

ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT
A COMPARATIVE STUDY OF TEN STATES

by

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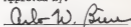
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INTRODUCTION

Problem Statement. Economic Development programs are receiving added attention at the state level as individual states seek to compete in today's increasingly competitive economic and political environment. Some of the state programs are formal while others are more informal. Each of the states, however, is facing important development issues. Initially, each must decide on how to identify and define its economic development goals. Do the states seek efficiency or equity; growth or development; job creation or wealth creation? Once these goals are identified, how should they be obtained? Should they emphasize physical capital investment or human capital investment; a business climate or an entrepreneurial climate; competition or cooperation; industrial recruitment or industrial expansion? Finally, who should make these decisions? Should it be political leaders or business leaders? And what should be the role of the state's universities? Obviously there are no magical growth formulas to follow nor uniform development models to imitate. Each state has unique problems and therefore unique solutions to achieve economic development objectives. Thus, it may be difficult to imitate other development programs that have been successful in other states.

In recent years, some state development programs have focused on the concept of entrepreneurship as a means of partially achieving development goals and objectives. The conventional methods have aimed to encourage entrepreneurial activity through tax rate adjustments,

venture capital availability, and increased funding and emphasis on applied research. These programs have proved to be successful in varying degrees depending upon the unique problems of each state. This new emphasis on entrepreneurial activity has led to a renewed effort in the research and analysis of entrepreneurship. To date, however, very little economic or empirical analysis has been done on the topic of entrepreneurship.

Purpose and Rationale. The objective of this study is to estimate the relationship between migration, income and entrepreneurship. This information will then be used to analyze the overall impact of the correlation on economic development in selected states.

In the economic literature, numerous articles have been devoted to the study of migration. Basically, these articles may be categorized into two broad groups: (1) Studies that deal with the determinants of migration. (2) Studies that deal with the consequences of migration. Those factors identified as possible determinants of migration include income, distance, risk, information and personal characteristics such as age and level of education. As will be reviewed later, these same determinants for migration with the exception of distance may also be considered variables for entrepreneurial activity. Thus, one may postulate that where a significant amount of in-migration exists, an entrepreneurial climate also exists. If this is the case, entrepreneurship may be seen as a direct consequence of migration.

Relatively little research has focused on the consequences of

migration, although in his survey on migration Greenwood cited some studies on the issues of education, "brain drain" and the impact on local entrepreneurship. Johnson pointed out that a locale which loses educated persons in effect loses its investment and is unable to recoup the costs. Bodenhofer in a separate study stated that if an economy experiences a continuing process of out-migration of highly qualified personnel, a cumulative erosion of its basic capacity for scientific, technical, and economic process must necessarily result which is difficult to change. Myrdal labeled this notion the "circular and cumulative causation" and described it as a consequence of migration of the younger, better educated, and more highly productive work force. Myrdal argued that such workers will be attracted away from those areas where demand is growing least rapidly and to those areas where labor demand is growing most rapidly. The selective character of migration leads to increased demand in the destination locale and decreased demand in the origin locale which leads to still more migration. Greenwood also argues that this "brain drain" may result in a decrease in marginal productivity in the origin of out-migration and an increase in marginal productivity in the destination of the in-migrants. Such an argument, claims Greenwood, is particularly valid with respect to entrepreneurship and the capacity for entrepreneurial activity.

Most of the research on entrepreneurship has dealt with either sociological or psychological concepts. But as noted earlier, these studies have shown entrepreneurship to share some of the same determinants as migration. Cantillon emphasized the risk-bearing

function of entrepreneurship. Kirzner defined the entrepreneur as a great communicator--gathering information and communicating it to others. McClelland introduced the psychological aspects and emphasized the personal characteristics of the individual entrepreneur. Leibenstein focused on the entrepreneur as organizer or as one who took advantage of income opportunities by minimizing X-inefficiencies. These and other authors on entrepreneurship have shown that entrepreneurship does indeed share the determinants of risk, information, personal characteristics and income.

Thesis Method. As noted earlier, the objective of the study is to measure the correlation between migration, income and entrepreneurship. It is assumed that a proper entrepreneurial environment will see an increase in new business activity. Therefore, new business incorporations are used as a proxy or as an indicator of entrepreneurship. Income is used as an indicator of the demand for entrepreneurship. Migration is used as an indicator for the supply of entrepreneurship. Data for all three indicators are readily available.

To empirically test the data, we set up the variables of business incorporations, income and migration within the framework of a distributed lag model. Distributed lag models are commonly used when testing time-series data and when it is assumed the dependent variable exhibits a lagged response to the independent variable. In this study, the business incorporation rate is the dependent variable; real state income, real U.S. income and net migration rate are the

independent variables. It is therefore assumed in this model that state entrepreneurial activity exhibits a lagged response to migration, state income and national income. Ten states were selected to test our data. These states were selected based on information that was available in two books recently published on the topic of state development programs. The programs of each of the ten states is reviewed in Chapter II. To minimize bias in our results, two separate lag models were used: the Koyck geometric distributed lag model and the Almon polynomial distributed lag model. Both models are discussed in greater detail in Chapter III.

In addition to measuring the correlation between entrepreneurship, income and migration we hope to provide some insight into the following questions: (1) is entrepreneurship a response to stress? (2) is migration a response to stress? (3) how do different states react to stress? (4) what are the economic characteristics that affect an individual state's response? (5) what development problems are unique to Kansas? (6) what development problems does Kansas share with other states?

NEW TRENDS IN STATE ECONOMIC DEVELOPMENT

"You will remember Mr. Justice Holmes' observation that our Federal system gives us the great advantage of making social experiments in the "insulated chambers of the individual states." That aspect, not of state rights but of state opportunities, might be emphasized with particular advantage in the state of Wisconsin."

Supreme Court Justice Frankfurter
in letter to President Franklin Roosevelt
1932

The issue to which Justice Frankfurter was referring was the Wisconsin plan of a state Social Security system. The point Justice Frankfurter was making is that the federal government must exploit the opportunities provided in these "insulated chambers." Justice Louis Brandeis evoked a similar idea in a 1932 dissenting opinion when he referred to states as "laboratories of democracies" and argued that "there must be power in the states and the nation to remould, through experimentation, our economic practices and institutions to meet changing social and economic needs." Today a similar trend is developing as individual states are responding with innovative and experimental programs to meet the challenges of a changing political and economic environment. The timing and the nature of the response have generally corresponded with the degree of economic pain each state has felt. As the problems became more severe or immediate, the states became more open to abandoning traditional approaches and seeking out new strategies.

Most of the variables that affect state economic development are beyond the control of state and local leaders. Exogenous factors such as international competition, productivity, interest rates, technology

and private sector investment are main determinants to economic growth. However, the state political, academic and business leaders can play an important role in building such economic foundations as education, research, financial capacity, physical infrastructure, quality of life amenities, and fiscal climate.

Following is a brief review of ten states and how each has responded to the economic challenge of the eighties with innovative economic development strategies. The reviews for nine of the states are based on information from two books published in 1988 on state economic development programs. The books are entitled Laboratories of Democracy by David Osborne and The New Economic Role of American States by R. Scott Fosler. The review for the other state, Kansas, is from the report entitled "Kansas Economic Development Study: Findings, Strategy and Recommendations" published by the University of Kansas Institute for Public Policy and Business Research in June, 1986.

MASSACHUSETTS: THE ECONOMIC DEVELOPMENT MODEL

Two areas of achievement have led some to dub this state's impressive gains in economic growth over the past ten years as the Massachusetts miracle. First, economic performance indicators show marked improvement in terms of the unemployment rate and in per capita income growth. The number of unemployed has fallen from a rate of 12.5 percent in 1975 to 3.9 percent in 1985. Concurrently, per capita income has risen from \$6,467 in 1975 to \$16,393 in 1985 - or an increase from 106 percent of the national average to 118 percent ten

years later. Second, creative business and political leadership during the 1980's has made Massachusetts the role model in the development of innovative state economic development programs.

Much of the turnaround in the economy, however, can be attributed to exogenous factors over which state and local leaders had little control. The turnaround in the unemployment rate reflects slow labor force growth and out-migration rate over the ten-year period. Also, two main factors contributed to the high growth rate. One, Massachusetts was part of a general boom in regional growth that benefitted from being in a good position in terms of industry mix. Two, Massachusetts benefitted greatly from dramatic increases in national defense spending and spin-off high technology industries and export business services.

Some important lessons, however, can be learned from the Massachusetts experience. A skilled work force and high quality university and research facilities are vital components in promoting high growth industries. Also, innovative leadership and private-public development programs play an active role in targeting depressed regions, filling gaps in the labor and capital markets, and improving the entrepreneurial climate through support for research and development, incubator facilities, and marketing development.

