were most often open and informative under the confidentiality of the interview.

Overall the questionnaire worked quite well. In spite of careful pilot testing, some weaknesses were identified and for the most part corrected in the field. This was especially true of the last two sections where the openness of the questions led to very lengthy interviews with the first few respondents. More detailed evaluations of the questionnaire and how well it incorporated the conceptual model follow as major points are analyzed. Most of the

respondents were able to follow the line of questioning and respond clearly. Some were uncomfortable, especially with the first sections, and were hesitant, undecisive, or, in a very few cases, unreceptive. With the exceptions of the last, all respondents were polite, interested, and extremely helpful, indicating an awareness of and interest in the community and what has transpired. Some of the most outstanding interviews were conducted with individuals who are, or have been, active in local government, trade associations, the Chamber of Commerce, and the like, which might be expected.

Once field work progressed, an immediate observation about the sample survey design and methodology had to do with the strong differences that delineate the sample groups. Some are revealed in the questionnaire but many were not. Most had to do with simply how new versus old businesses were conducted, personal attitudes and feelings, and personal preferences or goals (apart from business preferences or goals). Neither is better than the other; they are simply differences that, as will be discussed later, contribute to the character and nature of the local business community and thus the overall response to the change in basic activity. In contrast to the researcher's

expectations, no outstanding differences between retail and service activities were revealed.

The most extreme difficulties with the sample survey design were encountered in the data base that was used. Errors and adjustments to the data base were previously mentioned. Additionally, the Department of Revenue list did not include many of the consumer services available in Evanston, in particular, legal, health, accounting, and the like. These were added to the data base from telephone listings followed by preliminary telephone calls to determine whether the firm was still in operation and to attempt to define a date of establishment.

Table 4.1 describes the success of the field interviews in terms of response rates. The number of successfully completed interviews for each sample group constitutes the value of "n" for statistical inferences. That is, each sample total per group is adjusted to account for individuals who declined to be interviewed and/or no shows, where the individual failed to keep the scheduled interview appointment.

The only group yielding no shows was P079S. After reviewing the nature of unsuccessfully completed interviews, it was assumed that non-interviews including P079S

Table 4.1

Evaluation of Evanston Business Survey

Sample Group	Population Total	Sample Total	Comple-tions	Declines	No Shows	n1	Response Rate	Interview Administration[2] Range	Interview Administration[2] Average
PR79R[3]	36	33	27	6	0	27	82%	15-75	33
PR79S[4]	37	29	23	6	0	23	79%	20-60	31
PO79R[5]	55	27	23	4	0	23	85%	15-90	32
PO79S[6]	53	31	19	6	6	19	61%	20-60	33

1 Usable sample = n.

2 Duration of interviews, in minutes.

3 Retail outlets established pre-1979.

4 Services established pre-1979.

5 Retail outlets established post-1979 (during 1979 and after).

6 Services established post-1979 (during 1979 and after).

no shows were random occurrences with the resultant decrease in the sample totals. The assumption was based on two parameters. First, a wide variety of explanations and reasons were given as to why the interview was declined or when no shows were contacted in attempts to reschedule. Second, even though higher rates of non-interviews were found in some sectors, those sectors tended to also make up the larger proportions of the sample groups due to the number of existing outlets in Evanston.

While initially it was thought that non-interviews would primarily occur among those firms for which business activity is poor (a circumstance in the case of only one refusal), any number of reasons could also affect an individual's preference not to be interviewed. Some of these reasons were found to be that the firm was shorthanded (although it could then be argued that the business was not operating efficiently), the individual simply was not interested, the individual was fundamentally opposed to sample surveys, or the individual felt he or she was not knowledgeable enough to respond. The latter case was demonstrated when attempts were made to include businesses established in the calendar year 1985. The inability of individuals in those circumstances--even though they may

have lived in Evanston for several years--to respond to questions related to the performance of their business and the effects on their business of the current, dynamic situation led to avoidance of those few firms in drawing samples. (Not all of the most recently established businesses were on the Department of Revenue list.) It was difficult at times for individuals who established businesses in 1984 to respond to the survey.

Table 4.2 illustrates the distribution of various types of retail and service outlets in the four sample groups. As denoted by asterisks, the largest sources of non-interviews are fairly randomly distributed. To continue the above discussion in light of these distributions, several points should be made. In cases where no selection was made the absence of a unit from that industry was due either to the lack of any establishments of that type in Evanston or such a small number of establishments that the probability of randomly selecting a unit was very low. The latter is, of course, one of the shortcomings of simple random sampling. Since sampling was conducted with replacement due to errors in the data base, attempts were made to replace those cases where industry groups were not represented because of non-interviews with the same type of

Table 4.2

Distribution of Respondents by Standard Industrial Classification

A. Retail

Group No.	Description	Industry Nos.	PR79R	PO79R
521	Lumber and other building material dealers	5211	1	0
522	Plumbing, heating, air conditioning equipment	5221	0	1
523	Paint, glass, wallpaper stores	5231	1	1
524	Electrical supply stores	5241	1	0
525	Hardware and farm equipment	5251, 5252	0*	0
531	Department stores (includes catalogue order outlets)	5311-5399	3*	1
541	Grocery stores	5411	3	2*
542	Meat and fish markets	5421	0	0
543	Fruit stores and vegetable markets	5431	0	0
544	Candy, nut and confectionary stores	5441	0	0
545	Dairy products stores	5451	0	0
546	Retail bakers	5462-5463	0	0
549	Misc. food stores	5499	0	0
551	Motor vehicle dealers, new and used cars	5511	2*	0
552	Motor vehicle dealers, used cars only	5521	0	0
553	Tire, battery, and accessory dealers	5531	2*	1
554	Gasoline service stations	5541	2*	1
559	Misc. aircraft, marine, and automotive dealers	5591-5599	1	0
561	Men's and boy's clothing	5611	0	1
562	Women's ready-to-wear	5621	0	1

Table 4.2 (Cont.)

A. Retail (Cont.)

Group No.	Description	Industry Nos.	PR79R	PO79R
563	Women's accessory and specialty stores	5631	0	0
564	Childrens' and infants' wear	5641	0	0*
565	Family clothing	5651	0	1
566	Shoe stores	5661	0	0
567	Custom tailors	5671	0	0
568	Furriers and fur shops	5681	0	0
569	Misc. apparel and accessory stores	5699	0	1
571	Furniture, home furnishings and equipment stores (except appliances)	5712-5719	0	1
572	Household appliances	5722	0	1
573	Radio, television, and music stores	5732-5733	0	1
581	Eating and drinking places	5812-5813	5	6
591	Drug and proprietary stores	5912	1	0
592	Liquor stores	5921	1	0
593	Antique and second-hand stores	5932-5933	1	0
594	Books and stationary	5942-5943	0	1
595	Sporting goods and bicycle shops	5952-5953	0	0
596	Farm and garden supplies	5962-5969	0	0*
597	Jewelry stores	5971	2	0
598	Fuel and ice dealers	5982-5984	0	0
599	Other retail not classified elsewhere (includes florists; toys; gifts and novelty)	5992-5999	1 (5992)	2* (5997)
			27	23

Table 4.2 (Cont.)

B. Services

Group No.	Description	Industry Nos.	PR79S	P079S
701	Hotels, tourist courts, motels	7011	5*	1*
702	Rooming and boarding houses	7021	0	0
703	Trailer parks and camps	7031-7032	0	0
704	Organization hotels and lodging houses, on membership basis	7041	0	0
721	Laundries, laundry services, cleaning and dyeing plants	7211-7218	0	0
722	Photographic studios, including commercial photography	7221	0	0*
723	Beauty shops	7231	2	1
724	Barber shops	7241	0	0
725	Shoe repair shops, shoe shine parlors, hat cleaning shops	7251	0	0
726	Funeral services and crematories	7261	1	0
727	Garment pressing, alteration, and repair	7271	0	0
729	Miscellaneous personal services	7299	0	2
731	Advertising	7311-7319	0	0
732	Consumer credit reporting agencies, mercantile reporting agencies, and adjustment and collection agencies	7321	0	0
733	Duplicating, addressing, blueprinting, photocopying, mailing, mailing list, and stenographic services	7331-7339	0	0
734	Services to buildings and other dwellings	7341-7349	0	0*
735	News syndicates	7351	0	0
736	Private employment agencies	7361	0	0

Table 4.2 (Cont.)

B. Services (Cont.)

Group No.	Description	Industry Nos.	PR79S	PO79S
739	Business services not elsewhere classified (includes answering services; temporary help; equipment rental and leasing)	7391-7399	0	1*
751	Automobile rentals, without drivers	7512-7519	0	0
752	Automobile parking	7523-7525	0	0
753	Automobile repair shops	7531-7539	3*	4*
754	Autombile services, except repair	7542-7549	0	0
762	Electrical repair shops	7622-7629	1	0
763	Watch, clock, and jewelry repair	7631	0	0
764	Re-upholstery and furniture repair	7641	0	0
769	Misc. repair shops and related services (includes welding; farm machinery)	7692-7699	1* (7699)	1* (7692)
781	Motion picture production and distribution	7813-7818	0	0
782	Motion picture service industries	7821	0	1
783	Motion picture theatres	7832-7833	0	0
791	Dance halls, studios, schools	7911	0	0
792	Theatrical producers (except motion pictures), bands, orchestras, and entertainers	7922-7929	0	0
793	Bowling alleys and billiard and pool establishments	7932-7933	1	1
794	Sports promoters and commercial operators, and misc. amusement and recreation services (includes public golf courses; skating rinks; race tracks - none of these services were operating at the time interviews were conducted, due to normal seasonal schedules)	7941-7949	0	0

Table 4.2 (Cont.)

B. Services, (Cont.)

Group No.	Description	Industry Nos.	PR79S	PO79S
801	Offices of physicians and surgeons	8011	1	2*
802	Offices of dentists and dental surgeons	8021	1*	0
803	Offices of osteopathic physicians	8031	0	0
804	Offices of Lic. Chiropractors	8041	0	0
807	Medical and dental labs	8071-8072	0	0
809	Health and allied services, not elsewhere classified (includes rest homes)	8092-8099	1 (8099)	1 (8099)
811	Legal services	8111	2*	0*
841	Museums and art galleries	8411	0	0
861	Business associations	8611	1	0
881	Private households (domestic services performed in private households)	8811	0	0
891	Engineering and architectural services	8911	3	3
892	Nonprofit educational and scientific research agencies	8921	0	0
893	Accounting, auditing, and bookkeeping services	8931	0	1
899	Services not elsewhere classified (includes commercial artists; psychologists; newspaper columnists)	8999	0	0
			23	19

NOTE:

All services not operated by private individuals were excluded due to the research boundaries established. This includes hospitals and schools. Additionally, nonprofit associations and services (except for business associations) were excluded for the same reasons. The rationale for these exclusions is that public services such as these are generally directly targeted by impact mitigation programs and therefore are not subject to all of the market pressures faced by commercially provided services. The financing, expansion, and employment requirements of these industries should be the subject of future research.

"*" denotes sources of non-interviews.

establishment. This was often not possible. Usually the only recourse was to randomly select a unit from the population that remained which, because of the greater numbers of certain types of establishments, often dictated higher representation among those groups.

Under the service categories, Part B of Table 4.1, the absence of post-1979 lodging places is notable, given the abundance of this category in Evanston. It could be argued that competition is taking its toll so that the occurrence of non-interviews is related to operations that are not faring well. However, this is speculative reasoning and therefore the basis for non-interviews addressed earlier (that a greater probability exists) must hold. Among auto repair services, the same speculative argument could be made, given the large number of both pre-1979 and post-1979 established shops. Within this group, a major factor seemed to be the higher level of work commitment for the prospective respondents. Many of the shops were smaller with fewer employees or no employees other than the operator.

Industry group 769 includes welding services, and as mentioned earlier, a great number of operators of this type are based in Evanston. The nature of the operation--often a mobile, singly-operated establishment initiated by

individuals previously employed in basic industries (some railroad but primarily oil and gas related)--made prospective respondents within this group particularly difficult to reach. When repeated attempts failed to achieve a scheduled interview the unit was dropped out of the list or categorized as a decline if contact was made and the interview refused. This particular group of skilled workers displaced from basic industries is a prevalent one across southern Wyoming. It is thought to be the result of the employment of an indigenous work force on resource projects. The local workers are trained in these types of skills if they do not already have them and then remain in the locale when their term of employment, generally during the construction phases of projects, is completed. As a consequence, a large, unused pool of such skilled laborers as welders exists (Moore, personal comment).

The last observation concerns the large number of non-interviews among the health and legal services. This is related to the philosophy prevalent within these groups that the service offered is not a commercial activity (a comment expressed many times both by individuals who agreed to participate as well as those who refused). Numerous outlets for these types of services exist. Additionally,

several part-time offices in Evanston are maintained by services based in the Wasatch Front market area. In view of the highly competitive situation, the failure by operators to treat these services as business endeavors is a paradox.

It is important to note that although the absolute sample size within each group is small, the value of n is close to the population total in some cases. It is also important to note that with the exception of the last group, response rates were very good, a consequence of the survey being conducted through personal interviews and above the generally accepted response rate of 75 percent for that type of administration (Warwick and Lininger, 1975). An additional comment must be made about the original size of the samples as they were drawn. In Section 3.4 on research methodology it was stated that the goal for the survey was to successfully interview a minimum of 30 individuals. Mention has been made of the difficulties encountered in drawing legitimate samples due to errors in the data base used. Thus, with that constraint and the amount of time devoted to the field survey portion of this research, it was not possible to achieve this goal for each sample group. This was especially true for the last group,

P079S. Attempts were made to add the last few interviews by telephone to reach the assigned goal. The difficulty in conducting interviews by phone plus the higher rate of declines led to a decision to end the survey research with the totals as they stood.

One last general observation about the survey methodology and results achieved has to do with bias in responses. There was no way to fully know whether the respondent was being as frank as the interviewer would like. Except for the most obvious cases, it is felt that respondents and the community had been well-prepared and therefore little bias exists in the data. There was no way to truly know how well or poorly a business was doing at the time of the interview (with the obvious exception of business liquidations or the respondent's own opinion). The assumption that non-interviews were not triggered by how the business was faring at the time may be a substantial one. A thorough attempt has been made here to account for any possible sources of bias. That done, the analysis can only proceed on the conclusion that the data are sound.

4.1.3 Business Community Demographics

Tables 4.3 and 4.4 summarize data from Section II of

Table 4.3

Evanston Business Community Demographics

Q.1 Date of Business Establishment		Q.2 Ownership Type (Proportions)			Q.4 Sales Distribution (Mean of Proportions)			Q.5 Respondent Residence	Respondent Type (Proportions)			Q.3 Current Staffing		Q.6 Staff Residence (Mean of Proportions)		
Sample Group	Range	Locally Owned Franchise	Reg'l/ Nat'l Chain	Individual	Evanston Resid.	Outlying Resid.	Out of County	Years (Range)	Owner (Proport.)	Female (Proport.)	Proport. of Female Owners	No. Part-Time (Mean)	No. Full-Time (Mean)	New to Evanst. Within Past 6 Years	Family Member of O&G Employee	Number of Businesses in Process of Closing When Interviewed
PR79R (n=27)	1871-1978	3.7*	11.1	85.2	77.4	18.3 (n=22)	13.0 (n=16)	0-Life	81.5	11.1	13.6	3.8 (n=19)	8.9	44.3 (n=17)	30.5 (n=11)	0
PR79S (n=23)	1933-1978	0.0	0	100.0	76.8 (n=19)	19.4 (n=16)	56.1 (n=9)	3-Life	78.3	26.1	16.7	3.1 (n=9)	8.5 (n=22)	40.9 (n=14)	30.3 (n=11)	0
PO79R (n=23)	1980-1984	8.7	17.4	73.9	75.2 (n=21)	16.3 (n=20)	20.2 (n=13)	0-Life	69.6	47.8	50.0	11.5 (n=15)	5.7	59.5 (n=17)	43.0 (n=14)	2
PO79S (n=19)	1979-1984	0.0	21.1	78.9	76.6	13.6 (n=16)	17.5 (n=13)	1.5-38	57.9	47.4	45.5	2.8 (n=14)	5.5	75.6 (n=17)	45.4 (n=14)	1

NOTES:

1. All proportions are expressed as percentages.

2. "*" denotes only one occurrence in sample group.

3. "Q.1-Q.6" refer to questions on survey instrument (see Appendix I).

4. Values for n in parentheses refer to the number of cases within each group responding affirmatively to the question. For example, of the 27 units in PR79R, 22 served customers from outlying areas, with the average sales distribution among those respondents of 18.3%.

5. A response of "0" under Q.5 indicates that at the minimum the respondent does not live in Evanston. Among these cases, the most typical locations of residences were in Randolph, Wyoming.

Table 4.4
Frequency Distributions by Interval

A. Date of Business Establishment

	PR79R	PR79S		PO79R	PO79S
1969-1978	48.1	39.1	1984	30.4	15.8
1959-1968	7.4	34.8	1983	21.7	31.6
1949-1958	11.1	13.0	1982	17.4	26.3
1939-1948	11.1	4.3*	1981	17.4	15.8
1929-1938	18.5	8.7	1980	13.0	5.3
1869-1929	3.7	0.0	1979	0.0	5.3
TOTAL	100.0	100.0		100.0	100.0

B. Residence of Respondents

	PR79R	PR79S	PO79R	PO79S
Life	29.6	26.1	4.3	0.0
60-51	3.7*	0.0	0.0	0.0
50-41	0.0	0.0	0.0	0.0
40-31	11.1	4.3*	0.0	5.3*
30-21	18.5	8.7	4.3*	0.0
20-11	11.1	17.4	4.3*	5.3*
10 or Less	22.2	43.5	82.6	89.5
None	3.7*	0.0	4.3*	0.0
TOTAL	100.0	100.0	100.0	100.0

NOTES:

1. All proportions are expressed as percentages.
2. "*" denotes only one occurrence in sample group.
3. Totals reflect rounding of percentages.
4. Residence time is in years. For the category "none" see note 5, Table 4.3.

the questionnaire. Overall, the characteristics of the local business community follow closely what was expected. That is, the majority are individually owned, operators of newer establishments have shorter residence times in Evanston, most of the respondents are owners, a greater proportion of respondents from post-1979 established businesses are female, and higher proportions of staff from the post-1979 established businesses have shorter residence times and family members involved in the oil and gas industry (both basic and indirect basic employment) than among pre-1979 established businesses.

It was demonstrated in Table 4.1 that post-1979 established outlets comprise approximately two-thirds of the total number of businesses identified in the data base. Table 4.4 elaborates on the distribution of businesses by dates of establishment shown in Table 4.3. It is an observation of this research that the most significant phenomenon about secondary response in Evanston as evidenced by the current business community is the occurrence of larger proportions of new retail and service establishments dating from the more recent years, when indications of economic trends in Evanston would lead to contrary expectations. The large proportions of pre-1979 establishments between

1959 and 1978 correlate with the historical development of the Overthrust Belt as detailed in Section 3.3.1. The gap between 1979 and 1981 is most interesting in light of events during those years. Many explanations and observations based on secondary data sources can be offered regarding this phenomenon. These are detailed later, especially in regard to implications for employment multipliers.

Several inferences have been made and quoted in Section 4.1.1 about the impact on local competition of businesses backed by regional or national organizations. Yet, as evidenced in Table 4.3, data from responses about ownership type indicate that the larger proportions of businesses are individually owned. Most of these are partnerships or corporations, many family based, and some are not based in Evanston or Uinta County. It is not possible to compare business volumes of regional or national chains operating in Evanston against individually owned businesses. In Section 3.2.3 it was noted that Leistritz and Maki (1983) speculated that the higher volume could be captured by the former. From personal observations by the researcher this was noted in several instances, but not in all and it was also observed that competition within this

proportionately smaller ownership type was vigorous. Additionally, older establishments appear to have retained somewhat the loyalty of long-time residents, even though these establishments are a dwindling proportion of the business population. Thus, with exceptions of course, it could be concluded that competition with regional or national chains for market share may not be as negative an effect in reality on older businesses as popular opinion might indicate. Given the high proportions of individually owned businesses in comparison to the distribution of sales to Evanston residents across the four sample groups, it appears that competition for market share is much more significant between new and old businesses of this ownership type.

The absence of post-1979 lodging establishments is evident when out-of-county sales for sample groups PR79S and P079S are compared. For many of the respondents in all sample groups, out-of-county sales represented customers other than tourists or travelers. As an example, several engineering services were involved in projects for clients not based in Uinta County. Also for all sample groups, the term "resident" was used to mean both private individuals and commercial customers. With regard to the latter, this

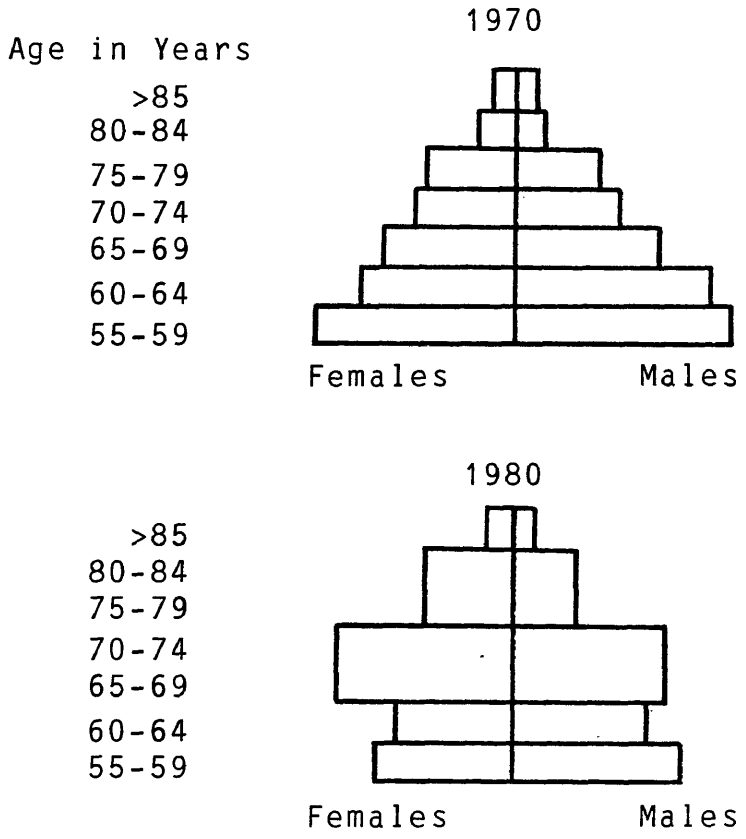
did include oil and gas operating companies and related businesses. The nature of most of the merchandise sold or services rendered qualified the activity as nonbasic. For many respondents, current estimates of sales distributions accounted for seasonal variations.

In requesting residence times from respondents in Question 5, the response "life" was accepted even though the actual number of years based on the respondent's appearance was highly variable. For pre-1979 establishments, the distributions associated with residence times of 20 to 11 years and 10 years or less in Table 4.4 correlate with the proportions of business establishment dates between 1959-1968 and 1969-1978. Likewise, respondents from post-1979 established businesses fall almost entirely into the interval 10 years or less for residence times.

In Section 3.3.2 it was noted that the acceleration of oil and gas activity had created opportunities for women. This has been the case in the nonbasic sectors. Among respondents from both P079R and P079S sample groups, women appear to play stronger roles, including ownership positions, than among pre-1979 establishments. From conversations with respondents in which they communicated their involvement in local affairs, it is also surmised that

women play very strong leadership roles in Evanston. Conversations with respondents and others suggested that women hold a substantial portion of local assets which may be the source of influence. Differences in longevity between men and women may explain the ownership of assets. Figure 4.1, based on 1970 and 1980 census data, demonstrates the trends in Uinta County for the portion of the population that is 55 and over in age. The leadership roles played by women in Evanston, while strong, are subtle. One employee of a human services center commented that women in Evanston hold a "great deal of power" in the business and public arenas, but that if it is directly exerted, it is generally displayed via city council positions, Chamber of Commerce committees, and school board activities rather than by seeking higher office. This may reflect the more conservative tendencies that typify the community as a whole.

In nearly all cases, responses to Question 3 were qualified to reflect recent cutbacks in labor commitment by firms in the samples. Additionally, as with sales distributions, labor commitments for many businesses surveyed fluctuated seasonally. Usually the mean of sample data often obscures actual distributions of data if a spread of



From: Institute for Policy Research, Wyoming Quarterly Updates, University of Wyoming, Spring, 1982.

Figure 4.1

Uinta County: Age by Sex in Five-Year Age Groups, 1970 and 1980

data is not fairly uniform. This is the case here, with two special instances. Among retailers, the larger grocery stores employ many more workers than do the remainder of outlets. Likewise, among services, lodging places employ the greater proportion of labor. In both instances, this particularly affects part-time staffing. Where P079S establishments are concerned, the lack of greater representation by lodging places in the sample clearly demonstrates the danger of literal interpretation when mean part-time staff levels are compared to PR79S establishments places. The values of n for the number of respondents who maintain part-time staffs should be kept in mind.