MICHIGAN: INDUSTRIAL RENAISSANCE

When predictions are made about the rise and fall of great powers, comparisons are often made between the industrial decline of the

United State with that of England earlier this century. Almost invariably, the state of Michigan will be cited as the symbol of this decline. Michigan is the nation's premier manufacturing state. Over 32 percent of its current Gross State Product derives from manufacturing compared to the national average of 20 percent. The recession during the early 1980's, however, devastated Michigan's economic industrial base. Unemployment reached a peak of 15.5 percent in 1982, the highest in the nation. From 1979 to 1985 total employment in the state actually declined by 91,000 workers. Over that same period, net out-migration of the states population totaled 520,000 people. Michigan was being called the next Birmingham, England.

Michigan's business and political leaders were, as one colleague phrased it, faced with three options: "Get poor, get out, or get smart". The obvious choice was to get smart. A consensus was ultimately reached on a plan involving a combination of the three basic economic development strategies: recruitment, expansion and creation. The recruitment strategy relied on the traditional methods of lowering business costs through tax reforms, regulatory policies and wage deductions. The expansion strategy relied on the modernization of the current industrial base - mainly the automobile industry. The creation strategy sought to develop spin-off businesses by maintaining a pool of entrepreneurs, identifying sources of venture capital, and supporting basic and applied research in product and market development.

The underlying theme of Michigan's economic development plan is

that economic development must concentrate on the economic base. In Michigan's case, of course, the base is the automobile manufacturing industry. Future economic growth, therefore, depended on several issues: first, modernization of the production process; second, innovation in the development of new products and markets; third, creativity in management-labor relations; and fourth, state role aimed at investment in education and in basic or applied research.

TENNESSEE: NED-SMOKE STACK CHASING

If the tortoise and the hare analogy could be applied to state economic development, Tennessee would definitely be identified as the tortoise. Slow, steady growth in income and employment has been accompanied by slow, steady structural shifts during much of the Tennessee post-war economy. Net migration has been negligible from 1970 to 1985. Unemployment rates have been near or slightly above the U.S. rate during this same period. Total employment reflects a very modest but steady growth period. A structural shift from agriculture to manufacturing accelerated by the Tennessee Valley Authority project during the Depression has leveled out over the past two decades. Manufacturing has maintained a 26-28 percent level of total Gross State Product from 1967-1985 while agriculture has remained below the three percent level.

What has been the Tennessee strategy for this slow, steady growth policy? Location, location, location. Tennessee has no formal state development policy but seeks to publicize its central location and easy access to markets in the South, Midwest and East. Over 50

percent of the U.S. population, for example, lives within 600 miles of Nashville. General Motors stated publicly that location was the number one incentive in their recent decision to locate the Saturn plant in the state of Tennessee.

Tennessee seeks to exploit its locational advantages through the informal strategy of recruitment. However, state officials reject the traditional notion of "smoke stack chasing" which implies developing a business climate through lower taxes, subsidies, and regulatory reforms. These policies have been shown to hurt local established businesses and may have an overall negative effect on the economy. Instead, they seek to attract new firms by developing an entrepreneurial climate through an active state role in basic support services targeted on education, highways, and environmental conservation.

CALIFORNIA: BACK TO THE BASICS

From the gold rush of the 1840's to the Silicon Valley of the 1980's, California has had an economy fueled by surges in population growth. Each surge provided a natural pool of entrepreneurs that led California into its next phase of economic evolution. Between 1850-60, innovative entrepreneurs sought their fortune not from gold but from gold miners. Agriculture, developed through advancements in irrigation, farm mechanization and food processing and accompanied by the opening of national markets provided by the transcontinental railroad, promoted California's next growth stage. Oil led the next great surge at the turn of the century and generated spin-off

industries in construction, tool-making, pumps, paints and other items that required advanced technology. This pre-war industrial mix set the stage for California's next growth industry - defense. During the 1940's, industrial production in California grew 53 percent and personal income rose 240 percent. This defense-oriented industrial base evolved into the current stage of industrial evolution - high technology. This hi-tech economy is not limited to the hi-tech manufacturing in the Silicon Valley, but includes the aero-space industry in Southern California, the bio-technology near San Diego, hi-tech agriculture in the Central Valley, and hi-tech approaches in the service industries including communications, finance and business.

The key to every phase of economic growth in California has been the presence of the entrepreneur. Unlike other states, however, California seems to be able to maintain or attract a natural pool of entrepreneurs and sees no reason to develop a formal economic development program to help create an entrepreneurial climate. The state has always been a leader in innovation. Successful entrepreneurial role models abound, basic and applied research is readily available through both businesses and universities, and roughly one-third of the nation's venture-capital is available to Californian entrepreneurs.

Thus, the theme for California's informal development strategy is, Back to the Basics: Education and Infrastructure. Investments in infrastructure have increased to accommodate California's population and economic growth. Investments in education have increased as the entrepreneurial community realizes that their economy is increasingly

built upon knowledge. The lessons from California's approach are twofold. One, more generic policies aimed at improving the economic environment for all industries appear to have more of an impact than specific policies targeted at individual industries. Two, investments in a state's capacity to create wealth may be a more important goal than focusing on either job creation or industry attraction.

ARIZONA: NEWLY INDUSTRIALIZED COUNTRY

The state seal of Arizona displays four emblems: copper, cotton, citrus and cattle. For decades these four C's constituted the main components of the Arizona economy. Over the past two decades, however, an economic transformation has taken place that has seen the natural resource industries of copper and cotton replaced by high technology manufacturing industries and service industries, most notably tourism. From 1967 to 1986, mining and agriculture as a percent of Gross State Product declined from 7.5 percent to 3.3 percent. Over the same period manufacturing and services as a percent of GSP increased from 26 percent to 30 percent. This newly industrialized economy was accompanied by a surge in population growth, high overall growth and high employment growth. Arizona is the second fastest growing state in the nation with a population growth of 77 percent from 1970 to 1985. Gross State Product grew at nearly double the U.S. average, and growth in employment more than tripled the U.S. average.

The catalyst for this growth were, as one author put it, war and sunshine. Growth in high technology manufacturing was due in large

part to the defense industry and growth in tourism due to the climate and the "miracle of air conditioning". This informal approach to economic development was dramatically reversed in 1983 when Arizona failed to attract the Microelectronic and Computer Consortium which it had heavily recruited. This unexpected setback led to a consensus by state leaders that a formal economic development program was needed. This program, entitled "Arizona Horizons", was developed by 1984 and outlined the following objectives:

- * to promote the growth of diversified high technology industry
- * to encourage the creation, expansion, and retention of new small business firms
- * to ensure that the optimal economic potential of all areas of the state is recognized and developed
- * to ensure that the citizens of Arizona are educated for a knowledge intensive future economy

Arizona's tremendous growth and rapid economic transformation have led political and business leaders to work together in developing a long-term economic development strategy. This strategy of an expanded state government role in developing an entrepreneurial climate may be conceptualized as follows: one, distribution of economic growth is an appropriate goal of state development; two, emphasis on small firms can lead to an efficient policy on job creation; three, education - especially at the elementary level - is an appropriate long-term economic development goal; and four, university research is a vital ingredient of the high technology industry.

INDIANA: PUBLIC-PRIVATE PARTNERSHIPS

Indiana is a dramatic illustration of a state where economic stress has led to innovative economic development programs. Indiana and other Great Lakes states felt the brunt of the 1982 recession. Unemployment rates were well above the national average and reached a peak of 11.9 percent in 1982; net out-migration of the population totaled 179,000 from 1981-85; employment growth actually declined for four consecutive years from 1980-83 with a net loss of 151,000 jobs, Gross State Product showed growth rates approximately one-half the national average. As a result of this stress, Indiana's political and business leaders rejected their traditional passive approach to economic development and sought to find aggressive, innovative solutions to help transform the Indiana economy.

The state responded by creating a formal economic development strategy for Indiana entitled "In Step With the Future". Emphasis under this strategy was placed on developing a well-structured and unique public-private partnership with the following basic objectives:

- * Business Climate including taxes, regulations and quality of life
- * Education and Training
- * Energy: supply, distribution and financing
- * Infrastructure: investment strategies
- * Technology: transfer and innovation
- * Productivity: labor-management relations
- * Finance and capital formation

Though Indiana shares many of the goals of other state economic development programs, its uniqueness lies in the formation of the Indiana Economic Development Council (IEDC). The IEDC is the most extensive application yet of public-private partnerships. The IEDC is a private, non-profit corporation with a 68-member board of directors appointed by the governor from both the private and public sectors. The network serves as a "central guidance system" with three main responsibilities of planning, coordination and evaluation. This partnership concept allows Indiana to retain the traditional emphasis on the notion of maintaining a proper "business climate" and also providing for public sector input into economic policy formation. However, it also represents a relatively radical change for the Indiana state government from that of a passive observer into one which takes an aggressive, active role in shaping the future direction of the Indiana economy.