Unlike respondent residence times, there is no clear single reason for the higher proportions of more recently located individuals employed by post-1979 establishments. It is logical that more recently located workers would also more often be family members of oil and gas workers, yielding an increasing trend in proportions. Several explanations based on personal observation and casual inquiries may be offered. Since many businesses are family owned, family members often help with staffing, so that recent residence times would be reflected in this way. Another might be the preferences of newer residents to work in more

recently established businesses. A factor might be job relocation--an increase in the number of nonbasic workers due to dislocation from basic employment positions--which is discussed later in terms of total nonbasic employment trends. Exact data, in terms of how historical responses to these questions might have looked, are not available to support this explanation. One might surmise that newer firms are larger but in general they are not. Or, one might surmise that newer firms are faring better, but that is not a satisfactory or a totally correct explanation either, nor does it account for the associated family characteristics. Possibly the best statement is that since older businesses form a smaller percentage of the total, they capture a smaller number of newer residents. In any case, nonbasic employment opportunities have obviously existed and expanded with the change in basic activity.

The last item in Table 4.3 indicates the number of businesses successfully interviewed while in the process of discontinuing operations. Unsuccessful attempts were made to include other businesses in the same position or businesses that had already completed phase out of operations at the time of the field sessions. Because the number of business people interviewed while in this predicament is

negliable, the trends found in questions that targeted the respondent's opinion of success were not affected.

4.2 Data Analysis

Before proceeding with the analysis of both original, empirical data and secondary data, a few remarks should be made on the organization of the remaining sections and tables. It has been noted that the questionnaire was organized in such a way as to facilitate the interview. The analysis of data from the questionnaires does not always repeat that organization. Rather, survey questions that were structured around the research hypothesis and questions are grouped together for ease of discussion. All results are proportions of sample respondents selecting particular responses and are expressed as percentages in the tables that follow. Some of the tables cross tabulate questions or parts of questions that interrelate, for example, where a "filter" question was first asked (example--would you use growth projections again in your own decisionmaking?) followed by a specifically targeted question (example--what types of projections would be most useful?). In these cases, where the value of n reflects a number that is different from the sample total, it is always reported.

Throughout the discussion of both types of data, qualitative or judgmental responses are used in the interpretation of quantitative results. Not all of the tabulated responses yield proportions that are significant, but all data are reported. Statistical inference is discussed only with respect to the hypothesis in Section 4.2.3.

4.2.1 Actual Secondary Response in Evanston

The first part of Research Question 1 (see Section 2.5) is: what nonbasic response is warranted (i.e., was the actual response in Evanston greater than, equal to, or less than the predicted response) given a change in basic activity? This query is broached by examining empirical data from the questionnaires, secondary data on employment, the influence of oil and gas basic activity, and trends in nonbasic economic activity. The underlying conclusion, which is more fully developed throughout this section, is that the current level of nonbasic activity exceeds what was warranted by the anticipated level of final demand in Evanston. Petroleum industry market conditions (subject to exogenous variables) and the temporary work force component of basic activity are the major factors that have molded final demand. Additionally, the differences in nonbasic

response patterns for existing and new nonbasic firms suggest that factors other than those related to direct, demand side forces, influenced the level of response that occurred.

The transition that occurred in Evanston's commercial sectors, described in Sections 3.3.2 and 4.1.1 is evidenced by the data in Table 4.5 and its supplement. While these data represent Uinta County activity as a whole, the reader will recall from population trends in Table 3.1 that Evanston's share of that activity has been close to or above 50 percent since 1930. With reference to Table 4.5, retail and service employment have steadily increased up to 1982 as have sales and use tax collections on retail and service activities. The contribution of these sectors to nonfarm employment and earnings have declined as oil and gas employment opportunities expanded. The supplement to Table 4.5 presents a more detailed breakdown of retail sales and use tax collections. Similar data are not available for service sectors other than automobile repair. Table 3.2 demonstrated the growth of both retail and service sectors in Evanston and a quick comparison between Tables 3.2 and Table 4.5 Supplement verify the trends indicated by the former, for example, that growth among food

Table 4.5

Uinta County Economic Trends

	1977		1978		1979		1980		1981		1982		1983
1. Wage & Salary Employment													
Mining & Construction (inc. oil & gas)	441	(17.26)	533	(46.71)	1004	(37.52)	1607	(27.65)	2221	(25.47)	2980	(-18.02)	2525*
As % Tot. Nonfarm Employment	14		15		22		28		30		34		NA
As % Tot. Nonfarm Earnings (current $)	19		26		37		39		41		46		NA
Retail & Service (exc. fish, ag. for.)	1104	(19.77)	1376	(8.14)	1498	(15.75)	1778	(22.09)	2282	(8.28)	2488	(-3.83)	2395*
As % Tot. Nonfarm Employment	34		38		35		33		33		32		NA
As % Tot. Nonfarm Earnings (current $)	22		20		16		19		20		18		NA
Base-Service Ratios (dE_{nb}/dE_b)	0.19**		2.96		0.26		0.46		0.82		0.30		-0.24
2. Oil Production (000's bbls/yr)			1563		3634		6736		8425		7934		11381
Gas Production (000's MCF/yr)			5062		22949		24053		24888		32930		113680
Wyoming Oil Production (taxable)			122798		115678		114144		111913		108055		110421
Gas Production (taxable)			273725		333323		349517		353076		351193		395657
U.S. Oil Production (bill. bbls/yr)			3.16		3.10		3.13		3.11		3.14		3.16
Gas Production (TCF/yr)			20.55		20.88		20.69		20.56		19.02		17.32

	FY 77-78	FY 78-79	FY 79-80	FY 80-81	FY 81-82	FY 82-83	FY 83-84
3. Retail & Service Sales Tax Collections ($000's); see also Figure 4.3 and Table 4.6	1303	1612	2260	3716	5440	5338	4881
4. Oil & Gas Taxable Property Valuations ($000's)	2174	8774	25562	95395	193633	373597	391470
As % Total Taxable Property Valuations	7	23	44	72	81	87	87

SOURCES: 1.) Denver Research Group (BEA); *1983 est. by BEA; 2.) WYOMING DATA HANDBOOK, Department of Administration and Fiscal Control, 1983, and DAFC Division of Research and Statistics; Petroleum Information Corporation (U.S. data only); 3.) DRG (DAFC); 4.) DRG (DAFC).

NOTES:

**Based on 1976 data, DRG (BEA).

Numbers in parentheses are annual percent change.

Table 4.5 Supplement

Uinta County: Estimated Sales and Use Tax Collections by Retail Sector (millions of current $)

	FISCAL YEAR						
	77-78	78-79	79-80	80-81	81-82	82-83	83-84
Building & Hardware	1.98	2.12	3.04	6.24	9.62	9.55	9.11
(% Total Collec.)	(8)	(7)	(7)	(10)	(11)	(10)	(10)
General Merchandise	3.22	4.04	4.61	5.47	6.66	7.31	6.71
(% Total Collec.)	(13)	(13)	(11)	(9)	(7)	(8)	(8)
Food Stores	6.78	8.73	11.15	14.80	21.76	30.07	30.88
(% Total Collec.)	(27)	(29)	(27)	(23)	(24)	(32)	(35)
Auto Service	4.75	5.48	9.61	17.11	24.79	16.49	13.48
(% Total Collec.)	(19)	(18)	(24)	(27)	(28)	(18)	(15)
Apparel	0.52	0.56	0.76	1.55	2.95	3.70	3.06
(% Total Collec.)	(2)	(2)	(2)	(2)	(3)	(4)	(3)
Furniture	0.02	0.08	0.10	0.51	0.79	1.39	1.28
(% Total Collec.)	(0)	(0)	(0)	(1)	(1)	(1)	(1)
Restaurants	4.12	4.40	5.50	8.67	12.48	14.04	13.19
(% Total Collec.)	(17)	(15)	(13)	(14)	(14)	(15)	(15)
Misc. Stores	3.45	4.57	5.97	8.98	10.94	10.68	9.99
(% Total Collec.)	(14)	(15)	(15)	(14)	(12)	(11)	(11)

Source: Denver Research Group (DAFC)

stores and restaurants was very strong.

Oil and gas employment constitutes the significant portion of the mining and construction employment categories in Table 4.5. The significance of that industry is indicated by the proportion of total basic income in Uinta County that it contributes. In 1982, for example, of a cumulative total basic income of $107 million, $74 million was estimated to be derived from oil and gas temporary and permanent employment (Amoco, 1983). Oil and gas activity has been the driving force for the local economy, and is largely responsible for the increasing percentages of total nonfarm employment and earnings in Table 4.5. Additionally, the rapid acceleration of oil and gas production as new fields were developed and the associated dramatic increases in oil and gas taxable property valuations underscore the importance of the industry. By the 1983-84 fiscal year, oil and gas properties formed more than three-quarters of the property tax base in Uinta County.

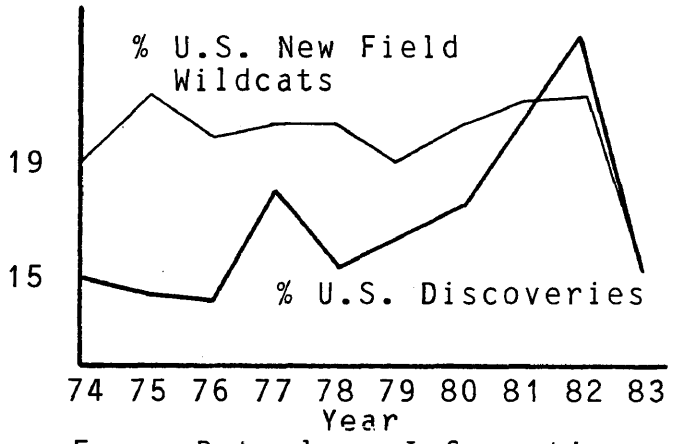
In earlier chapters it was noted that the multiplier effect works in both directions. Of interest in Table 4.5 are the base-service ratios which highlight the downward pull on the local economy of declining conditions in the petroleum industry. The behavior of the ratios indicate the jeopardy of making simple assumptions about

the effects of demand side changes in a local economy. While the data prior to 1977 are not presented, the trend up to 1978 was a slow increase in the base-service ratio from stable or declining values related to a drop in basic employment. The surge in the ratio in 1978 is caused by a more rapid expansion of the nonbasic sectors than basic activity. Data from the survey questionnaires shown in Table 4.4 for pre-1979 retail and service business establishment dates support data in Table 4.5 that indicate a surge in retail and service employment at that time. Data which show annual percent changes in employment in Table 4.5 highlight the trends in basic and nonbasic activity. Between 1979 and 1981 nonbasic capacity expanded in conjunction with a declining increase in basic activity, after being rapidly exceeded by the rate of increase in basic activity between 1978 and 1979. The decline in nonbasic activity from 1982 to 1983 paralleled the decline in basic activity but at a much slower rate. Overall the trend in base-servuce ratios suggests that factors in addition to changing demand may have played a role in influencing the nonbasic sectors and also that the relationships between basic and nonbasic activity are more complex than often realized.

That the influence of market changes for the petroleum

industry created a drag on the local economy in Evanston can be more strongly stated with a closer look at petroleum industry dynamics since 1979. Figure 4.2 compares Rocky Mountain oil and gas drilling activity (which includes the Overthrust Belt) to that of the United States. The steep plunge in drilling activity is a function of several factors. One is the effect of declining crude oil prices with the attendant decrease in gas prices on composite wellhead value. As depicted in Figure 4.3, the impact of these changing markets exacted an extreme and rapid effect on drilling activity. Additionally, the high cost of oil and gas drilling in the Rockies, discussed in, Section 3.3.1 of Chapter 3 and demonstrated in Figure 4.4, makes Rocky Mountain activity less desirable than lower cost provinces during soft market conditions.

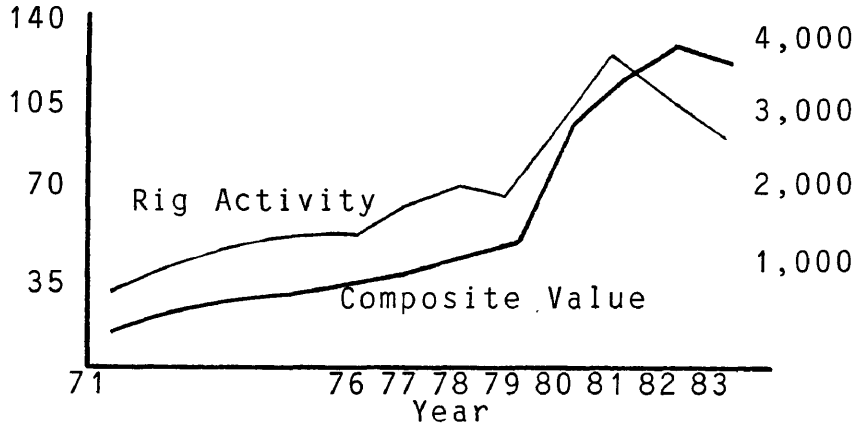
The volatility of rotary rig activity is even more clearly emphasized by Figure 4.5. The curves for 1979 through 1981 reflect the rapid escalation in petroleum industry activity in all provinces, of which the Rocky Mountains were highly significant, as shown in Figure 4.2. Those for 1982 and 1983 represent the most recent trends of reversal and slow comeback. Natural gas production, the primary component of Overthrust Belt activity near Evanston, is particularly changeable as Figure 4.6



From: Petroleum Information, EMFI Handout, 1984.

Figure 4.2

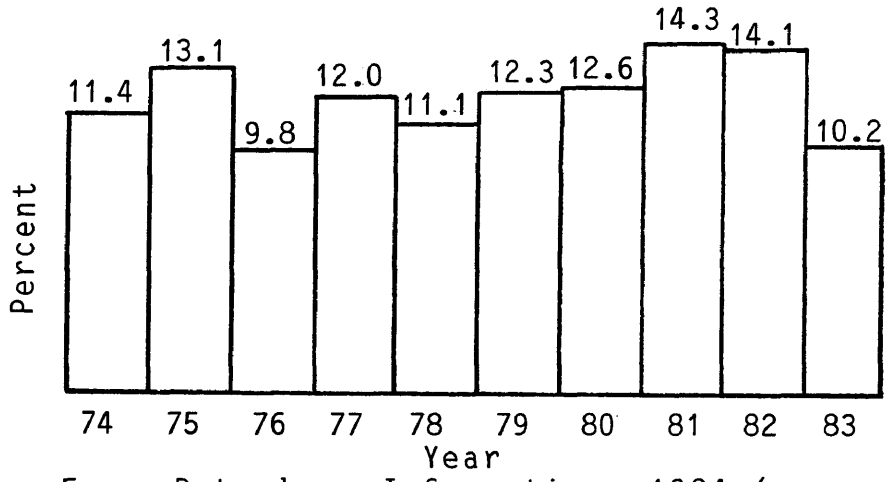
Contribution of Rocky Mountain Drilling to U.S. New Field Wildcats and Discoveries



From: Petroleum Information, 1984 (see Figure 4.2).

Figure 4.3

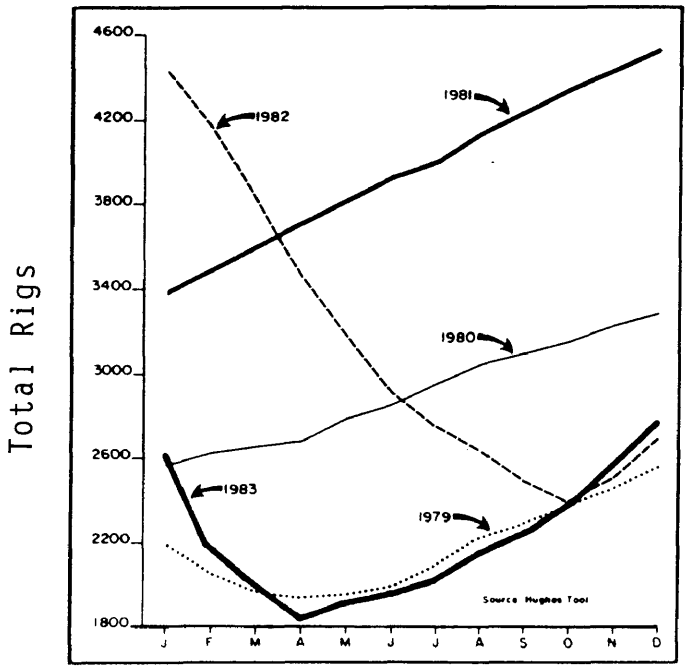
Oil and Gas Composite Value at Wellhead Versus Rig Activity, U.S.



From: Petroleum Information, 1984 (see Figure 4.2)

Figure 4.4

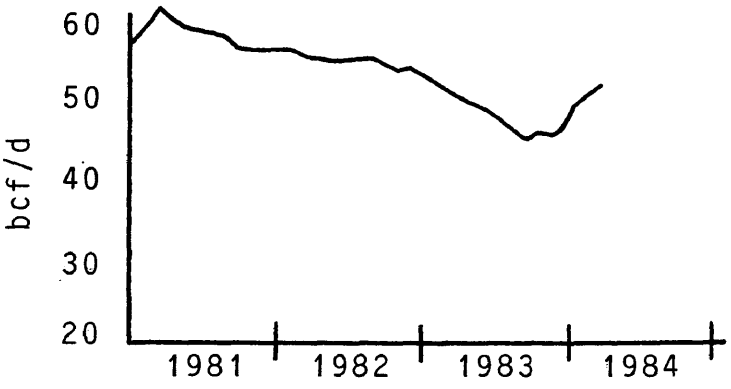
Contribution of Rocky Mountain Drilling and Completion Expenditures to U.S. Total



From: Petroleum Information, "Perspective '84, the 80s," TOPICS, 1984.

Figure 4.5

U.S. Rotary Rig Activity 1979-1983



From: Petroleum Information, 1984
(see Figure 4.2).

Figure 4.6

U.S. Natural Gas--Marketed Production

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COLORADO SCHOOL of MINES
GOLDEN, COLORADO 80401

illustrates, and as addressed in Section 3.3.1. The market trend is a consequence of the accelerated production and policies outlined in that section, and is the component that has most heavily impacted recent basic activity in Evanston and Uinta County.

Petroleum industry activity in Wyoming has reflected overall industry trends since 1979. Table 4.6 summarizes drilling activity in the state. The large increase in drilling activity for all wells in 1982 corresponds with peak basic activity in Uinta County shown in Table 4.5. Data for 1983 correlate with the industry wide slump and 1984 activity demonstrates the recent improvement. The escalation in occurrence of dry holes should be noted as it is a consequence of maturing conditions in the Overthrust Belt, which makes up the greater component of statewide petroleum industry activity. Projections for natural gas production in the state call for an increase through 1991 while projections for oil production suggest a decline beginning in 1986 (Institute for Policy Research, 1985).

Unemployment until the slump in petroleum industry activity after 1982 was quite low. Figure 4.7 summarizes unemployment trends for Uinta County, of which the largest proportion is commanded by Evanston. The higher

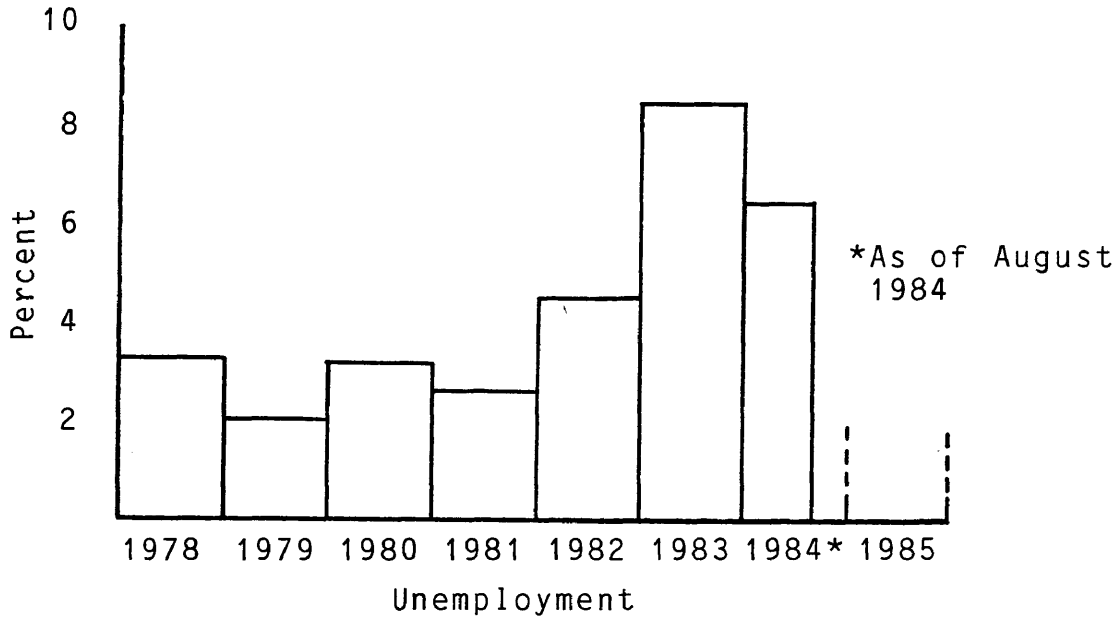
Table 4.6

Wyoming Drilling Summary

	New Field Wildcats			All Wells		
	Oil	Gas	Dry	Oil	Gas	Dry
1979	45	54	401	586	185	214
1980	52	50	305	539	198	227
1981	76	43	471	680	179	275
1982	68	28	404	1,029	272	750
1983	23	13	305	698	152	550
1984	57	9	440	801	142	827

Source: Petroleum Information

From: Institute for Policy Research, Wyoming Quarterly Updates, 1982 and 1985.



Source: Wyoming ESC, Denver Research Group, August 1984.

Figure 4.7

Uinta County: Annual Average Unemployment Rate

unemployment rate in 1983 reflects the external uncertainties related to petroleum industry activity discussed above and the completion of construction of the Whitney Canyon and Carter Creek gas plants. Consequently, much of the unemployed work force consists of many specially skilled workers. Because of slow conditions elsewhere in the petroleum industry, many unemployed workers have elected to remain in Uinta County (Amoco, 1983).

It can be concluded from data in Tables 4.3 and 4.4 that not only did a change occur in quantity supplied of local goods and services in Evanston between 1979 and 1984 but there was also a change in supply. That is, the supply curve moved up and to the right, increasing the quantity supplied with higher prices, and indicating that more factors were at work than simply price. The data in Table 4.5 on base-service ratios and annual percent changes support this conclusion. The base year for this research was set at 1979 because it is at this point that the most significant changes in basic activity took place: in Figure 4.4, U.S. rig activity began to accelerate in response to wellhead value, and oil and gas employment contributed to the near-doubling in mining and construction employment, as shown in Table 4.5. It is emphasized that nonbasic activity

had been steadily increasing, with the most rapid changes occurring not until 1980 and 1981 but after an initial lag between 1978 and 1979, reflected in the 1979 base-service ratio (refer to Table 4.5). Shifting of the supply curve for nonbasic activity is also evidenced by the data in Table 4.7, which summarize corporate charter activity in Wyoming and Uinta County. Of note are the rapid increases in new domestic charters between 1979 and 1980 and the downward trends beginning in 1982. This suggests an inward shifting of the supply curve back to a new equilibrium as illustrated in Figure 3.5. It is impossible to know the exact movements of the supply curve and its adjustment. It is also impossible to know the slope of the curve, how elastic or inelastic it truly is. The rapid change in supply in two directions--the increased number of businesses in Uinta County since 1979 (as shown in Table 4.7) and the possibility of large numbers of business failures, if Uinta County mirrors state-wide trends in this aspect as well as it does for new incorporations--leads to speculation that the curve tends to be more elastic than what might otherwise be thought. This would mean that the exponent e in the conceptual model would be positive.

With these points reconciled, that a change in supply

Table 4.7

New Domestic Corporations and Business Failures

Calendar Quarters	1979	1980	1981	1982	1983	1984
1. Wyoming--New Domestic Charters	1323	1510	1742	1597	1433	1323
1. Wyoming--Business Failures	39	106	120	189	225	258
Fiscal Years	**78-79**	**79-80**	**80-81**	**81-82**	**82-83**	**83-84**
2. Uinta County-- New Domestic Charters	24	44	87	92	67	75

Sources:

1. WYOMING QUARTERLY UPDATES, Institute for Policy Research, University of Wyoming, Fall 1981-Spring 1985.

2. Wyoming Office of the Secretary of State

occurred, the question is now asked as to whether it was warranted given the level of basic activity that occurred. A casual comparison of base-service ratios in Table 4.5 to those in Table 2.3 suggests that for the type of community Evanston is (moderate population densities) nonbasic response exceeded what should have happened. The ratio to peak for Evanston was 0.3 (compared to 0.1-0.2 in Table 2.3), the ratio to annual average was 1.03 (compared to 0.3-0.4), and the ratio that begins to account for transition to a basic work force that is largely "operations" personnel is 0.76 in 1983 (compared to 0.4-0.6). These indications, and all other evidence cited up to this point, lead to the conclusion that nonbasic response in Evanston was not warranted by the change in basic activity that took place and the nature of that activity. This accounts for exogenous factors that affected the petroleum industry but that were not anticipated.