MINNESOTA: QUALITY OF LIFE

One cynical bumper sticker labeled Minnesota as the "Land of 10,000 Taxes". In 1985, Minnesota ranked fourth in the United States with a tax rate of \$134 per \$1,000 in Personal Income. But during that year, Minnesota ranked in the top ten states in state and local per capita financing of elementary and secondary education, public welfare, hospitals, highways, and parks and recreation. These figures highlight Minnesota's strategy for economic growth: to develop a formal, comprehensive and long-term policy to organize and operate a high quality public sector that maintains and improves the state's

productivity and its quality of life.

Minnesota faces some basic inherent disadvantages that have forced the state government to play an active role in economic development. One, it lacks the location to attract large manufacturing firms; two, it lacks the climate to attract population growth; and three, its traditional economic base of agriculture and mining offer only limited opportunities for modernization and diversification. Minnesota's policy has sought to turn these negatives into positives. First, due to its geographical isolation, Minnesota has developed a political process that places high priority on community involvement and local decision making. Second, since it has a relatively small and stable population base, Minnesota has sought to concentrate its resources to improve its effectiveness. The state's commerce, government, educational, cultural, and service institutions are all concentrated in the urban region of Minneapolis-St. Paul. Third, since the state's opportunities to develop a hi-tech industrial base are limited, its policy has been to emphasize small businesses and to encourage competition and innovation in areas of low technology industries and business services.

Minnesota's approach to economic development places a high degree of emphasis on the public sector. Its strategy is to concentrate its scarce resources and to decentralize its decision making process in developing an entrepreneurial climate through human capital investment, quality of life amenities and long-term planning.

ARKANSAS: THE EDUCATION MODEL

In 1980, Arkansas had the lowest state and local tax burden in the United States with a tax rate of \$93 per \$1,000 in Personal Income. In 1980 it was also last in the nation in education spending per pupil, in teacher salaries, and in college attainment. It also ranked 47th in high school graduation rates. In 1985, Arkansas ranked 49th in the number of science/engineering students per 1,000 and 49th in University Research and Development funding per capita. Based on these figures, it should come as no surprise that a restructured economic development program in Arkansas now focuses on broad based educational reforms at every level.

The reform objectives at the public school level are to raise teacher salaries, lengthen the school day, improve curricula and to up-grade accreditation. In 1983, a fundamental reform bill was passed that mandated the implementation of these specific reforms. In addition, the bill included controversial amendments to require standardized test for elementary students and competency tests for public school teachers.

The second top educational priority has been in the area of adult and vocational-technical education. Illiteracy rate estimates in Arkansas have ranged from 15 to 25 percent of the adult population. Professionals in agriculture and small industry complained of the restraints in working with people who could not read or write. As a result, the state expanded its adult education program in 1983 and increased enrollment from 12,800 to 30,000 in three years. Vocational-technical schools were also reformed by requiring performance standards that encouraged competition among schools and by

providing graduates who were better prepared to meet the specific needs of the local industry.

Though Arkansas had the lowest tax rate in the nation in 1980, its per capita income and Gross State Product were well below the national average. This points out the fact that a proper "entrepreneurial climate" involves more than the traditional concept of a proper "business climate". In today's information-based society, human capital investment is a necessary if not a sufficient variable in economic growth and development.

PENNSYLVANIA: A NEW PARADIGM

In many ways, Pennsylvania mirrors the Michigan and Indiana experience. Severe economic stress brought about a need for innovative changes in the state approach to economic development. Michigan turned to a strategy of recruitment, expansion and creation. Indiana developed a public-partnership approach to meet the present economic challenges. Since the problems were similar, the approaches became similar. Pennsylvania sought a strategy similar to Michigan's in that it sought to build on its economic base in manufacturing. Pennsylvania implemented this strategy by taking the Indiana approach one step further and sought a public-private-academic partnership. To emphasize the intended theme of innovation, state officials named this comprehensive development plan the Ben Franklin Partnership.

The idea of the Ben Franklin Partnership was to build on the intellectual infrastructure and move to a more entrepreneurial economy by stimulating the commercialization of academic research. The

program offered matching grants to university based projects - primarily applied research projects - funded by business. To ensure that the projects were applied and benefitted the general Pennsylvania economy, the grants were awarded on a competitive basis. In the first four years the Partnership funded close to 1,500 projects, which involved 128 of the state's colleges and 2,500 private firms. Over \$77 million in matching grants were invested. Most of the research focused on modernizing the established manufacturing base through new technology and management approaches. The Pennsylvania experience highlight two important concepts: one, a successful development strategy can be built on the public-private-academic partnership model which in many ways is similar to the Japanese experience; and two, the notion of entrepreneurial climate is not limited to focusing on creating new or small businesses but also relates to the strategy of innovation and reform in large, established industries.

KANSAS: A COMPREHENSIVE PLAN

Kansas faces many of the problems in the 1980's that have become common among the agriculturally based Plains states. In demographic terms, Kansas has experienced a low population growth rate, a net out-migration rate of approximately 160,000 from 1960-85, a brain drain where many of the out-migrants are young adults and persons with higher education levels, an aging population, and declining rural communities. In economic terms, Kansas has faced low employment growth and an extremely volatile economy dependent on agricultural and natural resource commodities.

In addition, Kansas is similar to the other Plain states in that it does not seem to be in a position to expand its economic base in the areas of high technology and service based industries. Dun and Bradstreet has consistently ranked Kansas as one of the top states in terms of business failure rates. In both 1985 and 1986 Kansas had the dubious distinction of being number one in business failure rates.

To address these problems, the state commissioned a study in 1985 intended to analyze various economic development strategies. The main elements of this KANSAS ECONOMIC DEVELOPMENT STUDY are as follows:

- * The central focus of any state economic development policy must be on the modernization and expansion of the state's economic base in agriculture, oil and aviation.
- * Kansas comparative strengths are its high quality education system, central location, and some elements of its transportation infrastructure.
- * Kansas comparative weaknesses are its inadequate investment in Research and Development, capital availability, financing, and insufficient links between business and universities.
- * Kansas approach to economic growth should be based on: one, a balanced recruitment-expansion-creation strategy that focuses on the economic base; two, building a public-private-academic partnership; and three, encourage innovation and entrepreneurship in Kansas businesses.

The study concluded by noting a strong desire among Kansas business and political leaders to "take bold, new actions to encourage economic development". To address this mandate, the study outlined a 50 point program recommending new initiatives in the areas of traditional industries, taxation, education and research, financing, state organization, community development and policy making.

ECONOMIC GROWTH AND DEVELOPMENT: A REVIEW

Introduction:

Growth and Development are two terms that are used interchangeably. While this common usage is acceptable, it can lead to confusion in economic literature. In general, growth occurs in stages with a beginning and an end. Development, on the other hand, implies a continuous evolution that is dependent on growth. Growth can occur without development. Development cannot occur without growth. To use a human analogy, a child grows in terms of height and weight until he or she is fully grown. Development is contingent upon the child's growth and involves a dynamic and continuous process of changes in physical coordination, learning capacity and social values.

Similarly, economic growth and economic development have two different and implicit meanings. Economic growth will be defined here as simply an increase in output. Economic growth may involve greater output resulting from greater use of inputs. It may also result from increased labor productivity. Almost always it involves increased efficiencies in input/output relationships. Growth, therefore, involves better combinations of the basic economic elements of land, labor and capital. Growth, as an oversimplification, implies more of the same.

Economic development, on the other hand, is a much more complicated concept. Development can be defined as a dynamic and sequential process which involves changes in output, structure and

capacity. Development is dependent on growth and increased output but is more than just "more of the same". Development implies changes in the structure of the economy - changes in domestic demand and production, sectoral adjustments, and an increase in regional/international trade. Development also implies changes in economic capacity - improvements in human capital, improvements in physical infrastructure, increased capital formation, and improvements in living standards for all members of the society. Thus, economic development is an accelerating process that involves innovation, change and adjustment. It is this emphasis on innovation and change which has led some people to label entrepreneurship as the fourth factor of production, in addition to the three commonly accepted factors of land, labor and capital.

The focus of the literature review will be on this concept of economic development and the entrepreneur. The first section will be a brief review of the literature on economic development as related to the issues of output, structure and capacity. The second section takes a broader look at the role of the entrepreneur in economic development. The third section takes a more applied look at the concept of entrepreneurial climate and its major determinants.

Economic Development: Concepts and Issues

Changes in Output. As stated earlier, change in output is the focus of economic growth. Growth models frequent economic literature due mainly to the fact that input/output relationships are measurable. Thus, these models lend themselves relatively easily to empirical

analysis. Most of the major growth models can be categorized as growth without technical progress or growth with technical progress.

Most of the earlier growth models made no provision for the effects of technical progress. Malthus' model held the view that all land is of the same quality and production was possible only to a certain point. The limited natural resources would restrict growth while population grows at an increasing rate. This would eventually lead to a problem of severe scarcity. The Ricardian growth model also focused on the limits of growth imposed by the ultimate scarcity of land. Ricardo emphasized in his model the importance of foreign trade and exploration and the need to expand the available supply of resources and inputs. The Harrod-Domar model was the first notable growth model advanced after the depression in 1932 and focused on physical capital as the single scarce input to the productive process. Its main contribution lies in the recognition that one period's capital formation is the next period's source of output.

The post-war Neoclassical models represent the first major models to include technical progress. Meades' model included land, labor, capital and the variable of time. Time represented a constant trend of technological improvement. In this and other neoclassical models, technical change is "disembodied" in the sense that it proceeds in time with or without the accompaniment of investment. The Kaldor model addressed this issue by having technical change "embodied" in physical capital. Technical change can occur only when a capital investment is made.

Thus, economic growth is the result of increased use of inputs or

the more efficient use of these inputs. This process usually implies improved labor productivity and an increase in the capital/labor ratio which leads to structural adjustments.

Change in Structure. Economic development combines economic growth with certain other characteristics. Structural change is perhaps the most visible of these characteristics. Changes in sectoral adjustments, in the distribution of the labor force, in the input/output relationships of the economy are among the economic indicators of structural change. It must be noted that each nation, region or state has unique features that determine its respective development process. However, certain trends can be identified that are common to each.

Rostow summarized the "sweeps of modern economy" by designating five stages of economic development: the traditional society, the preconditions for take-off, the take-off, the drive to maturity, and the age of high mass consumption. First in the traditional society, the economy goes nowhere, trapped in static equilibrium. Modern technology has not encroached on traditional means of production. There is little social mobility due to hierarchial structures. Low productivity ties most of the population to near subsistence agriculture. Second, the system is disturbed and the society moves into the precondition stage where social mobility becomes possible, transport is cheaper, and new technology is adopted first in agriculture, later in industry. Central to the precondition stage is the entrepreneur where a structural change must be accompanied by a political change. The third, or take-off state, occurs when self-

sustaining growth is achieved. Investment and savings rise dramatically as the economy rises from subsistence and generates a margin that can be plowed back. The take-off is discontinuous when change spreads so rapidly that old structures disappear. After take-off, there is the drive to maturity and new leading sectors replace old. The acceptance becomes widespread and ingrained. Growth in output clearly outdistances population. The culminating stage is that of high mass consumption, when expansion is centered in consumer durables, industries, and services.

Fisher-Clark analyzed labor distribution and its correlation with economic progress. Their hypothesis specified a sequence in labor force use. High proportions in agriculture diminish as development proceeds, and are replaced by large numbers in unsophisticated industry, reflecting high income elasticities of demand and low productivity. As incomes continue to rise, demand for services increases and the labor force correspondingly adjusts. The lowest income countries, therefore, are characterized by high concentration of workers in agriculture; middle-income countries feature high proportions in industry, while high-income countries feature high proportions of service industries.

Leontief refined the input/output relationship as a measure of economic progress. The Leontief model portrays how the output of each sector is distributed in the form of intermediate products, for itself and for other sectors, and as a final product to businesses and government. The model shows that as an economy becomes more developed, the market network becomes increasingly integrated. For

example, in less developed countries agriculture is more on a self-subsistence level and there is little market activity in the form of purchasing inputs or selling the commodities.

Other common trends in structural changes include improved labor productivity, increased incomes and demand for public services, an increase in international trade, and trends in population changes or other demographic considerations.

Change in Capacity. The capacity for economic growth and development usually refers to the three traditional factors of production: land, labor and capital. More recently, entrepreneurship has been treated in the economic literature as the fourth factor of production. Together these factors determine the capacity for production and the environment for structural adjustment. These two characteristics - capacity and structure - combined with economic growth determine the direction and degree of economic development.

The classical factor affecting potential growth is land. Land, in the economic literature, is defined as the non-reproducible and immobile endowment of natural resources. The Malthusian and Ricardian models of restricted growth due to limited land resources led an early British historian to term economics as the dismal science. However, their dismal projections were not fulfilled basically because they did not include the variable of new technology. This relationship between land and technology carries forward towards the current assumptions in economic development. More natural resources are better than less because their existence gives nations and regions more freedom of action. However, abundant natural resources are not sufficient

conditions for economic development. Nations like Burma and Cambodia demonstrate this. On the other hand, the relative absence of natural resources does not prevent the opportunity for economic development. Nations like Japan, Hong Kong and Holland demonstrate this. Other things being equal, "land" is a major factor in economic growth. However, these other things - capital, labor and entrepreneurship - are rarely equal.

Capital in particular is the one factor of production that is rarely equal. Developed countries tend to be capital rich and have a high capital/labor ratio. Less Developed Countries (LDC's) tend to be capital poor and have a low capital/labor ratio. Unrestrained population growth that lowers the capital/labor ratio in LDC's is considered an inhibition to economic development. Controlling capital flight is also seen as a partial solution to development policies in LDC's. As noted earlier, the Harrod-Domar article focused on physical capital as the key factor in the production process. Capital formation, therefore, is seen as a necessary factor in economic growth. It can lead to more output and can be substituted for other scarce factors of production such as land or labor.

However, while capital is generally perceived as a key factor in development, it would be a mistake to consider it as the only ingredient in the development process. Development is not a smooth and continuous process and increases in capital formation are not uniformly accompanied by increases in growth and development. Solow developed a model that showed only 12 percent of the growth in productivity in the U.S. from 1909-1949 may be attributed to increase

use of capital formation. The other 88 percent was due to change in technology or other factors. Capital formation implies savings. Savings implies investment. Investment implies decision making by managers and entrepreneurs. Physical capital by itself is not the key. Only in combination with human capital and innovation can capital be considered the key to economic development.

Simple growth models usually consider labor homogeneous. For analytical purposes, it is more useful to separate the concept of labor from human capital. Labor generally refers to "raw labor" or the unskilled work force and is more prevalent in IDC's. Human capital is formed by investment much like physical capital and refers to skilled or trained labor and is more prevalent in developed countries. W. Arthur Lewis summarized that in many undeveloped economies an unlimited supply of "raw labor" is available at subsistence wages and, in many cases, the marginal productivity of labor was negligible, zero, or even negative. Thus, economic development was not affected by the labor force and the demographics of population, migration, age or sex. Therefore development in these lesser developed countries is almost entirely dependent on capital formation.

In more developed countries, the labor force is more heterogeneous and the issues of human capital investment, productivity, and education are more relevant. Schultz hypothesized that the structure of wages and salaries is primarily determined by human investment in schooling, on-the-job training, searching for job information, health, and investment in migration. Formal schooling ranges from basic

literacy training for children and adults all the way to university education in technology and engineering. On-the-job training consists of gaining specific skills in the work situation. Job market information helps make labor markets adjust more efficiently to sectoral shifts. Health and nutrition relate most directly to productivity, especially to 'low wage' jobs. Migration is seen as human investment since it involves the cost of moving, job market information and retraining in return for the benefits of increased income in interindustry shifts. This human investment in combination with physical investment and technical progress results in the increased productivity of labor.

Entrepreneurship is the fourth factor of production. Its relationship with the three other factors of production - land, labor, and capital - determines the capacity of a given economy. Capacity, along with output and structure, determines the sequential economic development process. The role of entrepreneurship in this process will now be reviewed.

ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT

In his book, Entrepreneurship and Economic Development, Peter Kilby compares the study of entrepreneurship to the Winnie-the-Pooh story of hunting the Heffalump. The Heffalump was a large mythical creature which was hunted by many. Those who claimed to have caught sight of him reported that he was enormous. But he has been caught by no one and the search goes on. This analogy captures the historical economic analysis of the entrepreneur. Almost all researchers who have studied entrepreneurship agree on its importance in economic development, but few have been able to capture the concept of entrepreneurship.

Like the firm in economic theory the entrepreneur is a theoretical abstraction whose definitions are varied and whose concepts remain elusive. Definitions of an entrepreneur include: risk-taker, innovator, manager, organizer, decision-maker, gap-filler, capitalist, enterpriser, retailer, self-employed proprietor, financier, and owner-manager of a small firm. The elusive concepts may be noted by the following historical review of the literature on entrepreneurship.

The term entrepreneur was coined by the 18th century writer Richard Cantillon, an Irishman living in France. His original definition emphasized the risk-bearing function of the entrepreneur and described him as one who buys at certain prices and sells at uncertain prices. A few decades later Jean Baptiste Say broadened the entrepreneurial function and focused on the bringing together of the

factors of production and the provision of continuing management, as well as risk-bearing. In the 19th century, Leon Walras designated the entrepreneur as the fourth factor of production.

The next stage of theories have tended to define entrepreneurs under either psychological or sociological elements. Psychological theories cited the prime movers of entrepreneurs as nonmaterialistic psychic concerns. McClelland emphasized psychological factors by introducing the need for achievement (n ach) based on child rearing practices in a hierarchical society. Hagen saw the entrepreneur as a creative problem solver. Schumpeter emphasized the role of the dissenter. Sociologists see economic incentives as but one part of a larger system of sanction based on the society's values and status hierarchy. Weber cited the entrepreneur as one who sets in motion a revolutionary process. Cochran emphasized cultural values and role expectations. Young disagreed with emphasis on values and instead focused on the importance of intergroup relations.