From the questionnaire, indications that a change in supply occurred support the above discussion points. Table 4.8 summarizes data from a series of questions in which respondents were asked to describe what course of action they elected to take with their businesses during Evanston's growth period. In Table 4.8, responses are framed in terms

Table 4.8

Question 7: Identification of Key Action Taken (in percent)

A. Action (total sample)

Response Choices	PR79R	PR79S	PO79R	PO79S
Action Alternatives:				
Changed physical plant	55.56	60.87	91.30	100.00
Changed labor commitment	18.52	4.35*	0.00	0.00
Changed output	11.11	13.04	8.70	0.00
Changed prices only	0.00	0.00	0.00	0.00
Combination selected	0.00	4.35*	0.00	0.00
No-Action Alternatives:				
Kept things pretty much the same	4.81	17.39	0.00	0.00

B. Year taken (proportion of respondents who took action alternatives)

	(n=23)	(n=19)	(n=23)	(n=19)
1979	21.74	15.79	0.00	5.26
1980	21.74	26.32	8.70	5.26
1981	8.70	10.53	8.70	10.53
1982	21.74	5.26*	17.39	36.84
1983	13.04	21.05	26.09	26.32
1984	13.04	21.05	39.13	10.53
1985	0.00	0.00	0.00	5.26*

C. Direction of change (proportion of respondents who took action alternatives)

	(n=23)	(n=19)	(n=23)	(n=19)
Positive	86.96	94.74	95.65	100.00
Negative	13.04	5.26*	4.35	0.00

D. Relationship of action taken to "boom" period (proportion of respondents who took action alternatives)

	(n=23)	(n=19)	(n=23)	(n=19)
Planned before boom	21.74	31.58	26.09	31.58
Planned as result of boom	69.57	63.16	60.87	68.42
Combination selected	4.35*	5.26*	0.00	0.00
Did not apply to respondent's particular case	4.35*	0.00	13.04	0.00

E. Time horizon for planning action taken (proportion of respondents who took action alternatives)

	(n=23)	(n=19)	(n=23)	(n=19)
Short-term	21.74	21.05	4.35*	15.79
Long-term	78.26	78.95	95.65	84.21

NOTES:

"*" denotes only one case in sample.

of whether they were "action alternatives" or "no-action alternatives." The majority of respondents in the PR79R and PR79S sample groups expanded their operations either by improving the existing location or by relocating. (The reader is encouraged to refer to Appendix I for details of the questions used in the sample survey and referred to in subsequent tables.) Essentially all of the P079R respondents and 100 percent of the P079S respondents expanded operations; for the majority of these business people, this was accomplished by establishing business operations in Evanston. The timing of various actions (Part B of Table 4.8) was widely dispersed from year to year. The only apparent trends are among P079R and P079S respondents, which tended to take action after 1981, and which correlates with the distributions of dates of business establishment for these groups reported in Table 4.4. The changes made by respondents in all four sample groups were almost always in a positive direction (Part C), to increase the physical size of the business and/or its volume. For newer businesses, the positive direction was most often viewed by the respondent as simply making the investment in Evanston.

Table 4.8, Part D, indicates that the majority of

respondents in all groups took action in response to rapid growth in Evanston. The expanded consumers market provided the incentive and often needed revenue to improve or establish the business operations. Several caveats were identified in qualitative comments. For example, among PR79R respondents some observations were that further actions would have been taken but for the recession, business operations were moved out of the home to a commercial setting, or assuming ownership of an existing business was the key action. Among PR79S respondents, comments included the observation that the primary influence of the boom was the "downside." In one case, a business that had been sold had to be repossessed. Others were assuming ownership to keep a popular service in Evanston in operation, a "withdrawal" of the respondent from active participation due to individual preferences about what was happening, and loss of traditional revenue from the tourist trade which was "killed" when oil industry activity accelerated.

Among P079R respondents, remarks about the business action taken ranged from one case in which the business established was a spinoff of a multi-outlet operation to another in which the business has served primarily to re-sell liquidated stock from business failures. P079S

respondents represented a diverse group of which several of the professional services moved into Evanston, after extensive marketing and testing, rather than to Salt Lake City. Among all four groups, many comments were to the effect that the business was viewed as an investment for retirement planning, security for future family generations, or a way to locate in an area with the appeal of a small town that had, because of the level of growth, a higher degree of commercial activity.

A popular notion with regard to "boom town" commercial activity is that much of it is "fly by night," that is, the result of speculation with no commitment to the community or market area. Without a doubt, some of this type of activity found its way into Evanston, but the surprising revelation of the questionnaire data was the extent of long-term commitment. Much of this had to do with fixed investment in physical facilities. The personal investment component was also a major factor.

In summary, the data in Table 4.8 raise two important issues. They do suggest that the comment, cited in Section 4.1.1, that existing businesses did not "rise to the occasion" and invest in improvements at the start of the growth cycle is valid. Rather, the pattern of response is

nearly a continuous distribution. There is no way to determine whether existing businesses in Evanston that failed did so because of this response pattern and subsequent entry of new firms. Secondly, the definition of what is "short term" and "long term" might well be contested, although its resolution would require extensive text. For purposes of the questionnaire they were defined to be six months to two years and three to five years, respectively, and certainly these are arbitrarily defined horizons. It appeared from conversations with respondents that most took almost a lifetime view of their business interests, but of course would take the necessary actions in the face of drastic changes. Certainly, in examining the response of nonbasic activity in Evanston overall in light of the conceptual model, enough time has elapsed for what seems to be long-term adjustments to change in demand.

The conclusion that nonbasic response in Evanston was not warranted by the change in basic activity that occurred can now be taken one step further. From the data in Tables 4.3, 4.4, and 4.8 it appears that differences in how existing and new firms responded to the change in basic activity have much to do with the pattern of nonbasic response as a whole, as described from data trends in Table 4.5 and

compared with "typical" base-service ratios in Table 2.3.

Subsequent inquiries in the questionnaire centered on the action taken by each respondent and the decision making process leading up to that action. A respondent's decision not to take action, to keep things pretty much the same, is treated as a negative action. In this sense, something about that respondent's objectives, information and/or viewpoint on economic factors, resulted in this negative action. From this point on, therefore, all data compilation incorporates both action and no-action alternatives.

The second part of Research Question 1 asks: in what terms does the output from state-of-the-art practices need to be stated (i.e., what information about demand side projections influenced private decision makers in Evanston, was useful, or would have been useful)? Here, demand side information about expected growth refers to information about projected employment and population changes given a change in basic activity. Total population growth, which accounts for nonbasic activity induced by basic activity, is considered to be the most commonly available data. Thus, Question 9 dealt with the various forms information might take as described in Table 3.1 and the conceptual model, real or perceived.

To approach the issue of how information about change

demand influenced secondary response, and how private decision makers in Evanston might have used it, questionnaire participants were asked to identify the information basis for the key actions taken. To reiterate on the design of this survey question (Question 9, see Appendix I), response choices were grouped under "external" if they described information that did not originate from the respondent, and "internal" if they did. Three of the six choices, growth projections, outside observations, and events were designed to reflect what the respondent might have perceived most literally about demand and are surrogates for market prices or price expectations. The other three choices also reflect the influence of demand but in more subtle ways. This approaches the statement in the introductory paragraphs of Chapter 3 that supply side (including "behavioral") factors themselves are altered by information about demand, the role of information as described by the variable B_m and explained in Table 3.1. The sensitivity of a survey instrument required to truly test perceptions is beyond the scope of this research. Data from the questionnaires, as summarized in Table 4.9, suggest that private decision makers in Evanston operating existing (pre-1979) businesses and subject to established attitudinal patterns

Table 4.9

Question 9: Information Basis For Key Action Taken
(Total Sample)

Response Choices	PR79R	PR79S	P079R	P079S
Growth projections	14.81	13.04	47.83	31.58
Outside observations	7.41	21.74	21.74	36.84
Business climate	33.33	8.70	13.04	0.00
Economic decision criteria	0.00	4.35*	4.35*	10.53
Attitudes	25.93	30.43	8.70	5.26*
Events	14.81	13.04	4.35*	5.26*
Combination selected	3.70*	4.35*	0.00	10.53
No choice selected, did not apply to respondent's own case	0.00	4.35*	0.00	0.00

NOTES: "*" Denotes only one occurrence in sample group.
All proportions are expressed in percent.

established attitudinal patterns with regard to the community and the transition that was occurring, gave greater weight to the more subtle influence of demand on those personal attitudes. Respondents from post-1979 established outlets used as their primary information bases the more obvious elements of demand side information, growth projections and outside observations of sales and customers by similar types of businesses. This is a logical pattern, since the majority of post-1979 business respondents could not have had enough exposure to Evanston to form strong attitudes about the community.

These conclusions are derived from an examination of the responses to Question 9 within sample group PR79R (see Table 4.9). The primary emphasis was on business climate or attitudes, but with the majority of respondents choosing from among external information bases. More PR79S respondents also seemed to be more strongly influenced by personal attitudes, but some individuals relied on outside observations. Overall, a slightly greater proportion (48 percent) of respondents chose from internal information bases. The emphasis on outside observations within this sample, coupled with the proportion of respondents selecting outside observations from P079S establishments, reflects a

characteristic approach to market research used by the professional services represented in these groups.

One respondent from the health services explained that the tradition in his industry is to study client ratios based on population in a market area, and reflected that a similar strategy is used in similar service industries. Among P079R and P079S respondents, in contrast to the first sample groups, the preference was to utilize growth projections and outside observations, both of which were more direct indications of demand. The emphasis on external information bases, 83 percent and 68 percent respectively, was much more definitive than for pre-1979 retail and service outlets.

A noteworthy trend is the relative lack of emphasis on what would seem to be a most fundamental indication of demand, internal events. For post-1979 establishments, this might be explained in a similar fashion as the absence of reliance on attitudes by the fact that since most were opened after 1981, not enough time elapsed for this to be a relevant response choice. Businesses established after 1981 would not have experienced the full cycle of customer activity--increased sales as growth accelerated, and stable to declining sales after the growth peak passed. The lack

of attention to this source of information by older businesses may be attributed to the greater emphasis on external information within the PR79R group and the strength of feeling about the community and the greater influence of "mainstream" attitudes within both pre-1979 sample groups. For example, comments such as one to the effect that the business climate in Evanston had deteriorated, that "old timers have had to take up the slack" and bear the burden of higher taxes to support improved public services, and that the quality of the town had declined, attest to strength of feeling and influence of attitudes on business decisions. These comments reflect the respondent's viewpoint on current conditions but the important point to note is that opinions like this one were formed several years ago. One interesting observation from the PR79S group was that the first expansion of existing local businesses was to meet the needs of rapid growth, while improvements many businesses have made recently or are considering are to compete and survive the downside.

In contrast to the opinions of pre-1979 respondents, remarks by P079R and P079S respondents were more optimistic. Many commented that among their outside observations were the lack of similar businesses in Evanston at the time

so that competition for customers and sales seemed to be better than in other market areas. One individual went into business as a reaction against "poor attitudes" of residents and to offer a higher quality of merchandise that would "uplift the populace." Several used as their information basis Evanston's economic health relative to recessionary conditions at the time in other areas, and the influence of outdoor recreational opportunities around Evanston was evident, especially among younger professionals in service categories.

Later in the questionnaire, respondents were asked to evaluate real demand side information that had been available to them. It was assumed that even if this information was not directly used in the decision making process the majority of respondents in the survey would at least be familiar with the situation of changing basic activity (only very few were not able to respond). Also, participants were given examples of sources from which their information might have been received since it was assumed that sources varied. Respondents representing newer businesses were encouraged to use 1979 as their reference point in time if they had a longer familiarity with Evanston. If this was not the case, these respondents were encouraged to

think back to the time of their earliest familiarity. The questions were framed so as to elicit the respondent's opinion about any information he or she had been exposed to in light of current conditions and how things have turned out in the community.

The results of this series of questions, item 17 on the survey instrument, are summarized in Table 4.10. Most respondents from pre-1979 retail and service establishments rated the quality of information fair or poor. Most P079R respondents rated demand side information good while the majority of P079S respondents called it fair or poor. Related comments focused largely on perceived inaccuracies by all respondents who rated this information poor in projecting the extent and duration of the growth situation compared to how events have actually turned out. Several respondents commented that they thought the "boom" would last longer than it did. Several felt that projections had been inflated for the benefit of oil industry employees (to encourage improvements in Evanston), that only local government was apprised of industry activities, that business people in Evanston were not "leveled with." One respondent expressed the prevailing tone of opinion by stating that information about demand was "no good to me

Table 4.10

Question 17: Evaluation of Information About Demand

A. Quality of information between 1979 and now, in light of how things turned out for respondent's business and Evanston (total sample):

Response Choices	PR79R	PR79S	PO79R	PO79S
Good	22.22	26.09	52.17	26.32
Fair	33.33	34.78	26.09	42.11
Poor	44.44	39.13	21.74	31.58

B. Was information published soon enough (total sample):

Yes	53.85	36.36 (n=22)[1]	42.86 (n=21)[1]	73.68
No	46.15	63.64 (n=22)[1]	57.14 (n=21)[1]	26.32

C. Would respondent use projections of expected growth in a similar rapid growth situation (total sample):

Yes	57.69	43.48	73.91	73.68
No	42.31	56.562	26.09	26.32

D. Which type of information is most important to respondent: (Proportion of "Yes" responses in C)

	(n=15)	(n=10)	(n=17)	(n=12)
Expected area wide growth	37.50	10.00*	52.94	50.00
Expected business growth	6.25*	0.00	0.00	25.00
How to use either in decision making	50.00	50.00	47.06	25.00
Combination selected	6.25*	40.00	0.00	0.00

NOTES:
[1] Sample totals adjusted for cases where "don't know" was the selected response.
"*" Denotes only one case in sample.
All proportions are expressed in percent.

personally" because it did not appear to be accurate. It seems, based on such judgmental remarks, that reactions toward demand side information were clouded by rumor and distorted communication and, at least among pre-1979 establishments, discouraged direct use of information about demand. To this effect, one respondent questioned what type of barometer an individual decision maker could use to determine the truthfulness of information about changes in basic activity and isolate rumor and hearsay from fact.

Respondents across the four groups who rated the quality of information to be fair were, of course, less strident in their criticism. Some observations were that the respondent recognized that some business interests would be short term based on information about oil industry projects, that "nobody can predict the future," that projections in some areas were good while in others they were not, and that an "oil based economy" is inherently risky. This theme was also reflected in comments from those respondents across the four sample groups who rated demand side information "good." Several remarked upon the uncertainty in the industry so that even though projections and information about oil industry activities were good, external events played a major role. Many of these respondents

had been aware that peak growth in Evanston would be short lived due to the nature of a large segment of the work force (temporary construction related to the Carter Creek and Whitney Canyon gas plants). One respondent suggested that information had been reliable but that local business people and residents simply "failed to believe the indications."

Respondents were then asked whether they felt information about expected growth in Evanston, again from any source they may have accessed, was publicized soon enough (Part B of Table 4.10). PR79R participants were fairly evenly divided on the question, although a slight majority felt that it had been. The majority of PR79S respondents replied "no," P079R respondents again were fairly evenly split but with a slight majority on the negative side, and P079S participants felt strongly on the affirmative side. The apparent randomness of responses suggests that they reflect individual preferences and efforts to obtain information rather than the broader question of whether information was made available to local business people in Evanston soon enough for it to be used in their decision making. The judgmental question about whether demand side information should be made available to the public in affected communities was not asked. However, many

respondents from all sample groups felt that information about expected growth due to oil industry activity should be made available in advance of specific projects.

Elaborations by respondents followed the same themes regardless of whether they answered yes or no, that information was publicized soon enough, and regardless of sample group. Many felt that accuracy was more of a problem with information about expected growth than timing. There also seems to be no pattern across sample groups in terms of how the majority opinion on quality (Part A in Table 4.10) correlated with the majority opinion on timing (Part B).

With respect to timing, most respondents commented that information was not available soon enough, although some remarked that availability of information in Evanston was an improvement over what had been done in other boom town situations in Wyoming, and one respondent from the P079S sample group thought information had been available "too soon," contributing to speculative pricing in all markets. Many respondents, again on both the affirmative and negative sides, felt that oil industry efforts to keep the community informed had been crucial in maintaining some order to the growth that occurred. Comments similar to those quoted earlier were made that the oil industry is

inherently subject to uncertainty and therefore the best possible job was done. Likewise, many respondents again commented that fact had become distorted by rumor and hearsay and that business people often ignored information that was at hand or did not make the effort to stay informed.

Another common theme was that no information had been released about the expected downside of the boom, related to the temporary gas plant construction phases. That industry made strong efforts to inform the public about employment levels as projects progressed from construction to operation phases was a unanimous assertion by local government officials who were consulted. The issue would appear to be more a case of a lack of understanding and/or effort to obtain information on the part of business people.

Some isolated comments also bear mention. Suspicions about the intent of the oil industry continued to be expressed. The quality of the news media serving Evanston and its ability to keep the public, and especially businesses, informed was a concern. One respondent from the P079R sample group suggested that the emphasis on financing improvements to public services gave a "false illusion of grandeur" and "led to false expectations" about Evanston, in addition to creating a "euphoria of endless money" from

the oil industry for public projects. Within the P079S sample, one respondent remarked that certain local business sectors such as construction (which, according to SIC codes, is considered to be a basic activity) were targeted to receive information and not others. A second respondent from this group felt that release of information about activity in Evanston was too slow to be distributed outside of the county and state, with the implication that this may have been responsible for the late surge in new business investment.

Given the low regard in which many respondents held demand side information about expected growth in Evanston, a surprising number in all sample groups stated that they would use this type of information if faced with a similar rapid growth situation (Part C in Table 4.10). It is not surprising that many survey participants qualified their answers. Most thought they would be much more conservative and moderate in evaluating demand side information. Many respondents felt they would know better how to evaluate and use information about expected growth if they were faced with a similar situation. Within the PR79R group, where the increment of those answering affirmatively was small, two respondents commented that they would put demand side

information to use to sell their business operations and move from Evanston if a similar growth pattern developed. In contrast to the other three sample groups, a somewhat larger proportion of PR79S respondents replied that they would not use projections of expected growth if faced with a similar situation. The explanatory comments provided were to the effect that this type of information was not reliable, that too many external factors impacted the oil industry, that the respondent's own situation did not make use of this information critical or useful, and that based on past experience the respondent would react very conservatively.

Post-1979 business respondents replied more strongly to the affirmative, consistent with the greater emphasis within these sample groups on the use of growth projections as indicated by responses to Question 9. Many still felt they would be more cautious in evaluating future information and incorporate their own embellishments based on past experience. One P079R respondent would use the information to plan for the sale of that business. Among all four sample groups, those who felt they would not use projections of expected growth in a similar situation expressed their answers in terms of perceived unreliability of this

type of information in light of the many external factors influencing the oil industry.

The final query was designed to ascertain the type of information that would be preferred by those respondents who indicated they would use growth projections in a similar situation. As shown in Part D of Table 4.10, the sample numbers are very small but two trends can be detected. Participants representing pre-1979 establishments preferred a more qualitative type of information about changes in demand due to changes in basic activity, that would offer some interpretation of what new employment and population growth might mean for the community. The response choice itself was framed in terms of information on how to use projections of either area wide growth (i.e., employment, population) or expected business growth in decision making for the respondent's own firm (see Appendix I). Most respondents from post-1979 establishments still preferred projections of area wide growth to other possible types of information. Very few additional remarks were made regarding preferences for types of information. A respondent from each of the PR79R and PR79S groups elaborated that while growth projections (of either business or area wide parameters) were useful, an interpretation or

integration of projections with other oil industry indicators would be preferred. A P079S participant remarked that "all information is good." Most interesting was an observation on the "extent to which local attitudes affected local perceptions of information that was released" by a P079R respondent. The question was also raised about whether there was "any way to judge that ahead of time." The respondent suggested that attitudes among local residents toward using the services and retail outlets that already exist in the affected community somehow be determined and then growth projections adjusted based on that assessment.

A quick comparison of Tables 4.8, 4.9, and 4.10 support two additional conclusions. First, for pre-1979 respondents the influence of demand side information on prevailing attitudes, perceptions of business climate, and observations of existing business activity were not always in the direction of an action alternative. Given the number of respondents who elected no-action alternatives (Part A of Table 4.8) as compared to information bases most often selected (Table 4.9) it is obvious that what some of these individuals perceived about changes in demand caused them to act more conservatively. This observation could be

extended to all respondents in these two groups. In fact, recalling the statement discussed earlier that existing businesses hesitated to respond to the growth situation, it is concluded that how the majority of these respondents perceived growth is the major factor responsible for the pattern of response indicated by the data in Table 4.8, Part B. Second, for nearly all post-1979 respondents, action alternatives (Part A of Table 4.8) were taken on the more obvious demand side information bases of growth projections and outside observations (Table 4.9). Therefore, for these groups, information about expected growth in Evanston seems to have more directly induced nonbasic response, a conclusion supported by the trends for these groups in Table 4.10. For the majority of post-1979 respondents, factors other than those tied to demand must be responsible for the pattern of response shown in Table 4.8, Part B.

By asking sample survey respondents whether they would use growth projections again if faced with another rapid growth situation, the question of what demand side information would have been useful to suppliers of nonbasic goods and services in Evanston was addressed. The most probable conclusion to make here is that for those decision makers

who would use demand side information, the overall preference is for projections of area wide growth tempered by some interpretation of what they might mean to the community and especially local business activity. In the view of these respondents, this combination of information bases would allow a more effective use of area wide growth projections in planning. This is by no means an absolute conclusion due to the small numbers of respondents in each response category.

The underlying conclusion of the series of questions in the sample survey that attempted to deduce the influence of demand side information is that it was highly variable and complex. The implication is that distinctive characteristics of individuals that operate in the nonbasic sectors dictate how they search out, evaluate, and utilize demand side information and even whether they will do so.

4.2.2 Influence of Supply Side Factors on Nonbasic Response in Evanston

The statement made above which ends Section 4.2.1 implies that even in cases where demand side information most directly stimulated nonbasic response, factors on the supply side influenced perceptions about demand and how

individuals operating in the secondary market chose to act. This is one facet of the problem. Two other facets remain and are dealt with in this section. They are, first, whether economic and behavioral factors on the supply side influenced nonbasic response and how, and, second, whether supply side factors themselves are altered by information about demand and what effect they may have had on nonbasic response. The latter point was introduced in the opening paragraph of Chapter 3. Both facets together comprise the hypothesis. Thus, in this section the following tasks are addressed:

1. identification of economic and behavioral supply side factors and influence on nonbasic response;
2. test of the hypothesis; and,
3. based on conclusions about the hypothesis, evaluation of the conceptual model used for this research.

The first task is framed in Research Question 2: do supply side factors trigger, constrain, or determine nonbasic response to a change in basic employment income and in what ways do they create divergences between actual and predicted response? This is not an easy question to resolve. Given the complexities associated with what, in

theory, had seemed to be a simple and straightforward step--communication between buyers or potential buyers and sellers of nonbasic goods and services--it may be expected that how suppliers perceive and utilize information about factors that specifically affect their capacity to produce is not simple either. Suppliers are directly impacted by the availability of resources and thus costs of inputs. Their ability to correctly anticipate these factors may influence their ability to respond. Finally, the ability of suppliers to cull out and evaluate information about these factors may be affected by the same characteristics that dictated their perceptions about demand and influenced the information bases that were relied upon.

To approach the specific points related to Research Question 2, the objectives for the actions taken described in Table 4.8 must first be discussed. The survey question was designed around objectives that would typify profit maximization and those that would focus on goals attributed to behavioral preferences apart from profit maximization (see Table 3.1). In designing the questionnaire, it was speculated that for those respondents who targeted profit maximization and business volume, specific economic factors may be more crucial. For those respondents who place less

importance on these types of goals specific supply side economic factors may not be as crucial. The questionnaire results do not fall into such neat confines. Responses to Question 8, which queried survey respondents on their objectives for the actions taken are first discussed. Comparisons to subsequent inquiries about the importance of supply side economic factors are then made.

Responses in Question 8 fell into one of three major categories--profit maximization, business volume, or "other" depending upon which examples of specific goals best fit a respondent's own situation. The results, shown in Table 4.11, reveal that across the four groups the total proportions of responses in the first two categories outweigh the proportion of responses falling into "other" with the smallest difference occurring within PR79S. Among PR79R respondents who chose profit maximization as their primary objective, the majority selected "increase efficiency and productivity by improving quality of service and staff performance" as the best description of their specific goals. Neither of the other two response categories contained similar distributions. Some of the anecdotal comments were that improvements had been made to keep existing clientele as well as add new customers and that

Table 4.11

Question 8: Objectives for Key Action Taken
(Total Sample)

Response Choice	PR79R	PR79S	P079R	P079S
A. Objective				
Maximize profits	51.85	30.43	34.78	21.05
Increase business volume	25.93	21.74	30.43	42.11
Other	18.52	47.83	34.78	21.05
Combination selected	3.70*	0.00	0.00	15.79
B. Time horizon for objective				
Short term	7.40	4.35*	0.00	0.00
Long term	88.89	95.65	100.00	100.00
Combination selected	3.70*	0.00	0.00	0.00

NOTES: "*" Denotes only one case in sample.
All proportions are expressed in percent.

the boom had been taken advantage of through merchandising. The goal to trim down an existing operation in order to concentrate on the original business was described by one respondent. Another survey respondent remarked that the goal for expanding his business was to provide a haven from the turmoil in Evanston for long time residents.

PR79S comments reflected the stronger response in the category "other." One participant explained that the goal of maintaining satisfactory profits and returns was a consequence of the owners' difficulty in effectively managing a larger business. Another elaborated that because part of his business centers on skilled handiwork, quality of workmanship is most important. Thus, he would rather lose some money while making a higher quality product than increase sales with lower quality workmanship. The desire to raise his family in a small town atmosphere was expressed by one respondent, a theme that recurs throughout the questionnaire data. Apart from the individuals who selected the third category of primary objectives, comments reflected the need to compete effectively with other service firms, in particular more recently established ones, as the force behind targeting profits or volume.

P079R respondents were spread evenly among the three

categories. Two of the more interesting comments were the need for making a personal change and desire to keep local dollars in Evanston. Among comments made by PO79S respondents was the most specific profit-oriented goal described by a respondent from any group, that of increasing profit levels to 5 percent above inflation. At the other extreme was the remark that profit alone is a "shortsighted goal."

Indeed, the long term view of objectives for actions taken was prevalent and surprising in view of sharp growth cycles to which communities such as Evanston are prone. This trend, demonstrated in Part B of Table 4.11, correlates with the planning horizons selected for the specific actions themselves (see Table 4.8, Part E) and includes both action and no-action alternatives. Therefore, while some of the responses reflect commitment to long term fixed investment, others reflect other goals as well. For example, one PR79R respondent explained his intention to preserve the business for future generations. A PR79S respondent focused on sufficient time for recapture of investment while others in this group again emphasized the focus of their goals to be building business opportunities for children or other family members. One PO79R respondent shared her ambition of wanting to start something that

might "go beyond Evanston"; another that his planning horizon accounted for retirement income; and another that he will always be in the type of business he is in because "you do what you know" and Evanston was as good a location as any. One P079S respondent reiterated the goal of building the business for his children and another that the objective was to establish a foothold in Wyoming with other offices set up in Wyoming over the long term. Only one respondent (PR79R) from among all four groups noted that his objectives "are different now than before the boom," a characteristic that was expected to be much more prevalent.

In light of the results reported above, data presented in Table 4.12 from Question 10 are most interesting. The survey question was designed about the variable C(I) in the conceptual model, as explained in Table 3.1. A slight majority of PR79R respondents selected the negative response choice in Part A, that no factors had any influence on the decision to take the key action. Of those who identified factors influencing their decisions, the majority indicated that the influence was positive. In Part B, the proportion of PR79R respondents who indicated that no factors had any influence was even stronger. In

Table 4.12

Question 10: Effect of Supply Side Economic Factors

A. Identification of factors affecting decision to take action (total sample)

Response Choice	PR79R	PR79S	PO79R	PO79S
Costs	14.81	4.35*	26.09	21.05
Availability of resources	22.22	17.39	8.70	21.05
Incentives	7.41	0.00	8.70	0.00
Competing opportunities	0.00	4.35*	8.70	0.00
Combination selected	0.00	4.35*	8.70	0.00
None had any influence	55.56	69.57	39.13	57.89

Effect of factors on decision (proportion of respondents who selected factors)

	(n=12)	(n=7)	(n=14)	(n=8)
Delayed	8.33	0.00	21.43	12.50
Complicated	25.00	71.43	35.71	50.00
Influenced in a good way	66.67	28.57	42.86	37.50

B. Identification of factors preventing different action (total sample)

Costs	18.52	26.09	30.43	26.32
Availability of resources	0.00	8.70	13.04	21.05
Incentives	0.00	4.35*	0.00	0.00
Competing opportunities	0.00	0.00	4.35*	0.00
Combination selected	0.00	0.00	0.00	0.00
None had any influence	81.48	60.87	52.17	52.63

C. Identification of factors affecting completion of action (total sample)

Response Choice	PR79R	PR79S	PO79R	PO79S
Costs	18.52	26.09	17.39	47.37
Availability of resources	18.52	4.35*	26.09	15.79
Incentives	0.00	0.00	0.00	0.00
Competing opportunities	0.00	13.04	0.00	0.00
Combination selected	0.00	0.00	0.00	5.26*
None had any influence	62.96	56.52	56.52	31.58

Table 4.12 (Cont.)

Effect of factors on completion (proportion of respondents who selected factors)

	(n=10)	(n=10)	(n=10)	(n=13)
Delayed	30.00	30.00	10.00*	7.69*
Complicated	70.00	30.00	80.00	69.23
Allowed to be carried out with ease	0.00	40.00	10.00*	23.08

NOTES: "*" Denotes only one case in sample.
All proportions are expressed in percent.

Part C, 63 percent of PR79R respondents selected the negative response in comparison to 56 percent in Part A. The effect of supply side factors on completion of the action taken was a complicating one for 70 percent of the respondents who identified factors in Part C. A wide range of comments was received within this group from participants who identified factors. Most often mentioned were physical settings and labor. Some of the less frequently mentioned considerations were the effect of tax levels for the downtown improvement district, credit problems with customers during the boom, lower costs associated with particular licenses required to do business in Evanston, and "acid rain, nukes and the deficit." Skilled labor and cost of training were most often mentioned. It should be noted at this point that in designing Question 10, "costs" and "availability of resources" were differentiated for ease of administration of the survey instrument. While in economic theory they are functionally related, pre-survey research indicated that some respondents may not comprehend this fundamental relationship.

Similar results were obtained for PR79S respondents. Almost 70 percent indicated that no factors had any influence on their decision about the key action, but just over

70 percent of those who identified factors indicated they complicated the decision, in contrast to PR79R participants. In Part B, 61 percent of the respondents indicated that none of the factors listed prevented them from doing things differently than they did. Again, like PR79R respondents, PR79S participants formed a smaller majority under the negative response choice of "none had any influence" in Part C. Among those respondents identifying influencing factors on the completion of the key action, the majority indicated the effect was to delay or complicate matters. Elaborating remarks again centered on physical setting but much less so on labor. Isolated remarks centered on the difficulty of securing business loans, zoning restrictions, and advantages or unfairness of bond subsidies. As with the PR79R group, several respondents commented that while higher operating costs at the time they took action were a constraint, recent cost declines have been advantageous. Also, some comments from both groups indicated that recent lower costs had been an incentive to take an action that had been considered previously, but had not been undertaken because of periodic, localized inflation induced by rapid growth.

In contrast to the pre-1979 groups, 61 percent of

P079R respondents identified supply side economic factors that influenced their decision to take action. Of the respondents in this situation, 57 percent indicated the effect of the factors was delaying or complicating. A slim majority of 52 percent selected the negative response in Part C, that no factors prevented a different action. An identical proportion to the PR79S group, 57 percent, responded that no factors had any influence on the completion of the key action once the decision was made. Of the P079R respondents who did identify factors, 80 percent found that they complicated completion of the key action. Most of the remarks within this group were related to cost of physical space and availability of both skilled and unskilled labor. Others targeted unfavorable loan repayment schedules, zoning restrictions, poor loyalty among employees, difficulty in obtaining financing, and availability of revenue bonds. One interesting comment had to do with the ability to survive the downside of the boom. This respondent felt that the growth peak had passed by the time the business was established and therefore she experienced much resentment from operators of similar, existing outlets in Evanston. In the opinion of this individual, if a business person "can make money on the downside," anything

can be survived. This theme will emerge again in discussion of the hypothesis.

Within the last group, P079S, the majority of participants (58 percent) again selected the response choice that none of the factors outlined had any influence on their decisions related to the key action. Of the respondents who did identify factors, 63 percent found them to delay or complicate the decision making process. A narrow majority, 53 percent, of P079S respondents were not pevented from undertaking a different action than they ultimately pursued. In contrast to the other four groups, 68 percent of the respondents representing post-1979 established services identified supply side economic factors that influenced the completion of the key action. Additionally, 69 percent of the individuals in this situation indicated the effect of the factors they identified to be complicating on the completion of the key action. Again, the major focus of elaborating comments dealt with physical setting and labor. With regard to the latter, some more interesting remarks were received to the effect that the labor situation was worse in Evanston than in other cities, and in the case of one respondent that the business was established in Wyoming so it could be open shop (not unionized). One respondent

found financing to be advantageous in terms of qualifying for a Small Business Administration loan and another counted as a supply side constraint her own preference to limit the growth of the business.

Overall, for all four groups, the most common factors were commercial space and labor. From qualitative remarks it does not appear that one was more critical than the other between pre- and post-1979 established businesses. Labor considerations appear to have constrained all businesses throughout, that is, shortages of the right types of workers, higher wage levels, and turnover do not appear to have been positively effected during the peak growth period. On the downside of the growth peak, however, lower wage levels have eased operating costs for some of the respondents. This may be partly due to higher unemployment levels and the observation made earlier, related to unemployment trends in Figure 4.7, that unemployed basic workers remained in the Evanston area in the nonbasic sectors. Some respondents felt that wage levels are still higher and finding the right kind of assistance still difficult.

The same is not true for physical location of businesses. While the majority of all respondents found this to be limiting, especially those who would have liked

to own their own buildings, several were able to take advantage of partnerships or their ownership of commercial space. Many respondents representing new businesses commented that the growth in inventory of commerically zoned space in Evanston was an incentive to locate there, even though lease costs are still unrealistically high.

With regard to the specific economic factors related to cost and resource inputs put forth to the respondents, the original notion that the primary objective might correlate with attention to these factors does not appear to hold. The majority of all respondents from all four sample groups selected profit maximization or business volume as their primary goals. In contrast to P079R and P079S respondents, the majority of the respondents from existing businesses do not seem to have found these factors to be influential on their actions. The more direct question of the influence of the factors targeted in Question 20 of the survey instrument on nonbasic response is dealt with in discussion about the hypothesis.

Up to this point, all questionnaire data that have been reviewed and interpreted have specifically dealt with actions taken by respondents, their objectives, and their information bases. The usefulness of a particular

information basis--direct demand side information in the form of growth projections--and the influence of some key economic supply side factors on the actions taken have also been addressed. To complete the analysis for Research Question 2, some additional data from the questionnaire remains to be treated.

A supply side economic factor that has been touched upon is that of competition from other firms in the non-basic sectors. This was treated separately in Question 16 of the survey instrument which was based on the variable No in the conceptual model. This question elicited respondents' viewpoints on how the resulting business activity in Evanston has affected their own operations. The results are compiled in Table 4.13. The greater proportions of PR79R and PR79S respondents (48 percent and 61 percent) felt that the capacity of each respondent's type of business in Evanston currently exceeded demand. Most but not all respondents felt, in subsequent remarks, that this was critical to their own operations. The greater proportions of P079R and P079S participants viewed the capacity of operations similar to their own to be about right. Some felt it was due to recent failures among their competitors (both new and existing). It seems that respondents

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Table 4.13

Question 16: Evaluation of Growth of Evanston's Business Community (Total Sample)

A. Level of activity for respondent's type of business and others like it.

Sample group	About right for current demand	Less than current demand	More than current demand
PR79R	37.04	14.81	48.15
PR79S	30.43	8.70	60.87
PO79R	47.83	13.04	39.13
PO79S	57.89	5.26*	36.84

B. Level of activity for all types of merchandise and services

Sample group	About right for current demand	Less than current demand	More than current demand
PR79R	18.52	40.74	40.74
PR79S	26.09	47.83	26.09
PO79R	13.04	65.22	21.74
PO79S	15.79	78.95	5.26*

C. Comparison of current demand to expectations of respondent

Sample group	Equal to what was thought would happen	Less than what was thought would happen	More than what was thought would happen
PR79S	18.52	62.69	18.52
PR79S	17.39	47.83	34.78
PO79R	47.83	34.78	17.39
PO79S	26.32	31.58	42.11

NOTE: "*" denotes only one in case in sample.
All proportions are expressed in percent.

operating existing businesses were much more sensitive to competition. This supports the observation in Section 4.1.1 that the pattern of response by many of these firms, hesitation to act, left them vulnerable to competition by new firms. Across all four groups, the majority of qualitative remarks concentrated on the proximity of retail and service outlets in the Salt Lake City area or the "Wasatch Front" as termed earlier.

In Part B of Table 4.13, with the exception of an even split among PR79R participants, the majority of respondents felt that the availability of local goods and services in Evanston was less than current demand. The explanation for this apparent paradox lies in the above mentioned factor of the larger Wasatch Front market area which was again most often mentioned in qualifying remarks. Most respondents felt that many business opportunities still exist in Evanston, but the attractiveness of shopping and services in Utah is a limiting factor. The effect of competition from firms outside the immediate market area on nonbasic activity was raised in Chapter 3 and incorporated into the conceptual model. Normally, this is viewed as a demand side factor and treated in terms of consumer spending patterns. It is argued here that it should be treated as a

supply side factor--successful firms in the nonbasic sectors of energy impacted communities must be able to accurately assess competition from all sources. Additionally, in the competitive market model the number of firms outside the immediate market area should affect prices just as the number of firms operating within the market area are considered to do so.

As a consequence of the emphasis placed on this factor by the first few questionnaire respondents, an informal query was added to the survey instrument that focused on this issue of competition outside of the Evanston market area. Not all respondents, therefore, were presented with this inquiry so that evaluation of responses must be viewed casually. Additionally, the question was framed in terms of whether respondents felt that businesses entering the Evanston market now could effectively compete. This called upon the respondent's opinion of historic trends as well as current conditions. Participants from the PR79R group were evenly split, and two-thirds of the respondents in the PR79S, P079S, and P079R groups felt that new businesses could compete. All individuals responding affirmatively qualified their answers. Competitive pricing, merchandising, and better business management were cited by nearly

every respondent. Those who responded to the negative felt that Wasatch Front competition was too overwhelming, especially for more expensive goods and services.

The last portion of Question 16 asked respondents to compare current demand for their businesses with what their expectations had been, from the time of their decision making about the key action to the time of the interview. The greater proportion of PR79R and PR79S participants found present circumstances to be less than what they had expected (see Part C of Table 4.13). The larger proportion of P079R respondents felt current demand was equal to what they thought would happen, while a slightly larger proportion of P079S respondents indicated that current demand for their businesses was more than what they had expected. This last question was presented to respondents in such a way as to test two things: how demand on the downside of the boom affected their businesses and whether they felt they had realistically anticipated the market share their businesses could capture or maintain, given demand and existing and growing competitiveness.

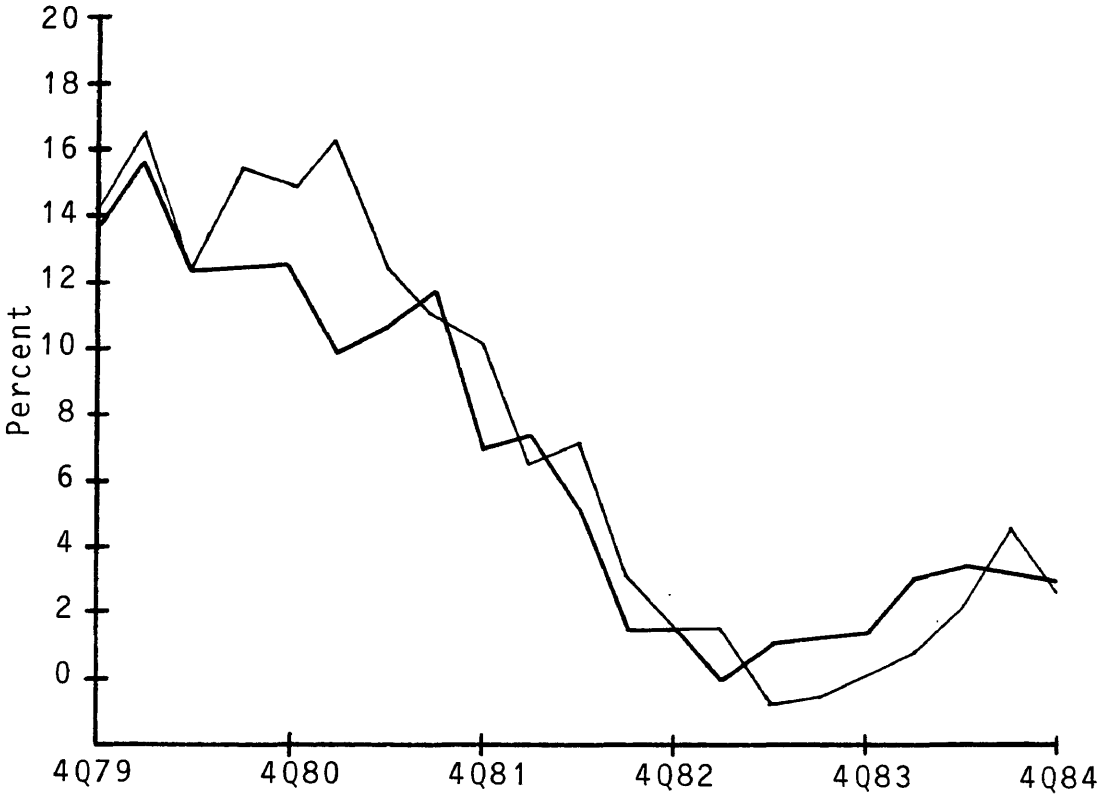
Based on the responses in Parts A and C of Table 4.13, several factors seem to have played a role in development of the nonbasic sectors. Businesses established before

1979 would logically see their market share erode as new businesses entered the Evanston market. Individuals operating businesses established after 1979 appeared to be much more realistic about their positions in the market place. To an extent, businesses entering the market after the growth peak passed had advantages in terms of perhaps more accurately assessing demand. The response patterns in Part C for the PR79R and PR79S groups underscore what has already been suggested about the greater difficulty within these segments of the business community in assessing the rapid growth situation.

The misjudgments about competition from Wasatch Front outlets among all four groups were widespread, but the majority of the business people interviewed appeared to have a better understanding of what they must do to bolster their market shares in Evanston. Response patterns in Part B of Table 4.13 and associated comments from respondents illustrate the prevailing optimism in this regard.

In surveying respondents' attitudes on the issues raised in Question 16, pricing of merchandise and services was consistently mentioned. Localized inflation in rapid growth situations has been mentioned as a factor that constrains both consumers and suppliers. As local goods

and services fall into short supply, prices escalate. Figure 4.8 illustrates the high inflation rates experienced in the southwest region of Wyoming, including Uinta County, compared to state wide trends. High inflation rates might tend to push up costs to suppliers of nonbasic goods and services, who in turn must charge higher prices again to cover operating expenses. With very few exceptions, respondents felt that prices both for inputs and final goods and services (i.e., the markup required to cover operating expenses) had not yet dropped from the high levels reached during the boom although Figure 4.8 indicates a plunge to deflation in the southwest region. These remarks were, of course, solicited from respondents about their competitors. No respondent suggested that his or her own pricing policies were inappropriate for the Evanston market. Only two respondents, representing post-1979 retail and service outlets, suggested that prices in Evanston were not too high or higher relative to the Wasatch Front area. One added that there are "exceptions to everything" and the other that a "tough attitude" towards local businesses prevails in Evanston, that local consumers "do not know what's available to them" in Evanston. If prices are not pushed downward by competition



Source: DAFC.

Figure 4.8

Comparative Inflation Rates: State of Wyoming and Southwestern Region

and an increase in the number of firms entering nonbasic sectors in Evanston, consequences may exist for a model of nonbasic firms in secondary markets based on imperfect competition.

In addition to information about demand, private decision makers in the nonbasic sectors would use information about supply side economic factors. This was suggested in Chapter 3 (see Table 3.1). Question 18 on the survey instrument approached this in terms of the notion that supply side economic factors may themselves be altered by demand side information, of whether this is perceived by decision makers, and of the availability of this specific type of information to private decision makers. Table 4.14 contains the results of these inquiries. In Part A, the number of respondents who indicated that they did have, from any source, information about how rapid growth had influenced critical supply side economic factors are shown for each group. (The reader should turn to Appendix I for the exact phrasing of the questions.) As anticipated, post-1979 business establishments represent higher proportions which are also the majority representation for each group (74 percent and 58 percent). This indicates three possibilities. The information may have been more readily

Table 4.14

Question 18: Evaluation of Information About Supply Side Economic Factors

A. Respondents who had information about effects of rapid growth on wages, commercial rent, interest rates, taxes, financing, and the like (number of "Yes" responses in total sample).

	PR79R	PR79S	P079R	P079S
	(n=4)	(n=8)	(n=17)	(n=11)
	14.81	34.78	73.91	57.89

B. Evaluation of supply side information (proportion of "Yes" responses in A).

Response Choices				
Good	50.00	75.00	58.82	54.55
Fair	50.00	0.00	35.29	36.36
Poor	0.00	25.00	5.88*	9.09

C. Availability of supply side information in rapid growth situation (proportion of total sample).

Should be made available to business people	70.37	65.22	73.91	52.63
Business people should seek out on own	29.63	34.78	26.09	47.37

NOTES: "*" Denotes only one case in sample.
All proportions are expressed as percent.

available to these groups, who, as shown in Table 4.4, were making key decisions about response actions late enough in time so that the effect of rapid growth on these factors was evident. This implies the second possibility, that most decision makers from existing firms did not use this information because it was not readily available to them. In the earlier discussion on pricing, Figure 4.8 was used to demonstrate that localized inflation very likely impacted prices of final goods and services in Evanston. It was stated that the same would be true of input prices to suppliers. The extent of inflation and inflationary expectations would at least provide suppliers with some indication of the effects of rapid growth on economic factors. Individuals from new firms may also have made a stronger effort to research operating conditions and costs in Evanston. This latter possibility is strongly supported by the number of respondents who indicated they had generated their own information.

In Part B of Table 4.14, the general pattern, with the exception of PR79R respondents, indicates that most respondents were satisfied with their information. Because of the small number of respondents from pre-1979 groups, these responses must be viewed with caution.

The final query in Question 18 surveyed participants'

feelings about the availability of this type of information. The query was framed in terms of whether the respondent felt information on how business costs in Evanston are affected by rapid growth should be made directly available to local businesses or whether business people should seek it out on their own. The majority of respondents in every group answered affirmatively, but many of the responses were tempered by the respondents' opinions of what impact mitigation should accomplish and whether growth of local businesses should be more carefully managed. One PR79R participant asked who would pay for this type of information. Most of the comments from PR79S participants had to do with "fairness," that local businesses are subject to market distortions not of their own doing and therefore should receive assistance for planning, and that because speculations also distort these facts consistent information should be provided.

A P079R respondent suggested that the information should come from industry expressed as "this is what it has cost (businesses) in other communities, this is what it might cost you." Another individual from the same group remarked that it might have discouraged entry of new businesses. Within the P079S group, an interesting remark was

made that responsible business people should also understand the dynamics of "boom-bust," that increased costs will fall and "seek their own levels" once the growth peak has passed. Comments from respondents who felt information about the effects of growth on economic factors should not be provided focused primarily on responsible business management, i.e., a "good business person" with the drive to succeed should be able to deduce these trends; that directly provided information could easily be abused in a tense, rapid growth situation; and that it would be difficult to decide who should be at risk in providing this type of information.

The final series of questions from the survey instrument to be analyzed in this section touch upon a variety of factors that may have influenced nonbasic responses in Evanston. They are business management ability (technical knowledge, as defined in the conceptual model), influence of business community involvement in the rapid growth situation (a component of social setting and business climate), influence of information dispersed by local government on decisions in the nonbasic sectors (local government as a distributor of real information), and influence of local government actions during the rapid growth period

on local businesses (in terms of costs). Table 4.15 shows the results from this series of questions.

Question 19 sought the respondent's opinion on whether all businesses, new and old, were adequately prepared with business training and experience of operators to cope with the rapid growth cycle between 1979 and the present. Except for P079S respondents, the majority of responses from all groups were to the negative. When asked to elaborate, some PR79R participants replied that many businesses are better off now having experienced the growth cycle than they were before, although having made the adjustment they are now faced with slack demand. One comment was made that for older establishments, merchandise was simply inadequate for new customer tastes and preferences. Other comments were that many established businesses knew that changes were imminent but did not plan, while those that "met the challenge with good management and inventory" have been successful. Remarks from PR79S respondents were diverse but often cited were the apparent advantages in planning for new businesses which enabled them to at least better anticipate the particular conditions in Evanston. All of the P079R respondents were sympathetic to existing

Table 4.15

Evaluation of Business Management, Business Climate, and Local Government Role
(Total Sample)

Question 19: Ability of business people to cope with rapid growth situation.

Response Choices	PR79R	PR79S	PO79R	PO79S
Yes	3.70*	8.70	30.43	26.32
No	77.78	73.91	65.22	36.84
Somewhat	18.52	17.39	4.35*	36.84

Question 20: Strength of business community role in management of rapid growth situation.

Yes	29.63	17.39	21.74	52.63
No	59.26	56.52	39.13	21.05
Somewhat	11.11	26.09	39.13	26.32

Question 21: Strength of communication between local business and government.

Yes	18.52	26.09	21.74	26.32
No	66.67	60.87	43.48	47.37
Somewhat	14.81	13.04	34.78	26.32

Question 22: Effectiveness of local government role in management of rapid growth situation.

Yes	33.33	43.48	8.70	26.32
No	55.56	34.78	60.87	52.63
Somewhat	11.11	21.74	30.43	21.05

NOTES: "*" Denotes only one case in sample.
All proportions are expressed in percent.

businesses. Most felt that prevailing attitudes and lack of experience had prevented existing businesses from managing the situation effectively. P079S respondents took a similar viewpoint; both post-1979 groups felt that newer businesses had been better prepared and managed. Only from these groups were comments obtained that indicated efforts to improve business management techniques. It appears, in view of data from Question 19, that technical knowledge was not adequate and may have been responsible for business closures, especially on the downside of the boom. Inefficient management practices may have been masked by high demand and revenue from sales as growth increased and peaked in 1982. It might be argued that nonbasic response would not have been as vigorous if technical knowledge had been greater. Businesses that subsequently failed might, in that situation, have never been established.