Leibenstein sought to simplify the issue and defined two basic roles for entrepreneurs: as a Schumpeterian entrepreneur or as a routine entrepreneur. To emphasize this concept of a dual role for the entrepreneur a comprehensive review will be made of two books on the subject: one, the entrepreneur as innovator as defined by Joseph Schumpeter in his book The Theory of Economic Development; two, the entrepreneur as organizer as defined by Israel Kirzner in his book Competition and Entrepreneurship.

SCHUMPETERIAN ENTREPRENEUR: INNOVATOR. Of all the major economists, only Joseph Schumpeter concerned himself with the

entrepreneur and his impact on the economy. For most economists, entrepreneurship is something that influences and shapes the economy without itself being part of it. Schumpeter broke with traditional economics in his 1911 publication The Theory of Economic Development when he postulated that dynamic disequilibrium brought on by the innovating entrepreneur, rather than equilibrium and optimization, is the "norm" of a healthy economy and the central reality for economic theory and economic practice.

Circular Flow. Schumpeter's theory of economic development centers around his hypothesis of circular flow. Schumpeter uses his circular flow or "Kreislaufl" to explain the old empirical law of supply and demand. The flow is initiated by the consumer, or the demand expressed by the consumer. The people who direct business firms only execute what is prescribed for them by wants or demands. Production, or supply, then follows this demand. Thus, the consumer is the leader, his needs are the force that begins the flow. The producer then is pulled along after the consumer. His production is aimed at consumption.

The circular flow begins when the consumer becomes a producer, i.e., a wage earner in the labor market; and the producer becomes a consumer, i.e., purchaser of raw materials. Thus, the producer and consumer become interchangeable and interlinked. Schumpeter used the simple analogy of a small community to explain his exposition. The farmer (producer) sells his meat to the butcher, the butcher sells what the consumer (tailor) wishes to buy. The tailor buys from the purchasing power he has earned from his consumer (the farmer). Thus,

the farmer is at once the seller and the buyer, as is the butcher and the tailor. This concatenation and mutual dependence of the quantities of which the economic cosmos consists, Schumpeter explains, are always visible, in whichever of the possible directions one may choose to move.

The circular flow has thus been established into self-perpetual motion. The buyer is a seller, and the seller is a buyer. It is at this point that the circular flow of economic life is closed. The sellers of all commodities appear again as buyers in sufficient measure to acquire those goods which will maintain their consumption and production in the next economic period, and vice versa. In other words, there are no gaps between outlay or productive effort and the satisfaction of wants. The economy is in a state of 'static' equilibrium with a stream of goods being continually renewed.

Economic Development. Schumpeter has now described economic life from the standpoint of the 'circular flow', running on in channels essentially the same year after year. The circular flow and its channels do, however, alter in time. Here Schumpeter begins to explain his thesis on economic development. He does not ask what changes take place nor what are the conditions of change. Rather he asks how such changes took place and what economic phenomena do they give rise to.

Schumpeter began by listing five dynamic elements that alter the circular flow and its channels. The first three elements - changes in capital, changes in population, and changes in consumer tastes - are considered as mere disturbances, however important as factors of

change. The other two elements evoke something different again from disturbances and are the key factors in Schumpeter's theory of economic development - the changes in technique and the changes in productive organization.

The first three elements explain the economic phenomenon of static equilibrium whose position is never actually attained, continually striven after, but changes because these three outside elements cause it to change; to which the circular flow imperceptibly adapts itself. But this, Schumpeter states, is not the only kind of economic change. There is another which is not accounted for by influence on the data from without, but which arises from within the system. These changes in technique and in production organization so displace its original equilibrium point that the new one cannot be reached from the old one by infinitesimal steps. This is the dynamics of economic development. Development in this sense is a distinct phenomenon, entirely foreign to what may be observed in the circular flow or in the tendency towards equilibrium. It is spontaneous and discontinuous change in the channels of the flow, disturbance of equilibrium, which forever alters and displaces the equilibrium state previously existing.

Thus the consumer leads, the producer follows. Changing production to meet changes in consumer taste is not development. Increasing production to meet increases in population is not development. Increasing production due to increasing capital is not development. It is adaptation. The channels are altered. The flow continues. Equilibrium is striven for but never attained.

Changing techniques, however, and changing production organization

lead to development by carrying out new combinations from within. The following five cases described by Schumpeter cover this concept: (1) The introduction of a new good - that is one with which consumers are not yet familiar - or of a new quality of a good. (2) The introduction of a new method of production, that is one not yet tested. (3) The opening of a new market, that is a market into which the manufacturer has not previously entered, whether or not this market existed before. (4) The conquest of a new source of supply of raw materials or half-manufactured goods, irrespective of whether this source already exists or whether it has first to be created. (5) The carrying out of the new organization of any industry, like the creation of a monopoly position or the breaking up of a monopoly position.

The new combinations draw the necessary means of production from old combinations - though not necessarily by the same people who control the old combination. In other words development consists primarily in employing existing resources in a different way, in doing new things with them, irrespective of whether those resources increase or not. And in a competitive economy, these new combinations mean a competitive destruction of the old businesses.

Thus development comes from within. The producer leads, the consumer follows. No longer a mere disturbance of a circular flow, but a spontaneous disruption of the channels in the flow, an equilibrium altered forever. This is the dynamic disequilibrium that is the norm of a healthy economy. A new flow and equilibrium are developed. A new level of development has been reached. And once

again, the consumer leads, the producer follows.

The Role of the Entrepreneur in Economic Development. Reggie Jackson of major league baseball once described himself as the 'straw that stirs the drink'. In other words, he saw himself as the dissenter--the one that stimulated discussion which led to progressive ideas and innovation. This analogy corresponds with Schumpeter's thesis on the role of the entrepreneur in economic development. The entrepreneur is the dissenter, he upsets and disorganizes the circular flow. The entrepreneur is the producer who initiates economic change from within, the one who becomes the leader during the process of dynamic disequilibrium. The one who assumes the task of creative destruction. The entrepreneur is, in Schumpeter's definition, the individual whose function it is to carry out the new combination. The question Schumpeter asks is: Why is the carrying out of new combinations a special process and not possible within the established circular flow? Schumpeter used this analogy to explain his own question: An entrepreneur is swimming against the stream of circular flow; a manager is swimming with the stream of circular flow. A manager has the routine task of making rational adjustments while in the accustomed circular flow. An entrepreneur, by contrast, cannot simply make adjustments when confronted with these new combinations or innovations. What was formerly a help becomes a hindrance. What was a familiar datum becomes an unknown. Therefore, it requires an entrepreneur - a leader - to step beyond the boundaries of the routine. Every step beyond the boundary involves difficulties and a

new element.

It is the nature of these difficulties which require the special functions of leadership from an entrepreneur. Schumpeter outlined these special functions with the following three points:

First, without accustomed data for decisions and no rules of conduct, the entrepreneur depends on intuition, preparatory work, analysis and understanding. His task is to make quick and reliable calculations in unknown territory much like that of a military commander. In other words, he must have the right stuff.

Second, the entrepreneur must have the 'psyche' to do something different, to be a dissenter and break with the chain of habit. This mental freedom to look upon an opportunity as a real possibility and not merely as a day dream is something peculiar and by nature rare.

Third, the entrepreneur must accept the role of the dissenter and not be overly influenced by the inevitable opposition to his deviation from the norm. In matters economic, this opposition manifests itself in the groups threatened by the innovation, then in the difficulty in finding cooperation, and finally in the difficulty in winning over consumers.

Thus, Schumpeter sees the role of the entrepreneur in economic development as that of a leader. One who leads workers to produce, consumers to consume and other producers into the same business. The entrepreneur must be the bearer of the mechanisms of change. He must recognize the opportunities made available to him through the business cycles, he must accept the responsibility of carrying out these innovations, and he must accept the task of destroying old businesses.

If successful, he will be rewarded by the ownership of a business—carried on by heirs—until destroyed by a new generation of entrepreneurs.

ROUTINE ENTREPRENEUR: COMMUNICATOR, ORGANIZER, MANAGER

Israel Kirzner, in his book Competition and Entrepreneurship, aligns himself with Schumpeter as an economist who breaks with the traditional price theory and its almost exclusive emphasis on static equilibrium. In the traditional neoclassical economic analysis, the market system consists of choosing the quantities and qualities of commodities and factors to be bought and sold and the prices at which these transactions are to be carried out. Thus, the emphasis is on the prices and quantities and, in particular, on these prices and quantities as they would emerge under equilibrium conditions. This emphasis on market equilibrium, however, is where Kirzner expresses his dissatisfaction with the traditional price theory. He feels it is not this relationship between equilibrium prices and quantities or the relationships over time of disequilibrium prices and quantities which represent the theory of price. Rather, it is more useful to look to price theory to help understand how decisions of individual participants in a market interact to generate market forces which compel changes in prices, outputs, methods of production and in allocation of resources. It is this interaction between market participants—identified as consumers, entre-producers and resource owners—which Kirzner labels as a market process.