On the second issue, phrased in Question 20 in terms of the strength (effectiveness) of the role played by the business community over the past six years, responses were also varied. Most PR79R and PR79S respondents felt that influence within the business community was not effective. It should be clarified that in explaining the question to respondents, the focus was on the participation of business

people at any level of the impact planning process and how that may have in turn benefited local businesses as a whole. Responses from P079R respondents show a slightly larger proportion to the negative (excluding indecisive responses), while the majority of P079S respondents felt an effective role had been played. Qualitative remarks highlighted benefits like better information and advice through the Chamber that were advantageous to individiuals in this group. The strongest theme from P079R comments was that many opportunities had been missed to take action that would benefit the local business community.

Similar remarks were made by PR79S and PR79R respondents, along with some resentments expressed against stronger voices by "larger businesses" which also benefited from "inside information." Some of the more interesting remarks within these groups had to with many older businesses being too complacent as a consequence of high revenues generated during the boom. This is important since, according to the distributions in time of action alternatives taken by businesses (Table 4.8), older businesses were initially the dominant presence before being outstripped by newer ones. The data suggest that with the exception of P079S participants, the role of businesses in

managing the rapid growth situation did not yield satisfactory benefits.

In Question 21, respondents were asked for their opinion about the effectiveness of information about growth from local government. They were encouraged to consider the question with respect to their own planning and general development of the local business sectors. The majority of respondents in every group felt that communication between local business and government had not been effective. Comments across the four groups touched on several areas--information was kept from local business "deliberately" so that officials with business interests could personally benefit, government was responding in such a short time frame that effective communication was not possible, more information was available as growth increased than on the downside when "information is still important," local business did not take government input as seriously as it should have, and local government input favored some business districts over others. Several respondents mentioned current efforts to organize trade and business associations to improve the exchange of information and give local business a greater voice. In summary, information exchange between local government and local business does not seem to have been beneficial to business operators in the

nonbasic sectors.

It was difficult when presenting both Question 21 and Question 22 to respondents to prevent discussion that was inappropriate to the thrust of the issue, the influence of these factors on decision making by local businesses. Many respondents used these queries to expound on the failings of city and county government officials, the typical "backlash" effect often found in communities impacted by rapid growth from energy development. This was especially true for the last question, Question 22, regarding the influence of local government actions and policies. As stated in Chapter 3, government policies that increase costs to businesses act as disincentives (preventing the full effect of change in demand on supply) while those that reduce costs act as incentives (enhancing the effect of a change in demand on supply). While a slightly greater proportion of PR79S respondents felt the role played by local government in managing growth had been effective, the higher proportion of respondents in the other three groups felt it had not been effective. The comments received were detailed and extensive. The strongest pattern among PR79R respondents concerned perceived incentives to new businesses over established ones, the latter being more adversely effected by more restrictive measures such as zoning. Although more

PR79S respondents replied to the affirmative, nearly all comments came from those who responded to the negative. The same themes were reflected with regard to perceived incentives to new businesses and disincentives to existing firms of restrictive measures. In both groups, several individuals were adversely affected by zoning changes that restricted commercial activities in areas where businesses already existed.

The majority of respondents from both P079R and P079S groups found local government to be ineffective in contrast to opinions expressed by respondents from older businesses that new businesses had benefited. The most sensitive topic in these cases was the availability of industrial revenue bonds. While it was widely perceived among older businesses that these instruments were primarily available to new outlets, data from Table 4.12 show that few respondents represented firms that had utilized the subsidies. The bond offerings seem to have been misunderstood by a large segment of the business community. Remarks from P079R participants included the sense that policy treatment of some commercial districts is different from others (in particular the central district); that business sectors are often ignored in lieu of emphasis on public facilities; that policies are inconsistent with either too much or too

little control over commercial development; and that government officials and employees lack the expertise required to effectively manage the situation (some respondents felt expertise had been improved or was quite good). One respondent said in summary that local government actions had been disincentives to local businesses. Comments from P079S respondents were in the same vein. Overall, individuals in these groups seemed to feel that local government effectively managed public service improvements but did not play a strong enough or effective enough role on behalf of private enterprise. However, while some respondents indicated government should have no role with respect to commercial sectors, others felt a stronger role was needed. This illustrates the elementary dichotomy in thinking with respect to impact mitigation efforts directed toward the nonbasic sectors and is the subject of Chapter 5.

4.2.3 Conclusions and Discussion of Hypothesis

Table 4.16 represents the key trends from the questionnaire data that serve as the basis for resolving Research Question 2 and forming conclusions about the hypothesis. Statistical inferences--variances, standard

Table 4.16

Summary of Key Questionnaire Data

X = Applies to majority of respondents in sample group.
✓ = Does not apply to majority of respondents in sample group.

Response Choices	PR79R	PR79S	PO79R	PO79S
1. Respondents who took key action alternatives	X	X	X	X
2. Respondents who took key action alternatives in a positive direction	X	X	X	X
3. Respondents who took key action alternatives as result of boom	X	X	X	X
4. Respondents who used external information bases in making decisions on key action/no-action alternatives	X	✓[1]	X	X
5. Respondents who found quality of information about expected growth to be poor	X	X	✓	✓
6. Respondents who targeted profit maximization or business volume as their primary objective in decision making on key action/no-action alternatives	X	X	X	X
7. Respondents for whom critical supply side economic factors did not influence decision on key action/no-action alternatives	X	X	✓[2]	X

Table 4.16 (Cont.)

Response Choices	PR79R	PR79S	PO79R	PO79S
8. Respondents for whom critical factors did not prevent a different key action/no-action alternatives	X	X	X	X
9. Respondents for whom critical factors did not influence completion of key action/no-action alternatives	X	X	X	✓[2]
10. Supply of respondents' own type of business activity and others like it about right for current demand			X	X
11. Supply of respondents' own type of business activity and others like it more than current demand	X	X		
12. Current demand for respondents' business activity equal to expectations			X	
13. Current demand less than expectations	X	X		
14. Current demand more than expectations				X
15. Respondents who had information about effects of rapid growth on critical factors	✓	✓	X	X

Table 4.16 (Cont.)

Response Choices	PR79R	PR79S	PO79R	PO79S
16. Respondents who felt local businesses have not been prepared to manage and cope with rapid growth[4]	X	X	X	X
17. Respondents who felt business community has not played strong enough role in rapid growth situation[4]	X	X	X	✓
18. Respondents who felt communication between local government and local business has not been strong enough during rapid growth situation[4]	X	X	X	X
19. Respondents who felt local government has not played effective role in managing development of business community during rapid growth situation[4]	X	✓	X	X

NOTES:

1 In these groups, internal attitudes in particular and events are more strongly represented than among PO79R and PO79S respondents.

2 Of these respondents, the majority indicated critical factors delayed or complicated decision or completion of key action/no-action alternatives.

3 For this item, "majority" represents the greater proportion of "good" of "poor" responses.

4 For the last four items, "majority" represents the greater proportion of "yes" or "no" responses.

deviations, standard error, and confidence intervals at a 95 percent level of significance using t-distributions--are found in Appendix III. The format in Appendix III replicates Table 4.16. For each response choice, the proportion is identical to the mean of responses for that choice. The computed confidence intervals are wide, which is to be expected for the small sample sizes obtained for each population. Estimated standard errors for the distribution of possible sample means for each response choice are small in several cases. This suggests that in these cases repeated random samplings from each population could yield means that cluster very closely about the true population mean. Based on the statistical inferences in Appendix III, for the key data represented in Table 4.16, the conclusions presented below are for the totality of observations in each population, as defined in Section 3.4 on research methodology.

To begin the process of drawing conclusions about the empirical and secondary data and trends analyzed to this point, it is well to review findings from Section 4.2.1. It is known that nonbasic retail and service capacity, represented by the activities of firms established before, during, and after 1979, expanded resulting in a change in

supply in Evanston. It is known that some long run adjustment has taken place and is continuing, but it is not known to what extent the supply curve for each nonbasic sector has shifted back toward a long run equilibrium. Nonbasic response in Evanston was induced by a change in basic activity associated with petroleum industry operations and triggered primarily by large, temporary construction work forces which peaked in 1982 and were associated with the Whitney Canyon and Carter Creek gas plant projects in Uinta County. Many, underlying, external forces on petroleum markets played a key role in stimulating and contracting basic activity. As a result, demand side factors, manifested by increasing numbers of basic workers and basic employment income, were substantial. Individual perceptions of demand varied, however, and are reflected in the distributions of preferences for different types of information upon which to base decisions, and opinions about the quality of information on expected growth. These trends differentiate existing nonbasic firms from new firms and are illustrated by the first five items in Table 4.16.

The nonbasic response that took place was found to be greater than warranted. To elaborate, the pattern of nonbasic response between 1979 and 1982 from secondary data is

one of increasing rates of growth from year to year, after an initial lag as existing capacity was absorbed and existing firms hesitated to act, even as rates of growth of basic employment slowed from year to year. From 1982 to 1983 and, it is assumed, through 1984 levels of both basic and nonbasic activity decreased. The rate of decrease in the nonbasic sectors has been slower, possibly due to the very dynamic nature of the secondary market with new firms entering the market as others fail, leading to the current surplus of nonbasic activity for final demand. For the four populations delineated and studied, two distinct patterns of growth emerged from empirical data (refer to Table 4.8, Part B). Nonbasic firms existing before 1979 exhibited nearly a continuous pattern of change between 1979 and 1984. Nonbasic firms established from 1979 on exhibited a pattern of activity concentrated in the years of 1981 to 1984 which correlates with dates of establishment of these businesses and, therefore, largely represents entry of these firms to the Evanston market. Additionally, new retail firms lagged behind new service firms entering the Evanston market.

In the above Section 4.2.2, analysis of questionnaire data which targeted supply side economic and behavioral

factors revealed strong differences between retail and service firms established before 1979 and those established in 1979 and afterwards. Coupled with trends in empirical quantitative and qualitative data analyzed in Section 4.2.1 that suggest perceptions of demand differed between existing and new nonbasic firms, observations from Section 4.2.2 explain the patterns of nonbasic response that occurred and how they deviated from what was expected.

First, the statement in Chapter 1 regarding qualitative data must be reiterated here: qualitative observations are not sacrificed in order to emphasize quantitative techniques and results. For existing firms, quantitative questionnaire data yield few clear explanations for the pattern of response that took place--some no action alternatives, action alternatives dispersed fairly continuously over time, complex signals related to information preferences and economic factors. The reader is welcome to refer to Tables 4.8, 4.9, and 4.12. Qualitative data yield less confusing signals--some existing businesses hesitated to act, most were not prepared, many did not view favorably the changes taking place in Evanston. Throughout the questionnaire data emerges a theme of resistance to change. This is the most significant theme in interpreting

empirical data trends for existing businesses. It explains the lack of use of growth projections by these decision makers and supports the notion that perceptions of demand among existing businesses were tied more closely to personal feelings and attitudes, even when individual decision makers exhibited preferences for external information. The result of this is that with the majority of existing businesses perceiving growth and change in demand in this manner, action alternatives would only be pursued when the individual decision maker felt the time was right. For the existing business community as a whole, therefore, no rapid build up accompanied the acceleration in growth.

As decision makers took action, three trends with respect to supply side economic factors can be detected. For many existing businesses, the cost advantages of already being located in Evanston explains why most suppliers, even though they targeted profit or volume, were not influenced by critical economic factors. Additionally, those suppliers who delayed action benefited both from higher revenues and some easing in costs as local inflation began to diminish (shown in Figure 4.8). Lastly, for most of the suppliers influenced by critical economic factors, the effect was positive (refer to discussion related

to Table 4.12).

The pitfall of the apparent resistance to change lies in the current market position for existing businesses. Item 11 in Table 4.16 highlights the sensitivity to competition currently felt by existing businesses. Additionally, as a consequence of how this behavioral mode influenced information preferences, decision makers from existing businesses were less in tune with the caveat that growth was temporary once action alternatives were launched. Qualitative data in this regard explain why most indicated that current demand was less than what they had expected (item 13 in Table 4.16), which in turn probably had a substantial effect on the majority opinion that the quality of information on expected growth was poor (item 5 in Table 4.16). With regard to current demand for existing businesses, it is also logical to conclude that they would have little reason to suspect they might be displaced by new firms, being already established in the tightly knit Evanston business community.

In view of how existing nonbasic firms perceived demand and were not influenced by supply side factors, it is not surprising that the majority did not have information about the effects of rapid growth on supply side factors.

The possibility that this information was not available to them was discounted in Section 4.2.2--inflationary pressures and expectations should have been sufficient indications of at least rising costs. Rather, it is more likely that by choice this information was not obtained.

In light of these arguments, what are the implications of the trends reflected in items 16 through 19 of Table 4.16? Recall that the most cited comment with regard to preparation by existing firms to ably manage and cope with rapid growth was the "lack of time." Management shortcomings were very possibly outweighed by the rapid changes in demand, and high sales revenues would have disguised inefficiencies. Perceptions about demand that resulted in the tentative response pattern also stymied participation among these firms in the community's efforts to manage the situation and in turn lessened the benefits to them of that participation. This extends to communication with local government about the situation and what was being done, which, if not directly provided to firms, could only be obtained by them if they took a more active role. Retail outlets established before 1979 were more negatively influenced by local government policies than were service outlets. From previous analyses, these trends were found

to be in the form of criticism of what were considered to be incentives to new businesses and planning policies such as zoning, so that the differences between retail and service firms on this point is logical.

The challenge to these conclusions regarding nonbasic firms established before 1979 and still in operation is the question of why the lack of emphasis on use of information about expected growth, and whether greater emphasis would have made a difference. Was this information available? Indications are that it was and even though early reports may not have been accurate, the duration of growth related to construction projects was surely known. Would greater use have made a difference? Very likely so. It appears that in an energy impact situation such as what occurred in Evanston, experiential perceptions result in a delay of action by existing firms. Had more of these firms relied on the direct information available, the pattern of response might have been clustered about the initial years of increasing growth rather than being a continuous pattern associated with individual perceptions about when growth was legitimate. This reflects many of the observations reported in Section 3.2.3 on the conceptual model to the effect that established nonbasic firms in communities

affected by growth cycles related to energy development adopt a "wait and see" posture as the growth cycle begins its upswing. Alternatively, more businesses would have declined to make any new investment beyond what was needed just in the short run.

In contrast to these conclusions, operators of non-basic firms established during 1979 and after and still in operation had different perceptions of demand and were influenced by supply side economic factors. Most of these decision makers responded on the basis of external information and more used growth projections (item 4 in Table 4.16). Most found information on expected growth to be fair or good (item 5 in Table 4.16). Frequency of reliance on outside observations was also greater. Thus, for these suppliers, perceptions of demand and what they could achieve in Evanston were more realistic even though some misjudgments were made. This is reflected in the emphasis on feeling that the supply of their type of business activity was about right for current demand and that current demand equaled and exceeded expectations (items 12-14 in Table 4.16). The larger proportion of newer businesses is also a factor in these trends. However, the fact that many new businesses were able to enter and compete in the

market is an indication of the lack of awareness and inability to truly perceive what was happening on the part of existing firms.

Establishing a business in Evanston as growth spurred higher costs and greater demand for resources would be more difficult, and this is exemplified in the trends with regard to supply side factors. For retail firms, the primary influence was on the decision to take action, while for service firms, the primary influence was on completion of the action. If these trends are compared to the patterns in Part B of Table 4.8, they explain the slower response of firms established in 1979 and later, especially so for retail outlets. Additionally, these firms had information on how factors critical to operating their businesses were effected by growth (item 15 in Table 4.16).As mentioned in Section 4.2.2, many operators generated that information on their own. While many firms established in 1979 and after could be expected to demonstrate inadequate technical knowledge or management expertise (item 16 in Table 4.16) it must be remembered that these opinions were often directed at older businesses and qualified by the viewpoint that local businesses in general have become better able to deal with the situation. Recall also that it was from among newer businesses that indications of efforts to

improve management and business expertise were obtained.

Finally, technical knowledge among newer businesses would have to be a greater factor than among older ones. Entering the market when they did, firms established in 1979 and after would have to be somewhat better managed in order to survive and compete on the downside. A corollary exists that lack of technical knowledge may have resulted in the failure of many newer businesses attempting to establish a foothold in Evanston based on short term increases in demand. This might explain the current absence of businesses established in 1979 and 1980 (refer to Table 4.4). The combination of knowledge that high demand would be short term in conjunction with the influence of factors related to costs and resources appears to be the stronger explanation.

New retail and service firms are differentiated by the trends with regard to effectiveness of the role of the business community. Like older firms, however, operators of new firms found communication with local government to be a shortcoming (items 17-18 in Table 4-16). This latter point, in conjunction with the negative view among these firms of local government policies may reflect more a disatisfaction with a government body and policies that the

majority of operators were not familiar with.

The conclusions presented above can be summarized in statements directed toward the hypothesis of this research.

1. For existing firms in the nonbasic sectors, supply side economic factors were not critical relative to suppliers' experiences during rapid growth. Behavioral factors that influenced how these firms perceived demand do explain the pattern of response among these firms.
2. For nonbasic firms established in 1979 and later, supply side economic factors were more critical and constrained the response of these firms. Behavorial factors were less critical in explaining the pattern of response for these firms.

The hypothesis is accepted but with qualifications that account for differences in response patterns between existing and new firms. These differences disguise any differences that exist between retail and service firms.

It must be remembered that these two conclusions are essentially totally based on analysis of empirical data from firms that have survived the growth cycle and are still operating in the Evanston market. Recall that in

Table 4.3, three firms among those successfully interviewed were in the process of ceasing operations. For these firms and firms that either elected not to enter the Evanston market or entered and did not survive, a corollary to the two conclusions can be proposed. That is, firms that did not survive the growth cycle failed to do so because of poor perceptions and judgments about demand and/or factors on the supply side that exacerbated the inability of the firm to adjust to the dynamic conditions of the secondary market. Firms that elected not to enter the secondary market did so because factors on the supply side and/or perceptions about demand prevented them from doing so.

A final step remains with respect to the conclusions reached and acceptance of the hypothesis. In Section 3.4 "categories" were described into which respondents would fall on the basis of how they viewed the results of all inputs related to the key action. The respondents' own classifications are shown in Table 4.17. The indications are that the majority of respondents in every group were satisfied with their results and thus fall into the first category: good judgments were made about the inputs and expectations were met or exceeded. Many individuals, in responding to Question 11, added that growth in Evanston

Table 4.17

Respondents' Evaluations of Business Results in Light of Present Conditions

Question 11: Success of overall results (total sample).

Response Choices	PR79R	PR79S	PO79R	PO79S
Yes	81.48	73.91	69.57	84.21
No	3.70*	13.04	17.39	0.00
Somewhat	14.81	13.04	13.04	15.79

Question 12: Evaluation of action taken.

A. Timing of action (total sample)

Should have been taken sooner	44.44	43.48	52.17	68.42
Should have been taken later	3.70*	0.00	0.00	0.00
Nothing different	51.85	56.52	47.83	31.58

B. Extent of action (total sample)

Should have been greater	25.93	13.04	30.43	26.32
Should have been lesser	7.40	4.35*	8.70	5.26*
Nothing different	66.67	82.61	60.87	68.42

C. Right choice of action (total sample)

Yes	92.59	100.00	91.30	94.74
No	7.40	0.00	8.70	5.26*

Question 13: Evaluation of objective

A. Primary objective achieved (total sample)

Yes	85.19	73.91	69.57	84.21
No	7.40	8.70	4.35*	5.26*
Somewhat	7.40	17.39	26.09	10.53

Table 4.17 (Cont.)

B. Secondary objective achieved (proportion of "No" and "Somewhat" responses in A)

	(n=4)	(n=6)	(n=7)	(n=3)
Yes	0.00	0.00	28.57	0.00
No	50.00	16.67	42.86	66.67
Somewhat	50.00	83.33	28.57	33.33

C. Planning horizon for objective (total sample)

Should have been shorter term	11.11	13.04	0.00	10.53
Should have been longer term	7.40	4.35*	4.35*	5.26*
Nothing different	81.48	82.61	95.65	84.21

D. Right choice of primary objective (total sample)

Yes	96.30	100.00	100.00	100.00
No	3.70*	0.00	0.00	0.00

Question 14: Evaluation of information basis

A. Quality of information relied upon (total sample)

Good	62.96	69.57[1]	73.91	57.89
Fair	22.22	26.09	17.39	31.58
Poor	11.11	0.00	8.70	10.53

B. Effect of respondents' attitudes about Evanston's future on information basis at time of decision about action (total sample)

Information basis was:

Optimistic	51.85	47.83	69.57	63.16
Conservative	29.63	30.43	17.39	15.79
Not influenced	18.52	21.74	13.04	21.05

Table 4.17 (Cont.)

C. Right choice of information basis (total sample)

Yes	92.59	100.00	95.65	100.00
No	7.40	0.00	4.35*	0.00

Question 15: Evaluation of attention to supply side economic factors

A. Enough emphasis when making decision about action taken (total sample)

Yes	81.48	78.26[1]	86.96	78.95
No	18.52	13.04[1]	13.04	21.05

B. Enough emphasis when completing action (total sample)

Yes	85.19	82.61	86.96	73.68
No	14.81	17.39	13.04	26.32

NOTES:

"*" Denotes only one case in sample.

[1] Does not total 100% due to cases in which no response was selected, i.e., question did not apply to respondent's own situation.

All proportions are expressed as percent.

helped them achieve successful results. In light of the analysis of data and presentation of conclusions, respondents from existing businesses might be better typified by the third category: judgments about some inputs were flawed but actual demand allowed these firms to adjust. Two points with regard to existing firms are revealed in these data. In Question 12, a large number, although not a majority, felt they should have taken action sooner. Correspondingly, more respondents from existing businesses, although not nearly a majority, felt the effect of their attitudes about growth caused them to react more conservatively than did respondents from newer firms. This supports the conclusion that existing businesses responded according to perceptions about demand that are experiential and that had more decision makers used growth projections, responses of these firms would cluster about the earlier period of growth acceleration. With respect to respondents from newer businesses, the constraint of supply side factors on nonbasic response is evident in Question 12 where most respondents would have liked to take action sooner.

4.2.4 Validity of Conceptual Model

In identifying the factors that might influence nonbasic response, the conceptual model proved to be effective. For existing nonbasic firms, the attention to questions of information, either real or tied to the variable B_m, uncertainity and timing were most valuable in explaining response of these firms (refer to Table 3.1 and the functional form of the model). For new nonbasic firms, the discussion of costs and resources have been found to be valuable in pinpointing explanations for the patterns of response they exhibited. The variable of autonomous expansion of nonbasic firms did not apply to either existing or new firms. The variable So, social setting and business climate were, as expected, more applicable to existing firms in terms of how they affected suppliers' perceptions about growth. Two factors were more critical than originally anticipated since they applied to most firms from all four groups--government policies and the number of firms. Additionally, technical knowledge was revealed to be a key variable in how nonbasic firms were able to respond in a stressful situation.

Since the majority of firms selected profit maximization or business volume as primary objectives for their

actions, it can be assumed that the perfect competition market model was a safe basis upon which to evaluate the nonbasic firms in Evanston. Goals other than profit maximization were important to fewer firms than was initially expected. That is, the influence of the variable B_m does not seem to be so strong that profit maximizing behavior was not indicated. It could be argued that since this observation is based on what the researcher was told by individuals who were interviewed, it is subject to distortion. This would especially be true if most decision makers interviewed do not understand what "profit maximization" means in terms of business performance. Additionally, the discussion on firms not included in the survey in Section 4.2.3 applies here. That is, firms for which factors tied to the variable B_m were stronger may not have survived, in line with the overall conclusions reached in Section 3.2.1 about the appropriateness of the perfect competition market model. Without conclusive evidence on pricing policies it is not possible to suggest that monopolistic characteristics prevailed, as suggested by Wicksell and discussed in Section 3.2.1. The behavior suggested by Wicksell does seem to exist in Evanston; but change in price as suggested by long run adjustment in competitive

markets appears to have more merit. It should be emphasized that the secondary market in Evanston is not perfectly competitive. Factors of production are not completely mobile, as suggested by Siebert and also discussed in Section 3.2.1. Information, either from direct sources or perceived from the market, was not perfect. The secondary market in Evanston replicates theoretical conditions well enough so that the logic of deductive, economic reasoning based on key assumptions about behavior of firms under perfect competition conditions allowed the conceptual model as it was developed to be a useful tool for analysis.

Although the conceptual model worked were in identifying supply side factors for analysis, several other factors were revealed during the course of the research that bear some weight on the results. Because they were not addressed in the collection of empirical data, they can only be offered as additional explanations for the trends that are apparent and the conclusions that were reached.

The often cited lack of comprehension that peak growth was tied to temporary construction work forces merits some additional discussion. How could it be that what should have been a most obvious element of information about demand was not comprehended by so many private decision

makers? A possible explanation might be the form in which information was most often distributed. Projections of total growth were the most frequently mentioned type of information accessed by those who actively sought out information through advance research or who casually obtained information from sources that were not intentionally sought out. This type of data was generated primarily for planning improvements to public facilities and services. As repeatedly put forth in this document, projections of total population growth incorporate the contributions of nonbasic components. Thus, the trends attributed to basic activity may not have been that obvious to the user who is unfamiliar with the underlying methodologies or who does not take the time to decipher the implications of those methodologies. From what was learned about private decision makers in the nonbasic sectors, this appears to have generally been the case, with the result that unsophisticated users of what is fairly complex data might easily miss or ignore important caveats such as a construction work force element.