The market process is set in motion by the initial results of

market-ignorance of the market participants. Ignorant in the sense that market opportunities were not exploited because they were either not immediately recognized or not successfully implemented. As the market process unfolds, with one period of market ignorance followed by another in which ignorance has been somewhat reduced, each buyer or seller revises his bids and offers in the light of his newly acquired knowledge of the alternative opportunities which those to whom he may wish to sell, or from whom he may wish to buy, can expect to find elsewhere in the market.

It is within this interaction of market participation in which Kirzner emphasizes the role of the entrepreneur. His analysis will be used to define the role of the routine entrepreneur. The entrepreneur plays the role of the great communicator—gathering information and communicating it to the other market participants which they themselves are unable to obtain. The competition among the entrepreneurs will move them to buy from lower price sellers, and sell to high-price buyers. Gradually, the competition will serve to inform all market participants of a correct estimate of the prices at which each is willing to buy and sell.

Entrepreneur. Kirzner sees entrepreneurship and competition as two sides of the same coin: that entrepreneurial activity is always competitive and competitive activity is always entrepreneurial. Both are inseparable and indispensable entities within the framework of the market process. The entrepreneur's role is to be alert to new opportunities and to communicate new information to other market participants. This inherently competitive process manifests itself in

price and quality adjustments toward an equilibrium or through commodity adjustment, change in technology, or the organization of industry.

It is at this point that Kirzner's concept of the entrepreneur differs from Joseph Schumpeter's in one important and basic respect. Schumpeter's entrepreneur acts to disturb an existing equilibrium situation. Entrepreneurial activity disrupts the continuing circular flow. The entrepreneur is pictured as initiating change and as generating new opportunities. Although each burst of entrepreneurial innovation leads eventually to a new equilibrium situation, the entrepreneur is seen as a disequilibrating, rather than as an equilibrating, force.

By contrast, Kirzner's treatment of the entrepreneur emphasizes the equilibrating aspects of his role. He sees the situation as one of inherent disequilibrium rather than of equilibrium--as one churning with opportunities for desirable changes rather than as one of placid evenness. The changes the entrepreneur initiates are always towards equilibrium, brought about in response to existing pattern of mistaken decisions and missed opportunities. The entrepreneur, says Kirzner, brings into mutual adjustment those elements which resulted from prior market ignorance.

Thus one pictures Schumpeter's entrepreneur as an exogenous force descending on the calm waters of circular flow in an almost apocalyptic manner--lifting the economy from one state of equilibrium to another through 'creative destructionism'. In contrast, Kirzner's entrepreneur sees no such placid circular flow, but a market process

already churning with opportunities. His entrepreneur plays a quieting role, bringing the market towards equilibrium by enlightening the sources of ignorance.

In both concepts, the entrepreneur must be alert to the unexploited opportunities. But for Schumpeter the entrepreneur must have the ability to break away from routine, to destroy existing structures, to move the system away from the circular flow of equilibrium. To Kirzner, the entrepreneur must have the ability to see opportunities whose existence means the evenness of circular flow is illusory, to respond to existing tension and to provide corrections.

For Schumpeter, entrepreneurship is reserved for the brilliant, imaginative, daring and resourceful innovators. For Kirzner, the entrepreneur is more routine - one who simply recognizes that doing something different may more accurately anticipate the actual opportunities and may be more rewarding to him.

Economic Development. Schumpeter saw economic development as utterly dependent on the entrepreneur. Development consisted of creative destructionism fueled by innovative energy with innovators followed by imitators. These disruptive stages manifested itself in long-run economic development by a process of destroying the old and creating the new. Kirzner sees development through short-run movements as much as long-run. Both the entrepreneur and the imitator play the role of moving about within the dynamic market process - responding to the individual consumer's or producer's change in values. Thus, as a particular society evolves, values and choices and

human actions change creating market gaps or ignorance. The entrepreneur bridges these gaps creating a spiral effect of short-run movements towards equilibrium and towards economic development.

CONTEMPORARY STUDIES OF ENTREPRENEURSHIP

In his own book, Kilby tried to bring the various definitions together by outlining the Thirteen Roles of the Entrepreneur:

Entrepreneur as Organizer

1. Perception of market opportunities
2. Gaining command over scarce resources
3. Purchasing inputs
4. Marketing of the product and responding to competition
5. Dealing with the public bureaucracy
6. Management of human relations within the firm
7. Management of customer and supplier relations
8. Financial management
9. Production management
10. Acquiring and overseeing assembly of the factory

Entrepreneur as Innovator

11. Industrial engineering
12. Upgrading processes and product quality
13. Introduction of new production techniques and products

In recent years the term entrepreneur has increasingly been identified with the concept of the organizer. The term has been commonly used as a synonym for the firm, or for management in general,

with little regard for special "entrepreneurial" qualities. Soltow noted in 1968 that the attention on the entrepreneur has spread from the few to the many, from the spectacular individual entrepreneurs making major innovations to an army of lesser innovators and imitators.

Leibenstein focused on the theme of the entrepreneur as organizer in his book on General X-Efficiency Theory and Economic Development. Leibenstein defined X-inefficiency as the difference between the actual output and the maximum output. The role of the entrepreneur is to organize the factors of production in such a way that minimizes the gap between the two levels of output. Thus, Leibenstein sees a clear role for an entrepreneur as a manager within a well-established and even successful firm. His entrepreneur does not require the brilliant daring innovator described by Schumpeter--although he agrees this role exists. Rather, Leibenstein's entrepreneur is more similar to the one described by Kirzner as one who simply recognizes that opportunities exist within the current structure. Leibenstein claims that an entrepreneur can limit his innovative ideas to management technique and market knowledge. His entrepreneur plays a role in recognizing opportunities which exist due to X-inefficiencies within a firm. He can use his innovative ideas in limiting the sources of X-inefficiencies--by correcting interpersonal problems, by improving internal communications, by ensuring the steady flow of information among the different units of production.

Drucker, in contrast, is one of the few contemporary writers who has continued to develop the Schumpeterian theme of the entrepreneur

as an innovator. In his 1985 book entitled Innovation and Entrepreneurship: Practices and Principles, Drucker defined the entrepreneur as one who sees change as the norm and as healthy. Usually, the entrepreneurs do not bring about the change themselves. But they always search for change, respond to it, and exploit it as an opportunity. The insider perceives these changes as threats and clings to practices that are rapidly becoming dysfunctional and obsolete. Thus, it is the outsiders or "dissenters" who take advantage of these new opportunities and who become the leaders in the new, developing industries.

The abstract nature of the entrepreneur makes it difficult if not impossible to analyze by traditional empirical methods. But, as Baumol noted, one can examine what can be done to encourage entrepreneurial activity. This can be done by considering not the means which the entrepreneur employs or the process by which he arrives at decisions, but by examining the determinants of entrepreneurial activity. These determinants and the concepts of entrepreneurial climate will now be discussed in the final sector.

ENTREPRENEURIAL CLIMATE

A major objective of any state economic development program is to provide the proper "climate" for economic growth. Fosler has defined the notion of "climate" in terms of economic development as follows: "Business climate" traditionally has referred narrowly to business costs, some of which (e.g. unemployment, compensation, taxes, and regulation) are affected by state action. A broader concern with the supporting elements that benefit enterprises (such as education, universities, and good public services) is implied in the notion of "economic climate". The idea of an "entrepreneurial climate" takes elements of both the business and economic climate (costs and supports) and adds a less tangible element of attitude and social culture that encourages innovation, risk-taking and aggressive business acumen.

In the past, the notion of business climate was used by state development programs to focus on recruiting large firms from out of state and on retaining large firms in state. This was done by such conventional methods as providing financial and tax incentives, grants for job training, and infrastructure improvements and relaxation of regulatory laws. However, in many cases these costs reduction measures proved too costly to state revenue sources or even counterproductive.

Currently, a new trend in state development programs is to focus on the notion of entrepreneurial climate. The objective inherent here

is to seek growth through the creation and expansion of businesses, products, markets, services and technologies through innovation. The state role is to invest in support services such as education, research, infrastructure and to target areas that promote or inhibit growth such as fiscal stability, capital availability, quality of life, or regulatory policies.

In general, the determinants involved in the state promotion of entrepreneurial climate can be categorized as follows:

1. Education and Human Resources
2. Technological Resources
3. Financial Resources
4. Infrastructure
5. Quality of Life
6. Fiscal and Tax Policy
7. Regulatory Policy

Each state—either formally or informally, directly or indirectly—seeks to promote a positive entrepreneurial climate as part of its economic development program. The issues and concepts involved in each category and the opinions of various authors are discussed below.