The questionnaire did not address whether construction associated with housing and commerical development in Evanston influenced private decision makers in any way.

The extensive amount of new construction that took place in Evanston is readily apparent. Thus, the development of nonbasic capacity that occurred in Evanston as compared to what is suggested for this type of community in Table 2.3 could be due in part to the "construction accelerator effect" described in Chapters 2 and 3. This type of activity, like activity associated with oil and gas development, was highly visible to decision makers in nonbasic sectors, though it was also short term. Since it is viewed as generating fixed capital assets, and since building construction is regarded as a leading stimulus in the national economy, suppliers of nonbasic activity would tend to become more optimistic about Evanston as a place for business. During the time period of 1979 to 1984, the state of Wyoming as a whole experienced several growth peaks in construction activity. This is shown in Figure 4.9. While comparative data from Uinta County are not shown, the trends in Figure 4.9 support the suggestion that construction activity contributed to the buildup in local retail and service activity.

Several possible explanations were suggested by questionnaire respondents and other contacts in Evanston as to why nonbasic firms would continue to enter the market as

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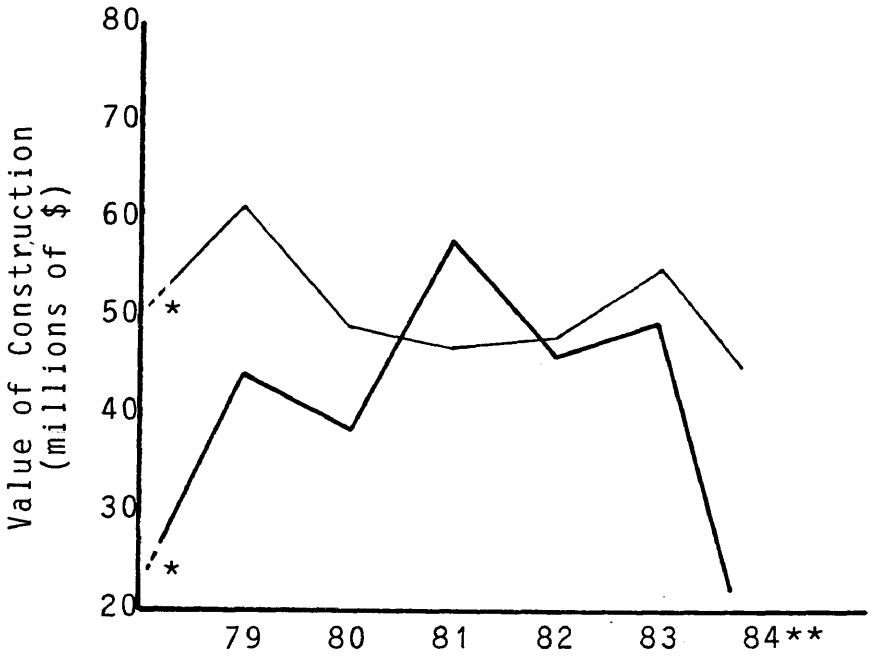


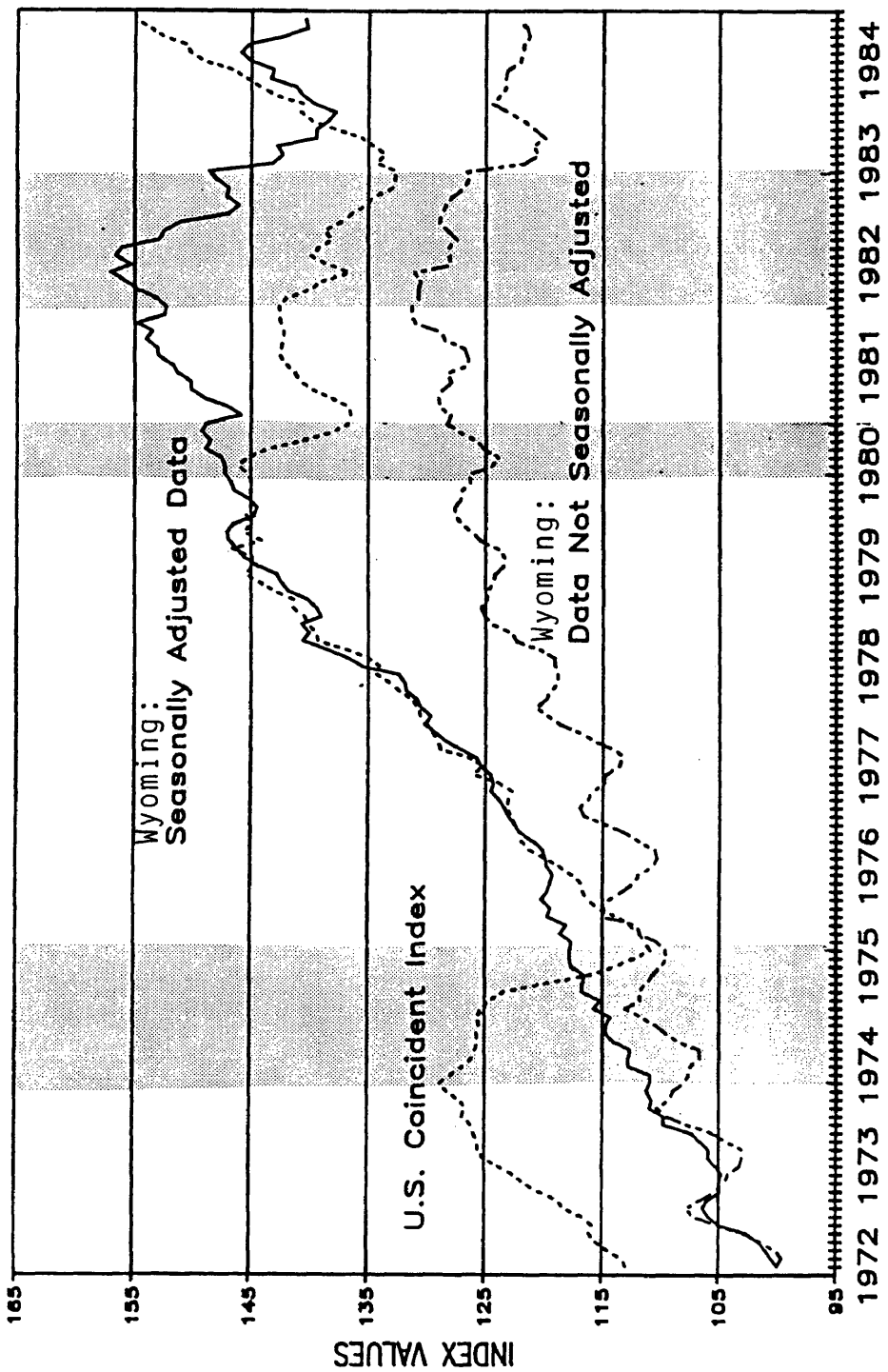
* Based on 4Q1978 only.
** Averaged over 3Q1984 only.
Sources: Institute for Policy Research, Wyoming Quarterly Updates, University of Wyoming, 1979-1984.

Figure 4.9

Construction Trends in Wyoming:
Average Annual Value

basic activity was declining. Some have been mentioned in the process of presenting and interpreting data from the questionnaires. One incentive appears to have been the poor health of the national economy relative to the strong economic activity being experienced in Evanston. Figure 4.10 is a coincident indicators index developed by the state Division of Research and Statistics, Department of Administration and Fiscal Control (DAFC). The state composite index uses four economic variables: Wyoming total sales and use tax collections in 1972 dollars; Wyoming state total insured wages paid in 1972 dollars; Wyoming state total employment; an industry index comprised of one variable each from agriculture (prices received by Wyoming farmers and ranchers for all commodities), mining (Wyoming drilling rig count), and tourism (Wyoming motor fuel gallonage sales) (Institute for Policy Research, 1985).

A comparison of the United States recessionary period between 1982 and 1983 to economic activity in Wyoming reveals that the decline in the U.S. Coincident Index led seasonally adjusted economic trends in Wyoming. The national recession bottomed out nearly a year before the recession in Wyoming which lends credence to the speculation that continued strong growth in the southwestern



From: Institute for Policy Research, Wyoming Quarterly Updates, University of Wyoming, Winter 1985.

Figure 4.10

Wyoming Coincident Indicators Index

region relative to other regions and the nation would attract investment in nonbasic firms. When compared to the distribution of dates of establishment of new nonbasic firms in Table 4.4, the proposed explanation appears to be a viable one.

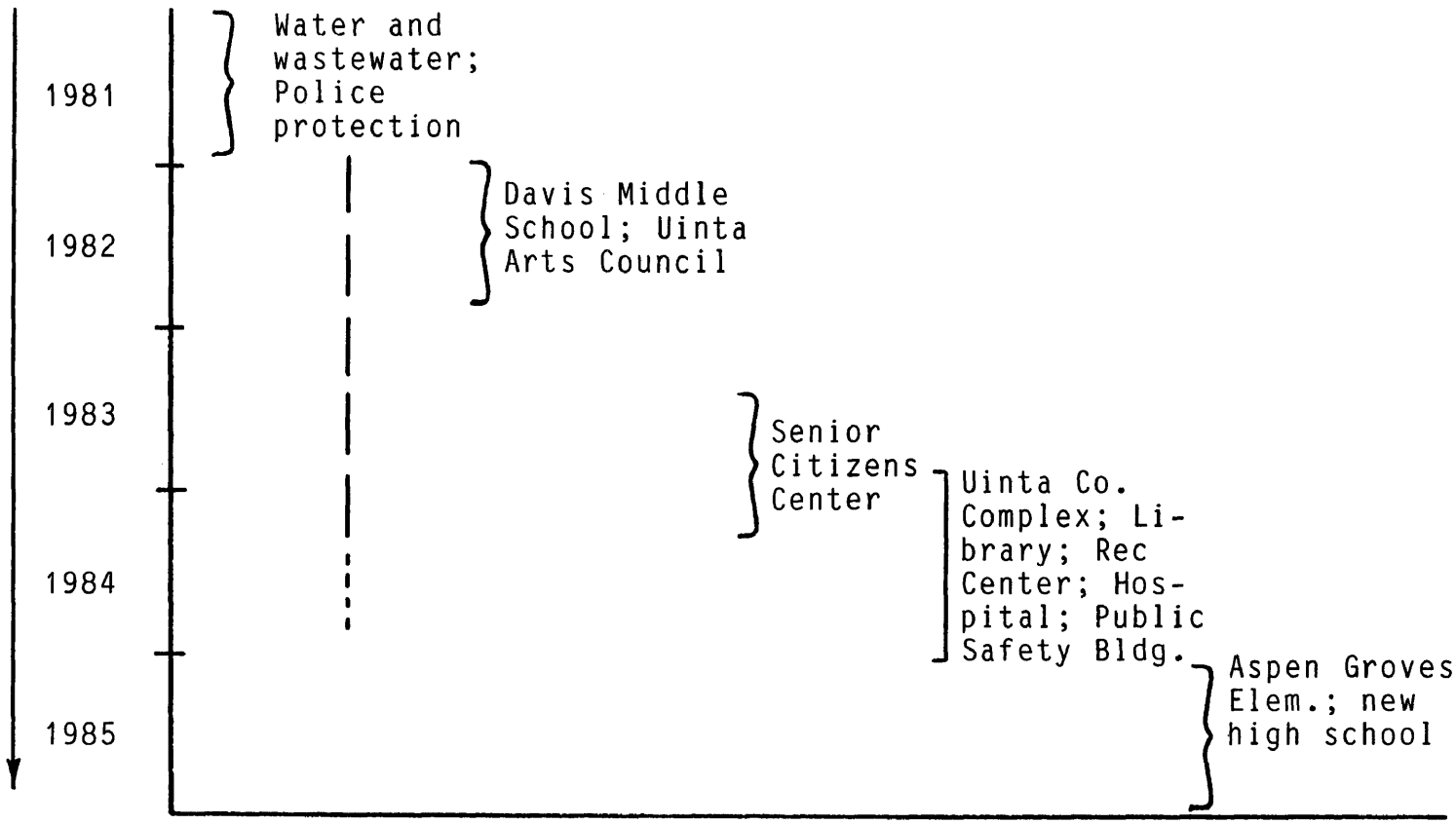
A second, less well defined, and more difficult explanation to consider is, as one state official at DAFC put it, the "lemming theory." Owners of nonbasic firms who are inclined to gauge their business investments by the activities of major corporate chains might hesitate to enter a market in which these operations are not present. Firms backed by major corporations are generally regarded to be better able to research a market. Entry of a branch or franchise of a regional or national chain might indicate to other potential investors that market conditions are sound enough to support the additional capacity. This would imply factors on both the supply side (for example, an adequate labor pool and supply of commercial land or space) and the demand side (income dollars available for local spending). Owners of independent nonbasic outlets as well as branches or chains of competing corporations thus use the entry of the first firms backed by large corporations as indications that the mix of variables is suitable. In Evanston, entry of several outlets backed by major

corporations in addition to owner operated franchises occurred in 1983 and 1984, so that this theory might explain the influx of other firms at this time. An interesting question is whether the nonbasic firms that "tag along" accurately evaluate what market share would be available to them in competition with corporate-backed outlets. Also, if, as in Evanston, incentives are provided to national or regional corporations, firms that tag along may not accurately assess the effect of critical economic factors.

A third, even more casual observation is related to the possible construction accelerator effect. The appeal to some of the individuals interviewed of new commercial space in Evanston was evident. The opening of three new malls in 1983 coincides with the dates of establishment of all businesses surveyed which lease space in those locations. For business people new to Evanston without allegiances or preferences toward the older business districts, these commercial locations provided an additional supply of desirable, albeit expensive, business space. It is very likely that private decision makers researching Evanston as a potential site for business investment would have been disinclined toward locating there without these

new facilities.

A fourth explanation lies in the improvements to public services and facilities. Indications from operators of new nonbasic firms are that the high quality of public facilities, for example, new schools and the recreation center, for a town the size of Evanston made it very attractive for investment. This would hold for firms that are backed by major corporations as well as smaller, individually owned businesses, and would also account for the long term planning horizon in which all of these investments were made. Additionally, although many individuals from existing businesses disapproved of the level of expenditure associated with these improvements, most felt it was beneficial to them as residents and for their businesses. Figure 4.11 is a timeline of when some of the more outstanding improvements in Evanston have been made. The majority fall among more recent years, in particular 1984. Again, this coincides favorably with the dates of establishment of the greater proportions of new retail and service businesses shown in Table 4.4. Improvements to public facilities and services were necessary and also encouraged by socioeconomic impact mitigation policies. The contribution of public sector employment is also considered in



Sources: Amoco Production Co., Anschutz Ranch East, Wyoming Industrial Siting Application, 1983; Evanston Chamber of Commerce, Community Profile, 1984-1985.

Figure 4.11

Timing of Improvements to Public Facilities and Services, Evanston

estimating growth in affected communities. In Evanston, local and state employment increased from 897 in 1979 to 1,294 in 1982 according to BEA data. An interesting question is related to the dependency of financing public improvements on local sales tax revenues. If it is significant, declining revenues on the downside of the growth peak as the secondary market adjusts could affect fiduciary integrity of these types of investments.

A fifth explanation is related to the tendency of basic workers to remain in the market area when the term of employment, be it construction or operation, expires. This was not targeted on the questionnaire, which focused instead on the contribution to nonbasic employment of family members of oil and gas employees. It has been documented for the Evanston area as reported in Sections 3.3.2 and 4.1.1. This phenomenon has also been mentioned in several of the retrospective studies reviewed in Chapter 2, especially those on McLean County, North Dakota, where the construction work forces on energy projects have been substantial. Figure 4.7 indicated unemployment trends which would include both basic construction and operation positions related to the petroleum industry. From the number of owners of firms who volunteered that this was the

source of their previous employment in the Evanston area, it appears that basic workers who remain in a market area provide a substantial pool of capital for potential investment in the nonbasic sectors. In state-of-the-art modeling practices, inmigrating basic workers are generally treated with regard to their income contribution to local spending, a demand side factor. As with the discussion of competition of firms in nonbasic sectors in and out of the Evanston market area in Section 4.2.2, it is argued here that income from inmigrating basic workers be treated as a supply side factor in view of potential capital available for investment. Certainly for those workers involved with oil industry projects who observed the public improvements taking place in Evanston and perceived opportunities for investment, many incentives would exist for attempting to permanently relocate there.

A final point is a most interesting one in view of all that has been discussed thus far, especially with respect to planning horizons of private decision makers in the nonbasic sectors. That is the tendency to try to preserve the level of capacity that develops in the face of changing demand on the downside of a growth peak. It is related also to the number of firms outside of the Evanston market

area, particularly the Wasatch Front, that attract local spending dollars and the integrity of investments in public facilities mentioned above. With regard to the former, the failure of local nonbasic firms to accurately judge leakages of local dollars from the Evanston market area has been examined in Section 4.2.2 as a supply side factor normally treated from the demand side in terms of consumer spending patterns. It cannot be emphasized enough that in the face of high levels of demand for local goods and services the influence of competition from larger market areas is easily disguised from local suppliers even though they may undertake an extensive a market research program.

In Chapter 2, this argument is highlighted by the study of oil industry activity in the Williston Basin of North Dakota and was, on the demand side, considered to be a major factor in the low multipliers derived for the affected communities. When compared to this example, and given the historical ability of the Wasatch Front to capture local spending dollars from Evanston, this factor on the supply side truly makes the level of nonbasic capacity in Evanston appear to be unwarranted. Two interesting pieces of additional data support these observations. One is a confidential study of leakage

of local spending dollars from Evanston to the Wasatch Front which suggested that up to 15 percent of personal income in Uinta County is not being spent within the county. According to the report, this percentage translates to approximately $45 million per year in potential retail sales. The report suggested also that diversification of nonbasic outlets in Evanston would enhance the probability of increasing the share of disposable personal income by the Uinta County market area as well as attract outside income.

When this research was initiated in Evanston, the Chamber of Commerce was in the process of conducting two surveys, one directed to consumers and the other to retailers. For consumers, data revealed that 59.6 percent of the 762 responses received indicated consumer purchases of 25 percent or less for nongrocery items in Evanston in 1984. Of those responding to the retail/business survey, 18 percent (of 111 responses) indicated leakage of dollars from the Evanston market to be a primary barrier to expanding operations in Evanston. Many respondents to the questionnaire used for this research indicated that the Wasatch Front area was their primary source of competition. If careful comparisons were made, it might be found that these

increments of 15 percent from the first study of spending leakages and 18 percent from the Chamber of Commerce surveys represent the extent to which the nonbasic sectors overdeveloped given the level of final demand.

With regard to preservation of capacity of nonbasic activity as related to public investments, a consequence of the downsides of rapid growth cycles in many western communities has been the financial burden of those facilities as population, retail sales tax revenues, and property tax collections decline. At this point, the research described here has come full circle since the relationship of public planning in rapid growth situations, growth projections, multiplier estimates, and nonbasic response was introduced in Chapter 1. The downside of a growth cycle must be considered and, as already noted, the multiplier effect works both ways. In Chapter 5, the policy implications of this research are presented, and the reader will be aware that they do not argue for direct management of nonbasic response. In light of the findings and conclusions stated in this chapter and the element of public planning needs as outlined, a strong argument is made for attention to the factors that would likely influence nonbasic response in other, future situations.

CHAPTER 5
POLICY IMPLICATIONS

In Chapter 1 of this discourse, the universality of results gained from narrowly defined and conducted research was described. It is the priviledge of a researcher who has conducted such a level of study to apply those results to other situations and circumstances, to suggest how the results may best be used, and to speculate on how they may actually be put to use. These, then, are the purposes for which this chapter is constructed.

5.1 Generality of Results

The analysis of the response of firms in the nonbasic sectors in Evanston to rapid growth related to oil industry development between 1979 and 1984 yielded several significant points. For communities that exhibit characteristics similar to those of Evanston, similar patterns of nonbasic response in a rapid growth situation may occur.

1. Firms established before the latest rapid growth cycle in communities which have experienced previous growth cycles tend to rely on perceptions of growth that are subject to the firms' flexibility

to change, and therefore not all firms respond immediately. Since existing firms are the primary suppliers of local goods and services in the immediate run, the local multiplier will be smaller. (In competitive markets, this means higher prices for essentially the same quantity of goods and services. As the market for each nonbasic sector moves into the short run, more existing firms respond and new firms begin to enter local nonbasic sectors, quantity also begins to increase, and the local multiplier is higher.)

2. Firms established from the time the latest rapid growth cycle commences and afterward are more likely to be influenced by critical economic supply side factors as resources become scarce and costly. In the short run, entry and establishment of most of these firms is delayed or complicated, so that the local multiplier increases but at a slower rate until most of these firms are able to enter the local nonbasic sectors.

3. Indications are that in communities where the basic activity is highly visible, where local construction activities intensify, where improvements

in public services are extensive, where basic workers tend to relocate, where nonbasic firms backed by major corporations enter the nonbasic sectors, and where substantial improvements to commercial space are made, the local multiplier may increase to levels not warranted by demand side predicted response. This was not proven to be conclusive within the scope of this research and merits additional study.

4. Indications are that in communities proximal to major market areas, so that firms in local nonbasic sectors must compete for local spending dollars with firms in nonbasic sectors outside of the local market area, conditions in the secondary market will be highly dynamic and difficult to predict in the longer run.

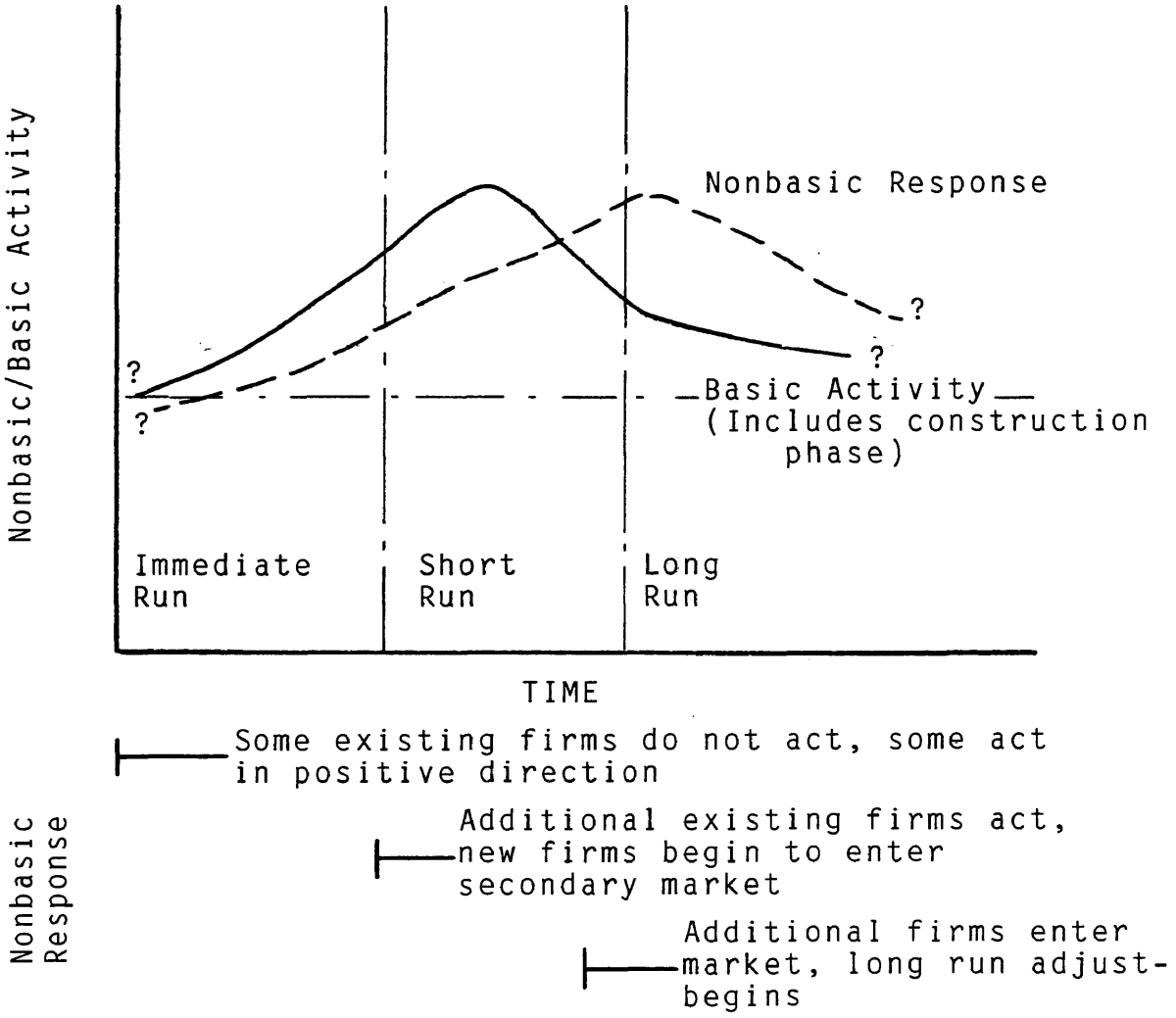
5. Existing and new firms in communities such as Evanston select courses of action and choose goals for those actions that are long term. Therefore, these firms will attempt to continue operations after the growth peak passes and local multipliers at the initiation of the next growth cycle will be higher than at the end of the previous growth

cycle.

Figure 5.1 illustrates these generalizations. The implications of these generalized results for communities like Evanston are that nonbasic response is complex and cannot be anticipated by demand based predictive models alone.