Education and Human Resources. No ingredient of economic development is more fundamental than education. The more educated the people, the stronger and more durable the structure of the economy. Education and job training build an intellectual infrastructure that is necessary for a competitive and productive labor force. Education provides the basic skills necessary to function in today's society and

it provides the job skills necessary to compete in today's information-oriented economy. Education also provides for a diversified labor force that becomes more adaptable to the changing social and economic environment. This, in turn, makes people less resistant to change and innovation. Perhaps most important, education opens the door of opportunity to all members of society, regardless of their social or economic status.

Kuznet and Denison postulated in articles written in the 1960's that the concept of capital and capital formation should be broadened to include investment in health, education and job training. In other words, the concept should include human capital investment. Denison developed an approach to the sources of economic growth which showed that about one-fifth of the economic growth in the United States between 1929-1957 could be attributed to education. He also noted that whereas physical capital contributed almost twice that of education between 1909-1929, the contribution of education to economic growth between 1929-1957 exceeded that of physical capital.

Schultz used these and other studies to show that the supply of entrepreneurial ability was directly related to the amount of educational or human investment. This was due mainly to the fact that an educated labor force was better able to deal with the disequilibrium associated with economic modernization.

Vaughan emphasized Schultz's terms of "human capital investment" when he argued that education and training must be a central part of a state's economic development strategy. Vaughan saw a dual role for state governments: as financier and as information provider. The

government must not only continue its traditional role of funding public schools and higher education, but must also play a major role in financing retraining and redeployment of its work force. Vaughan emphasized, however, that the government funding should not imply government management. The government also could play a major role in providing better information to students on career choices and on the relative performance of educational institutions.

Technological Resources. The relationship between technology and economic growth is virtually unchallenged as a major factor in economic development. The concept of technological resources involves an interdependence among education, research, and entrepreneurship. Education provides the skilled workforce and technical specialist, research provides the new technology, and the entrepreneurs provide the innovation. Together they provide technological innovation that stimulates economic development in three ways: by reorganizing the production process to lower costs or improve productivity; by improving resource allocation or access to existing markets; or by creating new market demand through new products and industries.

Malecki discussed three concepts within the economic studies of technological change and economic development. The first concept deals with the aggregate production functions and the treatment of technological change as a homogeneous process. The second concept concerns the creation of new technology through the process of research and development. The third concept is the diffusion of innovations and their adoption by individual firms. This third

concept involves the issue of entrepreneurship and entrepreneurial climate. The early adoption of innovation requires the element of risk-taking. This element requires an emphasis on developing a proper entrepreneurial climate that promotes the supply of entrepreneurs - such as entrepreneurial role models, availability of venture capital and compatible university resources.

Physical Infrastructure. Education, technical research and public works are the three major determinants of entrepreneurial climate that are within the jurisdiction of state and local government. Transportation networks, water supply and treatment systems and other public works are necessary for economic development. The level and quality of infrastructural investment and the effectiveness of maintenance programs influence the growth potential of a state's economy and its ability to respond to a change in environment.

Recent studies by the Council of State Planning Agency report that the country's infrastructure is on the verge of collapse. Sewer and water systems are overloaded. Bridges and highways are insufficiently maintained. Current government investment in public works is approximately \$45-\$50 billion annually. However, relative investment has been decreasing over the past two decades. Per capita investment in 1970 was \$148.30 compared to \$85.50 in 1982. Investment as a percentage of GNP also declined from 2.9 percent in 1970 to 1.3 percent in 1982. Estimates on the amount of funding needed to repair the nation's infrastructure range from \$75 billion to \$300 billion annually. Maintenance costs on the highway system alone are estimated

at \$500 billion over the next 10 years. Forty-five percent of the nation's bridges need repair at an estimated cost of \$47 billion. Cost estimates for water and sewer systems are \$75 billion, estimates for pollution control devices another \$25 billion.

To meet this "infrastructure crises", Vaughan suggests more innovative approaches to planning and financing that involve a partnership among federal, state and local agencies. He outlined three components for a state development strategy: one, a process for identifying services and facilities that could be built and operated more cheaply by private enterprises; two, a more rigorous capital planning and budgeting process that would help restore some market consideration into infrastructure decisions; and three, changes in financing methods that would include a greater reliance on dedicated revenues and user fees.

Financial Resources. Growth through technical change emphasizes a strategy of education, research and entrepreneurship. Growth through investment emphasizes a strategy of capital accumulation and availability. Eventually, the two strategies must merge since the capacity to translate innovative ideas into productive capacities depends upon the efficacy of the financial institutions. Most capital markets, however, tend to be national or international and beyond the realm of state development programs. Vaughan states that capital markets work fairly well in their decision-making process and sees little need for new sources of capital. However, he noted that capital gaps do exist for some businesses such as start-ups and

expansions. These gaps may result more from a lack of access to capital rather than a lack of capital. Therefore, state officials may need to develop a monitoring role in order to ensure an efficient network among bankers, venture capitalists and business firms.

Quality of Life. The concept of quality is not new in economics. Ricardo made the differences in the quality of land an essential part of his theory on Ricardian rent. Schultz made human abilities and a quality workforce an important part of his human investment theory.

The current concept of quality takes on several new forms. In the past development programs meant a policy of recruitment through lower taxes and lower wages. Today, by contrast, development programs place greater emphasis on business expansion and creation than recruitment. This translates into a greater emphasis on quality -- not only in a quality workforce, but also quality services, quality communication systems, quality airports, quality housing, quality health care and quality cultural activities. This concept of quality of life is an important factor in attracting the small companies and entrepreneurial activities that have become the engines of state economic growth.

Tax and Fiscal Policy. Michael Boskin in a recent article on fiscal environment and entrepreneurship claimed that an environment of inflation, high and rising taxes, and uncertain interest rates is quite inhibitive to the entrepreneurial process. An unstable fiscal and tax environment increases risks, reduces potential returns and discourages research and development.

Inflation and interest rates, however, are the results of national and international policies and events and beyond the control of state governments. Taxation, on the other hand, has been shown in a recent studies including one done by Douglas Booth entitled "Long Waves and Uneven Regional Economic Growth" to have relatively little effect on business location decisions. The other determinants such as the availability of local human and capital resources are more influential in creating an entrepreneurial climate. Still, this does not mean that state tax and fiscal policy has no effect on the economic environment in the state. Vaughan argues that the role of the state should be to stabilize its own fiscal environment through tax structures that ensure consistency in revenues and expenditures. In addition, the state must ensure a balanced tax structure that equitably distributes the tax burden.

Regulation. State regulations are an economic fact of life whose existence are generally accepted. The issue here is not so much regulatory relief but regulatory reform - the difference being that reform deals with the proper administration of regulation. Most state reforms address the issue through traditional methods such as limiting paperwork, providing one-stop services, and reviewing licensing requirements. Of greater concern to entrepreneurs, however, is that regulation should be used to ensure open competition and a flexible market environment. This is generally done through the state financial institutions. Vaughan suggests a review of regulations that restrict the portfolios of state chartered banks, public pension

funds, and other financial institutions.

METHOD OF ANALYSIS

Conceptual Model. The objective of the study is to measure the relationship between entrepreneurship, income and migration. The question to be asked is why. What can be learned by measuring or establishing this relationship. The first answer has to deal with the concept of entrepreneurship and the hunting of the Heffalump. If we can begin to measure entrepreneurship, maybe we can take another step in capturing the concept of entrepreneurship. Once this initial step has been taken, we can narrow our focus towards the issues of entrepreneurship and economic development as defined by Schumpeter and Kirzner. Schumpeter described five elements of entrepreneurship and economic development. The first three elements -- changes in capital, changes in population, and changes in consumer tastes -- constitute change but not development. The other two elements -- change in technology and change in production organization -- constitute development and require entrepreneurial activity. Similarly, Kirzner sees entrepreneurship as manifesting itself through commodity adjustment, change in technology, or the organization of industry.

This brings us to the follow-up answer to our question of why. As described earlier, state development programs in recent years have focused on the concept of entrepreneurship as a means of partially achieving development goals and objectives. This concept of entrepreneurship has gradually evolved into a sort of common ground in the partisan debate over development issues such as capital investment vs. human capital investment; recruitment vs. retention; growth vs.

development, and job creation vs. wealth creation. By measuring the relationship and making a comparative analysis between several states, it is hoped that another step can be taken in determining what constitutes a proper entrepreneurial environment within the concept of state economic development programs.

It is assumed that a proper entrepreneurial environment will see an increase in new business activity. Statistics on new business formations are not readily available for any lengthy span of time. While not all new business formations involve new incorporations, a reasonable assumption is that new incorporations will be positively related to the rate of new business formation. Also it is assumed that entrepreneurial activity within existing firms is positively related to new business incorporations. Annual statistics are available from Dun & Bradstreet on the number of new incorporations by state from 1946 and this data is used as a proxy for all entrepreneurial activity.