5.2 Policy Options

Figure 5.2 repeats the graphical illustration of the components of this research. The question can now be posed: should impact mitigation policies be targeted at the nonbasic sectors such as the linkage proposed in Process B of Figure 5.2? This raises the queries in Research Question 3 (Section 2.5). The answer hinges on the attitudes of planners and administrators most intimately involved with this question as well as the general attitude of the community. In Section 4.2.3 the basic dichotomy in communities impacted by rapid growth from energy development was alluded to when the question of effectiveness of local government policies for local business in Evanston was addressed. Some of the decision makers interviewed suggested it was necessary, others suggested it was not. Additionally, in Evanston some



NOTE: Assumptions are for "Evanston-Type" community and are drawn from Generalized Results, Chapter 5.

Figure 5.1

Model of Nonbasic Response for Evanston-Type Community

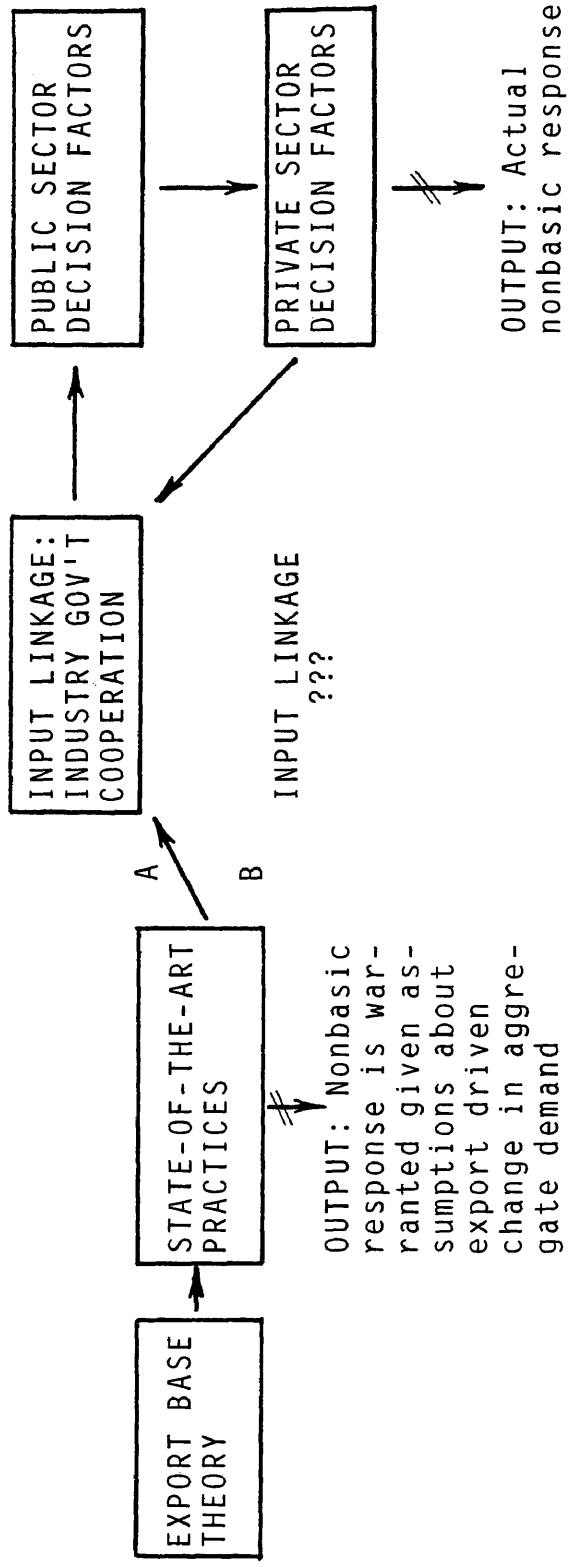


Figure 5.2

Policy Linkage

intervention in the secondary market did take place. In its most obvious form, industrial revenue bonds were issued to subsidize expansion of local goods and services. While the evidence is not conclusive, it appears the result was overdevelopment of some sectors and generation of a substantial amount of resentment towards local government and other local firms. In its less obvious form, some commercial districts in Evanston received special attention over others with the result, again, primarily one of backlash toward local government and other firms. In Question 19, which dealt with whether firms were adequately prepared to cope with and manage in the rapid growth situation in Evanston, decision makers were asked for suggestions on how nonbasic firms could be better prepared. Two primary trends were revealed among the observations shared. One, that reliable information was the most important variable. Two, that firms could not benefit from any assistance unless they improved their own managerial abilities, and those firms that did not do so should not receive any undue assistance.

Finally, programs such as socioeconomic impact mitigation programs and environmental protection are founded upon the concept of negative externalities. The details of

economic theory of externalities is beyond the scope of this research. Briefly, it is that actions taken by private firms incur social costs that are not reflected in firms' private costs. By ensuring that some of those social costs are borne by firms, efficiency in the economy is restored. With respect to costs for public improvements needed to resolve an energy impact situation, this is generally regarded as a reasonable argument for industry support. With respect to private investment in local retail and service outlets, the argument loses validity. Private decision makers in a free market economy take risks and make investments as a consequence of decisions that incorporate many or all of the variables accounted for in the conceptual model. Those firms that make the effort toward rational decision making will likely succeed, as the evaluation portion of the questionnaire indicates. Those firms that do not make the effort toward rational decision making have a higher probability of failing unless external events overcome poor judgment, as noted in the corollary to the conclusions in Chapter 4.

In light of the evidence and arguments, the answer is no, mitigation programs should not be targeted at the non-basic sectors in energy impacted communities. An effort

like that suggested by Process B in Figure 5.2 would possibly create greater distortion in the secondary market and would prohibit market forces from exerting their full effect. However, important considerations must be taken into account. At the close of Chapter 4, the role of nonbasic firms in fiscal balances within a community impacted by rapid growth was raised. Whether local government can leave nonbasic sectors subject to market influences and not intervene might depend on the extent of this dependency. (Of course, public improvements should probably not be planned beyond what a community could support under circumstances of normal growth rates.) Apart from the contribution of nonbasic firms to a community's tax base, there are the benefits associated with a healthy business community to consider. Much can be said in favor of the integrity of business communities, especially in small rural towns like Evanston, in contributing to quality of life. Both of these considerations can be reduced to the level of risk nonbasic firms must face in the operating environment.

As stressed in Chapter 1, energy resource firms also absorb considerable risk, some associated with the resource itself, some associated with uncertainties about costs the

firm will have to bear with regard to labor productivity and socioeconomic impacts in affected communities. The firm must do all it can to reduce risk and uncertainty which means that a certain amount of expenditure in a "public relations" sense to work with impacted communities is a logical and usually beneficial course of action.

Information is the key ingredient to reducing risks to both basic and nonbasic firms. Therefore, it is also logical for information about the resource project to be available for use by private decision makers in the nonbasic sectors. But what kind of information is best and how should it be distributed?

Figure 5.2 demonstrates the paths of communication between private decision makers in the nonbasic sectors and local government and industry. Looking first at the path from nonbasic firms to the input linkage of industry/government cooperation, several suggestions can be made founded on the research described here. First, the conceptual model should be used to identify factors of critical economic influence to suppliers of local goods and services in the affected community. These factors would likely exert the strongest influence on new firms attempting to enter the market. Attention should be given to

prevailing attitudes and characteristics of existing firms, local spending patterns and competition from firms outside of the immediate market area, and distribution among the nonbasic sectors of existing businesses and how much "slack" currently exists in the community (an indication of what the initial local multiplier effect is likely to be)--that is, how much room for improved efficiency and productivity exists as challenges to the survival and performance of existing firms increase. Attention should then be given to how growth will effect any or all of those factors. Will local inflationary pressures cause operating costs to increase? Will nonbasic wages rise as local retail and service outlets compete with basic industry for labor? Will stocks of financial capital and physical facilities alter? Lastly, how the changes that occur in the community as a whole, such as public improvements, may affect nonbasic response, especially with regard to new firms, should be considered.

Second, a range of likely local multipliers should be developed using demand based projections and what is deduced about possible nonbasic response patterns from the conceptual model. The range of multipliers should reflect likely stages of nonbasic response such as those outlined

in the previous section and suggested in Figure 5.1. The range of local multipliers will naturally reflect various phases of the energy project.

Third, projections of total growth should be tempered by a "survivability factor" that would estimate how likely firms in various nonbasic sectors would be to succeed. Two methods are suggested. A ratio of cash plus accounts receivable plus inventory (clients or merchandise) divided by average daily cash expenses would measure "survival days" for retail and service firms (Lusch and Stampfl, 1981). The other method is to use return on assets as a prediction of failure (Mason and Mayer, 1981). Key firms could be targeted via a monitoring program and results generalized for broad applicability across a local business community. The object would be to devise a conservative estimate of how nonbasic firms are likely to fare and so have some anticipation of what the dynamics of the local business community might be like. If historical data were weak, if the affected community has not experienced enough growth cycles so that a survivability factor could be generated confidently, comparisons could be made to communities of similar characteristics.

The information from and about nonbasic firms would be

obtained and used by local planners and administrators. Support from resource firms would be expected since it is from resource firms that data on their contribution to basic employment and local spending are obtained. Process A in Figure 5.2, which guarantees an input linkage to the public sector, must therefore exist. Assume then that reliable estimates of growth in an affected community are garnered utilizing these suggested avenues for anticipating nonbasic response. Planning and administration of public needs could be conducted on the basis of that data. But information must also somehow be dispersed so that it can be accessed by private decision makers in the nonbasic sectors and, indirectly, ensure that actual nonbasic response is warranted, given assumptions about export driven demand and the information generated about nonbasic firms based on what is learned about suppliers. As Figure 5.2 indicates, the logical pathway and the one that is probably best for the community is the one that already exists.

To demonstrate this, Evanston is again used as a case example. For the pathway from public sector decision factors to private sector decision factors to be most successfully charted, the initial input linkage of

industry/government cooperation must be a sound one. Efforts to mitigate socioeconomic impacts in Evanston resulted in the creation of a unique cooperative program that involved the oil industry and local government and serves as the model for "Process A" in Figure 5.3

As oil industry activity in Uinta County accelerated in 1979, articles in regional newspapers began to suggest that industry was not doing its part to help Evanston (and Uinta County) with its adjustment (see Baker, 1984). In response, Chevron, Amoco, and Champlin organized an innovative program called the Overthrust Industrial Association (OIA) in 1980. Thirty-six companies eventually joined the effort (refer to Table 5.1). The OIA brought together local public and private interests with oil industry representatives to initiate planning and management of impact mitigation for Evanston. From the time the OIA was formed, local government expenditures in Evanston grew from less than $1.5 million per year to a current budget of over $25 million. The most immediate concerns were housing and public services (safety, health, and education). The major contributions of the OIA were in defining problem areas which covered the overall extent of growth impacts, assisting a largely inexperienced local government gain the

Table 5.1

Overthrust Industrial Association Member Companies

Amoco Production Company
Anderson/Myers Drilling Company
Anschutz Corporation
Bethlehem Steel Company
Bovaird Supply Company
Brinkerhoff/Signal
Burns Drilling
Champlin Petroleum Company
Chevron U.S.A. Inc.
Cities Service Company
Dowell, Division of Dow Chemical U.S.A.
Dresser Industries, Inc.
El Paso Natural Gas Company
Exeter Drilling, Inc.
Exxon Company, U.S.A.
Flint Engineering and Construction
Fluids Control, Inc.
Getty Exploration
Halliburton Company and its Divisions:
- Halliburton Services
- IMCO Services
- Otis Engineering
- Wellex

B. J. Hughes
InterNorth's Divisions
- Northern Liquid Fuels Company
- Northern Natural Gas Company
- Northern Natural Resources Co.

R. L. Manning
MAPCO Pipeline, Inc.
Milchem Inc.
Mountain Fuel Supply
Natural Gas Pipeline of America
NL Industries' Divisions
- NL Acme Tool
- NL Atlas Bradford
- NL Baroid
- NL McCullough
- NL Shaffer
- NL Sperry-Sun
- NL Treating Chemicals
- NL Well Service

Noble Drilling Corporation
Northwest Pipeline Corporation
Oil Field Rentals
Overthrust Gas Products Venture
Parker Drilling Company
R. & A. Testing
Schlumberger
Vierson & Cocran
Wilson Supply Company

From: Amoco Production Co., Anschutz Ranch East, Wyoming Industrial Siting Application, 1983.

expertise needed to deal with complex problems, developing channels of financing the many costly public improvements that were needed, and initiating communication linkages with the community via the media and an organizational piece called Overthrust News. The immediate understanding was that the OIA would function for only a limited period of time. The participating companies, in particular Chevron (which is recognized as spearheading the effort to bring diverse interests together) and Amoco, were adamant that the community not come to rely overtly on industry assistance.

The strongest philosophy ruling OIA decisions and technical assistance programs was that "growth should pay its own way." To that end, monetary assistance from the coalition of companies was designed to attract investment from other sources (in excess of $50 million was raised) rather than pay the entire cost of improvements. John Fanos, a Uinta county commissioner at the time and now a state senator, terms the financing package for the Uinta County courthouse complex "one of the most innovative . . . in the State of Wyoming." The $23 million package put together with the Wyoming Farm Loan Board for capital construction (see Table 5.2) covered seven projects (Amoco, 1983; Hepworth, 1981; Hepworth and Foss, 1983; OIA a,b,c).

Table 5.2

Evanston Financing Package for Capital Improvements

Facilities	Costs
Sewer Treatment Facility	$ 10,700,000
Library	1,500,000
Recreation Center	2,850,000
Human Services Center	2,250,000
Uinta County Courthouse	3,500,000
Public Works Building	1,500,000
Public Safety Building	800,000
	$ 23,100,000

Participants	Percentage Shares	
Federal Government	14%	
State Farm Loan Board	9%	grant
	30%	loan
Uinta County	11%	
City of Evanston	5%	
Developers and new residents' hook-up fees	16%	
Overthrust Industrial Association	15%	

From: OIA, b, undated press release.

The OIA companies maintained that growth impacts in Evanston were not due solely to oil industry activity. To bring the various industrial elements together in a comprehensive, logical effort, an Impact Coordinating Committee (ICC) was formed. This committee extended impact mitigation efforts to include other affected communities in the county, and included county and state representation. Meetings were open to the public and were held to ensure that mitigation programs from the plan developed in 1981, were properly funded and implemented (Amoco, 1983; Hepworth and Foss, 1983). The OIA also acted to mediate environmental concerns and issues that arose, especially those related to the massive Whitney Canyon and Carter Creek projects.

Fanos credited the OIA with establishing a "mutual trust" between local industry, officials, and citizenry. For their part, local officials were able to prove to the OIA companies that industry would not be "ripped off" in terms of bearing the brunt of financing impact mitigation programs (Hepworth and Foss, 1983). Some local officials feel that industry did not begin to communicate its plans until oil and gas facilities were brought under the purview of the Wyoming Industrial Siting Act (Baker, 1984). The act, passed in 1975, has jurisdiction over energy

generating and converting facilities as well as any industrial facility costing more than $90 million. The main thrust of the Act is socioeconomic impact mitigation. Applicants for siting permits who anticipate adverse impacts must propose mitigation programs and provide an in-depth assessment of the host community. Richard C. Moore, Director of the Wyoming Office of Industrial Siting, maintained that although communities are all different, "prevention is the key to the problem." Requirements under the law are geared toward adequate preparation of housing and public facilities and human and social services in order to prevent the more destructive activities from occurring (Hepworth and Foss, 1983).

As an experimental program, the OIA served Evanston and Uinta County exceedingly well, as attested to by comments from local leaders obtained during the course of this research and the field survey process. The OIA is an effective model for establishing the communication pathways defined in Figure 5.2. In reaching out to nonbasic firms, two modifications could be made to the model.

The first centers on information made available to decision makers in nonbasic firms. The model should allow for only the simplest information to be released. From

indications compiled in this research, projections of total population growth, information about how growth could be expected to affect key supply side variables, and, most importantly, a clear statement of what growth projections mean to the community and local suppliers of goods and services (which would define anomalies in the basic work force), are most useful to nonbasic firms. The latter would, of course, be limited to what energy firms are able to reveal about their projects. In the case of the oil industry, the last type of information would help private decision makers in the nonbasic sectors comprehend and appreciate this fragmented, diverse, and risky industry. Distribution of information through public sector channels strenthens the role of local government in that process. From results of this research, it is emphasized that the role would not be one of direct intervention. Rather, it would be one of leadership and information exchange, two areas that appear to have been weakest in Evanston. This extends to public policy measures already in existence or established during the rapid growth period, such as planning and zoning. These policies should be considered from an efficiency standpoint--that no individuals are made

better off while others are made worse off. Technical assistance through an established industry/government linkage such as the OIA model can be used to guarantee that some consideration is given to this criteria.

The second modification to the model has to do with the means by which the information is accessed by nonbsic firms. A substantial amount of discussion was devoted to the Cyert and March process model of firms and their theories of how firms search out and secure information to reduce risk and uncertainty and to set goals. The research documented here supports the importance of encouraging firms to cultivate search techniques to make rational decisions. Thus, the amount of information made available free of charge to decision makers in nonbasic sectors should be limited. The old adage, "no such thing as a free lunch," implies that things of value are only attainable for a price. If nonbasic firms must secure their information for a real price apart from their own opportunity cost, as all firms in the competitive market must do, the associated transactions costs could inspire more "respect" for that information with the result that users would become more sophisticated, better decision makers, and, conceivably, nonbasic response would stay in line with basic activity.

In conjunction with information dispersal, the local Chamber of Commerce could be strengthened and used as a vehicle for business management programs. These programs could be directed towards those factors identified from the conceptual model of supply side factors and possible non-basic response that might most constrain effective business management during rapid growth situations. However, policy makers should be cautious that any assistance provided in this manner would not manipulate the market. Such programs should be designed and conducted using the best available expertise in small business management and administration.

CHAPTER 6
BENEFITS OF RESEARCH AND SUGGESTIONS FOR FUTURE RESEARCH

The greatest value of original empirical research lies in its replication. This study has described and reported the results of a tested research methodology. The methodology, which centers on compiling and summarizing key factors that influence nonbasic response, is the most significant benefit and unique contribution of the research. The results, taken with evidence from other documented studies, have been generalized for communities like Evanston. Thus, they may be put to practical use in future rapid growth situations.

But not all communities are alike, and this recurring theme suggests that similar research applied to many other situations would yield new results which could also be generalized. Evenutally a universal theory of what supply side economic and behavioral factors are most critical to suppliers in the secondary market of energy impacted communities, how those factors differ, and the effects of each type could be formulated. In this process, the conceptual model would be refined and those variables

suggested at the close of Chapter 4 to be possible additional explanations would be evaluated for inclusion in the model. In this process, the competitive market assumptions would also be further tested and deviations noted. Thus, even as the model is used to build propositions and analyze the world without reproducing it, as Friedman believed economic theory should be used, the propositions become more reasonable and the analysis more reliable. A warning must be posted, however, against attempting to convert something that is useful for conceptualization into something that is used in an attempt to mathematically measure and predict. It is suggested that future research not be devoted to this end. Theorists face an inherent danger in losing the more subtle aspects of a problem that may actually explain a substantial portion of the problem when this course is followed. This would have been exactly the case if an attempt had been made to mathematically model existing nonbasic firms.

This research focused on a growth situation, but many of the findings revealed dynamics of nonbasic response during economic contraction in a market area. This aspect of growth is just as critical, especially for its human element. Further research should be conducted on this

aspect of nonbasic response tied to cyclic resource industries.

Communities differ in their resource bases. Would the results of this research hold for communities affected by rapid growth related to coal development? Molybdenum? (The AMAX Mt. Emmons molybdenum project was a classic case of dynamic interactions in a community, Crested Butte, Colorado, impacted by non-fuel mineral development.) What of communities in which the major basic industries are agriculture and fisheries? Do inherent differences between renewable and nonrenewable resources--in markets, production, processing, distribution--somehow influence nonbasic response? Repeated replications of the research methodology would prove a system for analyzing nonbasic response related to any resource base. The generalities would distinquish or tie together characteristics of nonbasic response in any of these settings.

Western communities may be singular because of the remoteness, restricted mobility of some resources, and dependency on specific resource bases. To what degree are the prevailing attitudes in these communities more unique than, say, New England mill towns? To what extent do they dictate which factors will be most critical to suppliers of

nonbasic goods and services? Would the policy model described in Chapter 5 be as effective in this type of setting?

Communities in the United States are different from the rest of the world. The most interesting future applications of the research methodology developed here would be in furthering an understanding of the growth of local commercial activity tied to a natural resource base in less developed countries. Many justifications exist for future research in this direction. In developing economies, mining, for example, is a major source of foreign exchange. It has a direct impact on aggregate demand. Leakages for purchases from foreign markets were thought to be responsible for low multiplier values attributed to the mining sector in Bolivia. In contrast to traditional macroeconomic models, the principle impact on the economy of the leading export sector in Bolivia is not through its demand for domestic goods and services, as the level of foreign exchange leakages from the mining sector is very high (Jenkins and Gillis, 1983). A study of export commodities and the effect different commodities have on growth-inducing linkages, such as the development of a local market for final consumer goods, found that growth

effects varied among different commodities. The notion of "growth without development," export generated revenues not directed back to domestic businesses, was quoted as a common denominator in the cases studied.

Ownership of production and control of technology of the exporting industries, be they rubber, tin, or petroleum, was also analyzed as a factor (Thoburn, 1977). Seidman (1980) proposed a program of development planning by which mining could better spur growth in domestic sectors including those that cater to consumer needs. With regard to the petroleum industry, a study of the oil industries in Tunisia and Algeria revealed that differences in regional settings and economies influenced secondary effects of increased revenues from oil production (Schliephake, 1977). These brief examples highlight the potential differences in everything from savings and investment to cultural mores that influence how other economies develop. Given the greater influence of the public sector in directing economic development in less developed countries, the research methodology documented here could be used to determine how best to stimulate growth in small market areas proximal to the resource base. And given the resurgence of interest in energy resources outside of the

United States, and host government requirements that activities of multinational companies benefit the domestic economy, conceptualizing local business sectors may be a key ingredient in directing local multiplier effects.

Two additional aspects of this study are raised for future endeavors. The first is that this research did not focus on the speculative nature of land development and how development for commercial use might influence the secondary market. In rapid growth situations, this dimension of local change can be prevalent and sensitive. The second is related to the first and involves the interdisciplinary nature of studies such as the one documented here. One of the weaknesses of this research is the lack of a strong interdisciplinary accommodation of land planning and social theory. While the two areas may appear to be topically segregated, they do indeed intertwine. This intertwining is most important, especially in the practical applications of the methodologies developed here and the results offered. Thus, it is recommended that future efforts to understand the nonbasic sectors and their contribution to change in rapid growth situations target these issues.

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APPENDIX I

QUESTIONNAIRE

QUESTIONNAIRE #_____

KEY:_____ STAT CODE:_____

DATE:_____TIME:_____DURATION OF INTERVIEW:_____

LOCATION OF INTERVIEW:_____

NAME OF RESPONDENT:_____

CLASSIFICATION OF RESPONDENT (OWNER, MANAGER, ETC.):_____

NAME OF BUSINESS:_____

TYPE OF BUSINESS (VERIFIES SAMPLING):_____

I. OPENING (PROMPT ONLY)

(INTRODUCTION) Hello! I'm interested in learning about how you and other business people reacted to the rapid growth that occurred here in Evanston between 1979 and now. This survey is being conducted as part of my thesis research for a Masters of Science degree in Mineral Economics at the Colorado School of Mines. My research is funded by the Overthrust Industrial Association and is being conducted for the Denver Research Group. Your insights and comments during the next 30 minutes will be most helpful to my research. If you would like to hear some details of my study, I'll be glad to explain them to you when we've completed the questionnaire. Copies of the entire thesis will be retained by the Evanston Chamber of Commerce and Library, and parts of the thesis will be published elsewhere (including local newspapers in Evanston and Kemmerer). The results of the thesis will be used in planning for future growth in Evanston and other similar communities. ALL INFORMATION THAT WOULD IDENTIFY ANY INDIVIDUAL OR BUSINESS WILL BE HELD IN STRICT CONFIDENCE.

II. PRESENT BUSINESS CONDITIONS

I would first like to ask you some general questions about your business and present business conditions in Evanston.

_____ (1) 1. When was this business established? (VERIFIES SAMPLING)

_____ (2) 2. Is this business
1. a locally owned franchise?
2. part of a regional or national chain?
3. individually owned and based in Evanston?
(CAN BE A COMBINATION RESPONSE)

3. How many people employed here now are
_____ (3) A. part time (less than 35 hours per week)?
_____ (4) B. full time (more than 35 hours per week)?

4. How much of your business comes from (ESTIMATE PERCENTAGE FROM RESPONSE)
_____ (5) A. residents of Evanston?
_____ (6) B. residents of the area around Evanston? (PROMPT: Bridger Valley, Woodruff)
_____ (7) C. others? (PROMPT: tourists, travelers, out-of-county)

_____ (8) 5. How long have you lived in Evanston?

6. What about employees here. Can you tell me how many of them (ESTIMATE PERCENTAGE FROM RESPONSE)
_____ (9) A. have moved to Evanston within the past 6 years (1979-1984)?
_____ (10) B. are family members of people employed in the oil and gas industry?

III. IDENTIFICATION OF KEY ACTION TAKEN 1979 TO 1984

7. A. (RESPONSE CARD) You see on the card several possible actions that could be taken voluntarily to change a business. Please select the key action that was actually taken for this business between 1979 and 1984.

By key action I mean the one that stands out in your mind the most, that had the greatest effect on this business. Think about this in terms of what was done here in response to the "boom." (PROMPT: isolate effects of recent downturn)

(CODE INTO RESPONSE MATRIX; PROBE AND CLARIFY)

1. Changed physical plant.
Examples:

°business was established.
°changed floor space at existing location.
°changed floor space by adding a branch.
°changed floor space at branch location.
°changed floor space by closing existing location and moving to a new one.
°changed floor space at new location.

2. Changed labor commitment.
Examples:

°changed management structure. (PROMPT: to/from assistant management tier)
°changed full time staffing.
°changed part time staffing.
°changed annual payroll.
°changed benefits paid to employees.

3. Changed output.
Examples:

°diversified into a new type of business.
°changed product lines/types of services offered.
°changed inventory within a product line.
°changed business hours. (PROMPT: to/from a 24-hour schedule, to/from a "7 to 11" schedule, to/from a Sunday schedule)
°changed advertising and promotions.

4. Changed prices only. (CLARIFY WITH SERVICE FIRMS)

5. Kept things pretty much the same.

If this list does not include a choice that describes what was actually done, describe the change yourself. (CATEGORIZE RESPONSE FROM RESPONDENT'S DESCRIPTION: IF DESCRIPTION DOES NOT FIT ANY CATEGORY 1-5, PLACE IN CATEGORY 6, OTHER, ON RESPONSE MATRIX)

B. Indicate to the best of your ability when the key action was taken; a year will be fine.

C. If you chose from responses 1-4, was the key action taken in a positive direction (PROMPT: increase, expand, extend) or the opposite (PROMPT: decrease, streamline, reduce)? (CODE INTO RESPONSE MATRIX)
CODES: + = Positive changes
- = Negative changes

D. Was the key action something that
(CODE INTO RESPONSE MATRIX; READ AND ROTATE STARTING POINT)
1. was actually planned before the boom but for which the resources (money, labor, time) did not exist.
2. was planned as a result of the boom when the resources (money, labor, time) did exist.

E. Was the key action intended to be a short term (6 months to 2 years) or long term (3 to 5 years) change?
(CODE INTO RESPONSE MATRIX)
CODES: S = Short term
L = Long term

IV. OBJECTIVES FOR THE KEY ACTION TAKEN

8. A. (RESPONSE CARD) For the key action you've identified, let's now discuss the primary objective. Think about the objective with reference to the time when the action was taken. (PROMPT: isolate effects of recent downturn)

From the 3 types of objectives shown on the card, select the one that best describes the actual, primary goal for this business, the goal that most strongly influenced the decision about what action to take. If you feel more comfortable with more than one choice, tell me which objective was the most important, next most important, or least important.

(CODE INTO RESPONSE MATRIX; PROBE AND CLARIFY)

1. Maximize profits (decrease costs while increasing revenue).
Examples:

°decrease labor costs.
°decrease wholesale costs by seeking new suppliers or changing inventory.
°decrease plant costs (rent or commercial mortgage payments)
°increase efficiency and productivity by improving quality of service and staff performance.
°insure survival of the business.
°take advantage of good times.

2. Increase business volume (increase revenue with less emphasis on costs).
Examples:

°increase total gross sales and/or sales per employee (PROMPT: target an annual goal for total gross sales)
°increase inventory or number of clients served.
°increase market share for this business in and around Evanston.
°increase the rate of growth of sales revenues. (PROMPT: target an annual percentage goal for increasing sales)

3. Other (important goals but ones not tied solely to cost/revenue considerations).
Examples:

°maintain a satisfactory profit.
°earn a satisfactory rate of return.
°maintain a satisfactory level of service.
°increase staff for maximum employment.
°preserve the prestige of this business.
°stay in or relocate to Evanston.
°be one's own boss.
°be in this type of business.
°be able to take advantage of the future potential of this business or type of business in Evanston.

B. Thinking about the key action, was the primary (or most important) objective intended to be short term (6 months to 2 years) or long term (3 to 5 years)?
(CODE INTO RESPONSE MATRIX)
CODES: S = Short term
L = Long term

V. INFORMATION BASIS FOR KEY ACTION TAKEN

9. (RESPONSE CARD) People base their business decisions on information from a variety of sources.

Thinking about the key action, select from the 6 choices given here the most important information basis for the key action. If you feel more comfortable with more than one choice, specify which was the most important, the next most important, and so on. Remember to base your response on the time when the action was taken. (PROMPT: isolate effects of recent downturn)

(CODE INTO RESPONSE MATRIX; PROBE AND CLARIFY)

A. External information.

1. Growth projections.
Example:

°what you read in the newspapers, heard in public meetings, or heard from other sources about expected growth in Evanston and
a) how it might change the outlook for employment, income, population, local business sales, or character of Evanston;
b) when it would occur;
c) how long it would last.

2. Outside observations.
Examples: What you observed about

°sales by other businesses in town.
°prices businesses similar to this one were getting for their merchandise or services.
°how much competition seemed to be developing in Evanston.
°whether a substantial portion of local dollars seemed to be spent outside of Evanston.

3. Business climate.
Examples:

°tax levels.
°existing capacity and diversity of Evanston's business community.
°zoning regulations.
°development of downtown and/or outlying commercial business/shopping areas.
°quality of public facilities such as roads and schools.
°strength of leadership in Evanston.

B. Internal information.

4. Economic decision criteria.
Example:

°the criteria normally used in making decisions related to this business, such as rate of return, net present value, payout period, profit-to-investment ratio.

5. Attitudes.
Examples: One's own feelings about
°Evanston's future.
°whether, overall, growth in Evanston would be good.
°when growth would occur and how long it would last.
°managing a smaller vs. a larger business.
°the importance of personal business goals or expectations.
°the uncertainty of growth in Evanston due to past cycles of "boom/bust."

6. Events.
Examples: What you observed about

°the number of new customers that seemed to be coming to this business.
°the types of goods/services purchased by new vs. old residents in Evanston.
°how much new vs. old residents seemed to be willto spend for merchandise/services purchased here.

VI. IDENTIFICATION OF CRITICAL FACTORS AND THEIR EFFECT

10. A. (RESPONSE CARD) You see listed here several factors that can be critical to any business.

I would like to discuss with you now the effect of any of these critical factors on the key action.

First, thinking about the key action, which one of these factors (if any) was most critical to the decision to take that action?

(CODE INTO RESPONSE MATRIX; PROBE AND CLARIFY)

1. Costs.
Examples:

°wage levels.
°labor turnover. (PROMPT: because of the attractiveness of other types of employment in the area)
°cost of commercially zoned land or rental space.
°interest rates on business or commercial loans used for both plant and inventory.
°wholesale costs.
°level of commercial property taxes.
°level of local sales taxes.

2. Availability of resources.
Examples: Availability of

°skilled labor. (PROMPT: from new residents or second income earners in families)
°unskilled labor. (PROMPT: same as above)
°commercially zoned land or rental space.
°business and commercial mortgage loans from financial institutions in Evanston.
°these types of loans from financial institutions outside of Evanston.

3. Incentives.
Example:

°availability of special subsidies set up to promote certain kinds of commercial development. (PROMPT: industrial revenue bonds)

4. Competing opportunities.
Example:

°attractiveness of other types of investments (including retirement savings and pension plans) in which to place business or personal earnings.

5. None of these factors had any influence.

If you feel more comfortable with more than one choice, rank them by importance. Remember to base your choice on the time when the key action was taken. (PROMPT: isolate effects of recent downturn)

What was the effect of the most critical factor on the decision to take the key action--did it: delay the decision, complicate the decision, or influence in a good way the decision to take the key action?

(CODE INTO RESPONSE MATRIX)
CODES: D = Delay
C = Complicate
I = Influence in a good way
O = No factors selected

B. Did any one of these factors prevent a different key action from being undertaken? (REPEAT CHOICES 1-5 FOR RESPONSE) If you feel comfortable with more than one choice, rank them by importance. (PROMPT: isolate effects of recent downturn)

C. Which one (if any) of these factors was most critical to the completion of the key action, once the decision to take that action was made? (REPEAT CHOICES 1-5 FOR RESPONSE) If you feel more comfortable with more than one choice, rank them by importance. (PROMPT: isolate effects of recent downturn)

What was the effect of the most critical factor on the completion of the key action--did it: delay completion, complicate completion, or allow completion with ease?

(CODE INTO RESPONSE MATRIX)
CODES: D = Delay
C = Complicate
A = Allow to be carried out with ease
O = No factors selected

VII. EVALUATION

11. Up to this point, we've talked about a combination of things with respect to this business--

--a specific key action taken to change the business,
--with a particular objective in mind,
--on the basis of certain kinds of information,
--with consideration given to critical factors and their effect.

We've talked about all of this with reference to the period of rapid growth experienced in Evanston starting in 1979.

(24) Now, in light of present economic conditions in Evanston and this business, do you feel that the overall results were successful?

1. Yes
2. No
3. Somewhat.

Why?

Let's evaluate each component we've discussed--action, objective, information, critical factors--in terms of your feelings about the success of the overall results and why this is so.

12. ACTION (READ AND ROTATE STARTING POINT FOR EACH RESPONDENT)

(25) A. Given how things have turned out for Evanston and this business, do you think [the key action (READ BACK RESPONSE TO QUESTION 7)]

1. should have been taken sooner?
2. should have been taken later?
3. nothing different?

(26) B. (REPEAT QUESTION A)

1. should have been taken to a greater extent?
2. should have been taken to a lesser extent?
3. nothing different?

~~C. (REPEAT QUESTION A)~~

(27) ~~1. should have been shorter term?~~
~~2. should have been longer term?~~
~~3. nothing different?~~

(28) D. In light of present economic conditions, do you think the choice of key action was the right one?

1. Yes
2. No

Comment:

13. OBJECTIVE (READ AND ROTATE STARTING POINT FOR EACH RESPONDENT)

(29) A. In evaluating the overall results would you say that [the primary or most important objective (READ BACK RESPONSE TO QUES. 8)] was achieved?

1. Yes
2. No
3. Somewhat

(30) If "no," was a secondary objective achieved? (IF SECONDARY OBJECTIVE WAS INDICATED, READ BACK RESPONSE TO QUES. 8. IF NO SECONDARY OBJECTIVE WAS INDICATED IN RESPONSE TO QUES. 8, SPECIFY HERE)

1. Yes
   Specify (if necessary):
2. No
3. Somewhat

(31) B. Given how things have turned out for Evanston and this business, do you think [the primary or most important objective] for the key action should have been

1. shorter term?
2. longer term?
3. nothing different?

(32) C. In light of how things have turned out for Evanston and this business, do you think the choice of primary or most important objective for the key action was the right one?

1. Yes
2. No

Comment:

14. INFORMATION (READ AND ROTATE STARTING POINT FOR EACH RESPONDENT)

(33) A. In evaluating the overall results would you say that [the most important information basis (READ BACK RESPONSE TO QUES. 9)] relied upon for the key action was

1. Good?
2. Fair?
3. Poor?

Comment:

(34) B. Would you say that, in terms of your feelings at the time about Evanston's future, [the most important information basis] relied upon for the key action was

1. optimistic?
2. conservative?
3. not influenced by these feelings?

Comment:

(35) C. In light of present circumstances, do you think the choice of most important information basis for the key action was the right one?

1. Yes
2. No

Comment:

15. CRITICAL FACTORS

(36) A. In evaluating the overall results, do you feel that enough emphasis was placed on the effect of critical factors on the decision to take the key action? (REVIEW RESPONSE CHOICES FOR QUES. 10)

1. Yes
2. No

Which ones should have been emphasized more:

(37) B. ...on the completion of the key action?

1. Yes
2. No

Which ones should have been emphasized more:

VIII. POLICY (READ AND ROTATE STARTING POINT FOR EACH RESPONDENT)

These last few questions are directed toward the future. Your experiences and opinions are very important to evaluating what has happened here since 1979, the effectiveness of what was done to cope with rapid growth in Evanston, and what should be done in the future. What is learned from your experiences will apply to other communities besides Evanston that are faced with similar situations.

(38) 16. A. You probably have a feel for how the level of business activity in Evanston right now meets current demand. By "business activity" I mean the number and size of businesses and what they offer to customers. By "current demand" I mean your observations of actual sales by businesses in Evanston.

Thinking first about this business and other businesses like this one, would you say that the level of business activity now is

1. about right for current demand?
2. less than current demand?
3. more than current demand?

Comment:

(39) B. Think now about the overall business community and the diversity of merchandise and services offered. In your opinion, is the level of business activity now

1. about right for current demand?
2. less than current demand?
3. more than current demand?

Elaborate (PROMPT: need more of some types of businesses, less of others, etc.):

(40) C. Now think about how present circumstances have met the expectations you and others had.

Is current demand for this business

1. equal to what you thought would happen?
2. less than what you thought would happen?
3. more than what you thought would happen?

~~(41) D. What about for overall business activity in Evanston. Is current demand for local merchandise and services~~

~~1. equal to what you thought would happen?~~
~~2. less than what you thought would happen?~~
~~3. more than what you thought would happen?~~

(42) 17. A. In light of how things have turned out for Evanston and this business, how would you rate the quality of information about expected growth in Evanston between 1979 and now? (PROMPT: in terms of reliability, accuracy) (Examples: from the OIA, Chamber of Commerce, other)

1. Good.
2. Fair.
3. Poor.
4. Don't know

Comment:

(43) B. Do you think it was publicized soon enough?

1. Yes
2. No
3. Don't know

Comment:

(44) C. If it was necessary to make similar decisions again for this business, under similar circumstances of rapid growth, would you use projections of expected growth in decision making?

1. Yes
2. No

Comment:

If "yes" ~~what kind (PROMPT: population, duration, etc.)~~

(45) D. Which is more important to you:

1. information on expected growth. (PROMPT: employment, population, etc.)
2. information on expected business growth. (PROMPT: retail sales, local spending, etc.)
3. information on how to use either type in decision making for this business.

Comment:

Did you have any information at the time of your decision on (Q. 18. A.)? 1. Yes 2. No

If "yes," then--

(46) 18. A. Given how things have turned out for Evanston and this business, would you say that information on how rapid growth might change things like wages, commercial rent, interest rates, taxes, financing was (Prompt: from any source)

1. Good?
2. Fair?
3. Poor?
~~4. Nonexistent?~~

(47) ~~B. How would you rate this type of information in terms of quality of life in Evanston, housing, public facilities, community spirit?~~

~~1. Good.~~
~~2. Fair.~~
~~3. Poor.~~
~~4. Nonexistent.~~

(48) C. Do you think that

1. this type of information ~~(BOTH A AND B)~~ should be made available to local business people?
2. business people should seek this type of information ~~(BOTH A AND B)~~ on their own?

Knowing what you know now...

____ (49) 19. Do you think that, overall, businesses in Evanston ~~were~~ have been prepared to manage and cope with rapid growth between 1979 and now? (PROMPT: in terms of business experience, training, etc.)

1. Yes
2. No
3. Somewhat

Elaborate (PROMPT: some more than others):

If "no" or "somewhat" how could business people be better prepared?

____ (50) 20. In your opinion, ~~did~~ has the business community ~~play~~ played a strong enough role in managing rapid growth in Evanston between 1979 and now?

1. Yes
2. No
3. Somewhat

Comment:

____ (51) ~~If "no" or "somewhat" should a stronger role have been played?~~

~~1. Yes~~
~~2. No~~
~~If "yes" how?~~

____ (52) 21. In your opinion, ~~was~~ has communication between local government and local business been strong enough between 1979 and now? (PROMPT: for exchange of information about growth)

1. Yes
2. No
3. Somewhat

____ (53) ~~If "no" or "somewhat" should communication have been made stronger?~~

~~1. Yes~~
~~2. No~~
~~If "yes" how?~~

____ (54) 22. In your opinion, ~~did~~ has local government ~~play a strong~~ played an effective enough role in managing development of Evanston's business community between 1979 and now? (PROMPT: in terms of a master plan, zoning, etc.)

1. Yes
2. No
3. Somewhat

Comment:

____ (55) ~~If "no" or "somewhat" should a stronger role have been played?~~

~~1. Yes~~
~~2. No~~
~~If "yes" how?~~

* * *

Thanks for your time! If you have any final comments I'll be happy to discuss them with you now.

COMMENTS ON INTERVIEW:

Survey to focus on results of boom

Colorado School of Mines student Michelle Michot Foss is conducting a survey of the retail, trade and services community in an effort to "try to understand the considerations that opened and made businesses stay here."

Her survey, funded by the Overthrust Industrial Association, will be conducted through this week of approximately 120 people, she stated. "Our goal is to try to improve management growth" and should an oil and gas boom happen again, "we hope the results from the survey will help people to cope better and judge the risks they want to take."

Foss is conducting the survey as part of her research for a master's degree in mineral economics and copies of the thesis will be retained by the Evanston Chamber of Commerce and Uinta County Library. Also, parts will be published in the Herald.

Foss says "people are in a more reflective mood and are more willing to share" their thoughts on the community and the effects of the boom. OIA funded the project as part of its "phasing out" period, although she added, "it is not targeted at OIA. OIA wanted to find out if the information they had obtained was good, accurate and useful information" for the people in the community.

Foss will be contacting several individuals in the next few days for answers to the survey and estimated time to take the survey is 30 mintues.

Uinta County Herald
February 20, 1985, p.3

OIA Survey Being Done In Evanston

Michelle Foss, a graduate student from the Colorado School of Mines, is currently in Evanston working on a survey for the Denver Research Group of the O.I.A.

Foss said, "I'm interested in learning about how the business people in Evanston reacted to the rapid growth that occured here."

There are about 120 business houses on the list of those to be interviewed. She would appreciate the cooperation of these businesses in answering her short survey.

She said, "My preliminary studies indicate that those businesses that were established when the boom happened tended to be more conservative than those that were established during the boom period."

She indicated that modelers based her survey on other boom towns like Gillette and Rock Springs, but, "Every town is differnt, and my preliminary work indicates that Evanston is different than the others."

Copies of her entire thesis will be retained by the Evanston Chamber of Commerce and the Uinta County Library. Results of her survey will be published in local newspapers.

Evanston Post
February 21, 1985,p.3

APPENDIX II

Energy and Minerals Field Institute

The CSM Energy and Minerals Field Institute is a separately funded program that conducts two summer field sessions on western energy and nonfuel mineral development. One session, traditionally attended by journalists, was expanded in 1983 to allow individuals from many fields to participate, including government sectors. The second session has traditionally been attended by federal government officials (from agencies and congressional committees that deal with policies affecting western resource development) and officials from governments of the states visited. Since 1978 when the EMFI was founded, the field sessions have been conducted in New Mexico, Colorado, Utah, Wyoming, Montana, and North Dakota. Each session consists of site visits for demonstration of production technologies, contacts with industry and state government officials, and contacts with local government, citizens, and interested groups in affected communities. Topical issues, critical to western resource development, that have been focused on over the years ranged from Native American interests to environmental and socioeconomic concerns. Markets and

trends in the industries and for the projects highlighted are always emphasized.

The EMFI programs included Evanston, Wyoming in both 1981 sessions (while the Whitney Canyon and Carter Creek gas plants were under construction), the first session in 1982, and the second session in 1983.

APPENDIX III

Statistical Inferences for Questionnaire Data[a]

Format	PR79R	PR79S	PO79R	PO79S
1. a) $\bar{x}_2$ [b]	0.8519	0.8621	1.0000	1.0000
b) S^2 [c]	0.1310	0.1502	0.0000	0.0000
c) S [d]	0.3620	0.3875	0.0000	0.0000
d) CI [e]	0.7087, 0.9951	0.6585, 0.9937	0.0000, 0.0000	0.0000, 0.0000
e) SE [f]	0.0348	0.0497	0.0000	0.0000
2. a)	0.8396	0.9474	0.9565	1.0000
b)	0.1399	0.0517	0.0435	0.0000
c)	0.3740	0.2275	0.2086	0.0000
d)	0.6916, 0.9876	0.8490, 1.0458	0.8663, 1.0467	0.0000, 0.0000
e)	0.0360	0.0292	0.0332	0.0000
3. a)	0.6957	0.6316	0.6087	0.6842
b)	0.2198	0.2433	0.2490	0.2281
c)	0.4689	0.4932	0.4990	0.4776
d)	0.5102, 0.8812	0.4183, 0.8449	0.3929, 0.8245	0.4540, 0.9144
e)	0.0451	0.0633	0.0794	0.0878
4. a)	0.5555	0.4348	0.8261	0.6842
b)	0.2564	0.2569	0.1502	0.2281
c)	0.5064	0.5069	0.3875	0.4776
d)	0.3551, 0.7753	0.2156, 0.6540	0.6585, 0.9937	0.4540, 0.9144
e)	0.0487	0.0650	0.0953	0.0878
5. a)	0.4444	0.3913	0.2174	0.3158
b)	0.2564	0.2490	0.1779	0.2281
c)	0.5064	0.4990	0.4217	0.4776
d)	0.2440, 0.6448	0.3697, 0.4129	0.0350, 0.3998	0.4540, 0.9144
e)	0.0487	0.0640	0.0671	0.0878
6. a)	0.7778	0.5217	0.6521	0.6316
b)	0.1795	0.2609	0.2372	0.2456
c)	0.4236	0.5108	0.4870	0.4956
d)	0.7610, 0.7946	0.3008, 0.7426	0.4415, 0.8627	0.3927, 0.8705
e)	0.0408	0.0655	0.0775	0.0911

Format	PR79R	PR79S	P079R	P079S
7. a)	0.5556	0.6957	(0.6087)[g]	0.5789
b)	0.2564	0.2213	0.2490	0.2573
c)	0.5064	0.4705	0.4990	0.5073
d)	0.3552, 0.7560	0.4922, 0.8992	0.3929, 0.8245	0.3344, 0.8234
e)	0.0487	0.0603	0.0794	0.0932
8. a)	0.8148	0.6087	0.5217	0.5263
b)	0.1509	0.2490	0.2609	0.2632
c)	0.3885	0.4990	0.5108	0.5130
d)	0.6611, 0.9685	0.3929, 0.8245	0.3008, 0.7426	0.2790, 0.7736
e)	0.0374	0.0794	0.0812	0.0943
9. a)	0.6296	0.5652	0.5652	(0.6842)[g]
b)	0.2422	0.2569	0.2569	0.2281
c)	0.4921	0.5069	0.5069	0.4776
d)	0.4349, 0.8243	0.3460, 0.7844	0.3460, 0.7844	0.4540, 0.9144
e)	0.0474	0.0650	0.0806	0.0878
10. a)			0.4783	0.5789
b)			0.2609	0.2573
c)			0.5108	0.5073
d)			0.2574, 0.6992	0.3344, 0.8234
e)			0.0812	0.0932
11. a)	0.4815	0.6087		
b)	0.2593	0.2490		
c)	0.5092	0.4990		
d)	0.2800, 0.6830	0.3929, 0.8245		
e)	0.0490	0.0591		
12. a)			0.4783	
b)			0.2609	
c)			0.5108	
d)			0.2574, 0.6992	
e)			0.0812	
13. a)	0.6296	0.4783		
b)	0.2422	0.2609		
c)	0.4921	0.5108		
d)	0.4349,	0.2574,		

Format	PR79R	PR79S	P079R	P079S
	0.8243	0.6992		
e)	0.0474	0.0655		
14. a)				0.4211
b)				0.2573
c)				0.5073
d)				0.1766, 0.6656
e)				0.0932
15. a)	0.1481	0.3478	0.7391	0.5789
b)	0.1310	0.2371	0.2016	0.2573
c)	0.3620	0.4870	0.4490	0.5073
d)	0.0049, 0.2913	0.1372, 0.5584	0.7197, 0.7585	0.3344, 0.8234
e)	0.0348	0.0625	0.0714	0.0932
16. a)	0.7778	0.7391	0.6522	0.3684
b)	0.1795	0.2016	0.2371	0.2456
c)	0.4236	0.4490	0.4870	0.4956
d)	0.7610, 0.7946	0.7197, 0.7585	0.4416, 0.8628	0.1295, 0.6073
e)	0.0408	0.0576	0.0774	0.0911
17. a)	0.5926	0.5652	0.3913	0.2105
b)	0.2507	0.2569	0.2490	0.1754
c)	0.5007	0.5069	0.4990	0.4188
d)	0.3945, 0.7907	0.3460, 0.7544	0.3929, 0.8245	0.0086, 0.4124
e)	0.0491	0.0650	0.0794	0.0770

NOTES:

[a] See Table 4.16 for response choices.

[b] Mean = proportions of each response choice = $\bar{x} = \frac{\Sigma x_i}{n}$, where n = number of observations in the sample.

[c] Sample variance = $S^2 = \frac{n}{n-1}\left[\frac{\Sigma(x_i)^2}{n} - (\bar{x})^2\right]$.

[d] Standard deviation = S = positive square root of S^2.

[e] Confidence interval = $CI = \bar{x} \pm t_{\alpha/2} \frac{s}{\sqrt{n}} \leq \mu$.

[f] Standard error = $SE = \sqrt{\left(\frac{N-n}{n}\right)\left(\frac{S^2}{n}\right)}$.

[g] For these groups, the proportions of respondents who were influenced by supply side factors are used.