The problem of measurement has always hindered studies of economic development and entrepreneurship and may explain why there has been so little empirical research. In an attempt to simplify this complex problem of measurement, we approached the concept of entrepreneurship from the basic economic perspective of supply and demand. A measurable indicator of the demand for entrepreneurs is income. This is based on the fact that economic growth is usually measured in terms of income growth. As income grows the demand for goods and services grows, resulting in an increase in business activity. A measurable indicator of the supply of entrepreneurship is

net migration. As discussed earlier, migration and entrepreneurship have the following determinants in common: income, risk, information and personal characteristics. Thus, this collective group of immigrants forms its own pool of potential entrepreneurs. We have therefore assumed that net in-migration is an indicator of proper entrepreneurial climate.

The framework of our model is established as follows: Business incorporations are a function of state income, national income, and migration. Business incorporations as the dependent variable is an indicator for entrepreneurial activity. The three independent variables are state income, U.S. income and migration rates. State income is an indicator of "domestic demand", or the demand for local entrepreneurship due to state economic growth. U.S. income is an indicator of "export demand", or the demand for local entrepreneurship due to national economic growth. Migration is an indicator of the supply of local entrepreneurship which is caused by the commonly shared determinants of income, risk, information and personal characteristics. Data for income and migration back to 1929 are readily available from government publications.

Empirical Model. In regression analysis involving time-series data, if the regression model includes not only the current but the lagged (past) values of the independent variables, it is called a distributed-lag model. The lag variable is usually an indicator for a lapse in time between the occurrence of the independent variable (cause) and the response from the dependent variable (effect). There are basically three main reasons for the lagged responses:

(1) psychological reasons where people are reluctant to change; (2) technological reasons where a market, for example, may be slow to respond to new research, and (3) institutional reasons where capital markets on an administrative bureaucracy may prevent early adjustments.

Lag distributions are characterized as finite or infinite, depending on the time required for the lag effect to vanish completely. The most popular finite lag distribution is the Almon polynomial lag distribution. In this technique the coefficients of the lagged explanatory variables are assumed to lie on a polynomial of a designated order. This allows for a flexible lag structure with a reduction in the number of parameters to estimate.

The most popular infinite lag distribution is the Koyck geometric

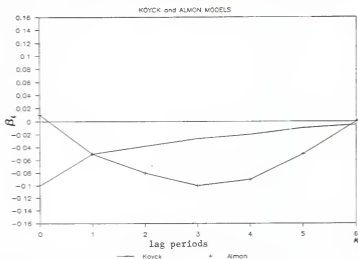


Figure 3.1: Koyck and Almon Models for State Income

distributed lag. In this technique the restricted coefficients of the lagged explanatory variables continually decline implying that the most recent period has the most effect on the dependent variable.

Both the Almon polynomial lag model and the Koyck geometric distributed lag model were estimated and the results compared. Descriptions of both lag models are taken from the textbook entitled Basic Econometrics by Damodar Gujarati. As shown on the previous page in Figure 3.1, the Almon lag with a second degree polynomial gives a polynomial structure while the Koyck lag gives a continually declining structure.

Almon Polynomial Lag Model. To explain the Almon Polynomial Lag Model, let us begin with a distributed lag function with one time-series variable where,

$$(3.1) \quad Y_t = \alpha + \beta_0 x_t + \beta_1 x_{t-1} + \beta_2 x_{t-2} + \dots + \beta_i x_{t-i} + \mu_t$$

Following a theorem in mathematics known as Weierstrass's theorem, Almon assumes that β_i can be approximated by a suitable-degree polynomial in i , the length of the finite lag.

As an illustration we use a quadratic, or second-degree polynomial in i , where

$$(3.2) \quad \beta_i = a_0 + a_1 i + a_2 i^2$$

Substituting (3.2) into (3.1) gives

$$\begin{aligned}
 Y_t = & a + a_0(x_t + x_{t-1} + x_{t-2} + x_{t-3} + \dots x_{t-i}) \\
 (3.3) \quad & + a_1(x_{t-1} + 2x_{t-2} + 3x_{t-3} + \dots x_{t-i}) \\
 & + a_2(x_{t-1} + 4x_{t-2} + 9x_{t-3} + \dots x_{t-i})
 \end{aligned}$$

Rewritten as,

$$(3.4) \quad Y_t = a + a_0 z_{0t} + a_1 z_{1t} + a_2 z_{2t} + \mu_t$$

where,

$$\begin{aligned}
 z_{0t} &= \sum_{i=0}^k x_{t-i} \\
 (3.5) \quad z_{1t} &= \sum_{i=0}^k i x_{t-i} \\
 z_{2t} &= \sum_{i=0}^k i^2 x_{t-i}
 \end{aligned}$$

In this Almon equation Y is regressed on the constructed Z variables, not the original x variables. Once the a 's are estimated from (3.4), the original β 's can be estimated from (3.2) as follows:

$$\begin{aligned}
 (3.6) \quad \beta_0 &= a_0 \\
 \beta_1 &= a_0 + a_1 + a_2 \\
 \beta_2 &= a_0 + 2a_1 + 4a_2 \\
 \beta_3 &= a_0 + 3a_1 + 9a_2
 \end{aligned}$$

Before we apply the Almon technique, we must resolve the following problems: (1) The maximum length of the lag (k years) must

be specified in advance. In practice, the k must be reasonably small --not more than one-fourth the length of the data. (2) Having specified k , the degree of the polynomial (m th degree) should be one more than the turning points in the curve. Hence, with one turning point a second-degree polynomial would be a good approximation. If the number of turning points is not known, a subjective decision on the degree of the polynomial must be made and tested on a trial and error basis. After running a series of regressions, we determine what degree of polynomial is statistically significant and provides a good approximation. (3) The problem of multicollinearity must be taken into account due to the way the Z 's are constructed from the x 's.

The advantages of the Almon method are threefold. First, it provides a flexible method of incorporating a variety of lag structures. Second, there is no problem with a lagged dependent variable as an explanatory variable. Finally, the number of coefficients to be estimated (the α 's) is considerably smaller than the original number of coefficients (the β 's).

Koyck Geometric Distributed Lag Model. The Koyck distributed lag model may be written as

$$(3.7) \quad Y_t = \alpha + \beta_0 x_t + \beta_1 \lambda x_{t-1} + \beta_2 \lambda^2 x_{t-2} + \beta_3 \lambda^3 x_{t-3} \dots + \mu_t$$

where $0 < \lambda < 1$ so that the influence of lagged values of the independent variable x declines geometrically. The value of the lag coefficient depends, apart from the common β_0 , on the value of λ . The

closer to 1, the slower the rate of decline in the coefficient; while the closer it is to zero, the more rapid the decline in the lagged coefficient. In the former case, distant past values of x will exert a sizeable impact on Y_t , whereas in the latter case their influence on Y_t will phase out quickly. This can be seen clearly on the four values of λ given in this analysis.

λ	0	1	2	3	4	5	...	10
.9	0	.9	.81	.72	.65	.59		.34
.75	0	.75	.56	.42	.32	.24		.06
.5	0	.5	.25	.13	.06	.03		.0009
.25	0	.25	.06	.02	.004	.001		.0

To choose among the four models, the result with the smallest mean square error (MSE) is selected.

The problem with the geometric lag is that it forces the first

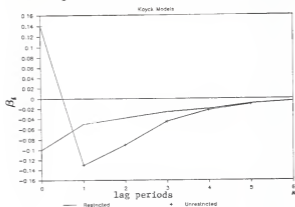


Figure 3.2: Restricted and Unrestricted Koyck Models

lag period to have the greatest weight. We can achieve a more flexible shape by letting the first lag period be unrestricted, where

$$(3.8) \quad Y_t = \alpha + \beta_0 x_t + \beta_1 x_{t-1} + \beta_2 (x_{t-2} + \lambda x_{t-3} + \lambda^2 x_{t-4}) + \mu_t$$

In this study, a flexible geometric lag model described as Model I was used with both the current year and the first lag year left unrestricted. In addition, an adjustment was made on this model and described as Model II. Figure 3.2 on the previous page gives an example of these models when plotted out into a graph. These adjustments will be described in greater detail in the following chapter.

Autocorrelation in Lag Models. A more difficult problem with both the Almon and Koyck lag models is autocorrelation. When autocorrelation is present, the ordinary least-squares parameter estimates are not efficient and the standard error estimates are biased. In this study some of the initial estimates in the Almon model showed an autocorrelation problem. This was corrected by adding a population variable and a time trend variable. In the Koyck model, three states still showed an autocorrelation problem even with the additional variables. In these estimates, the SAS AutoReg procedure was used to correct for autocorrelation.

Advice for Virtuous Living. A journal article authored by Chen, Courtney, and Schmitz described the use of distributed lag models as

looking for a black cat in a dark room. With this in mind, we have outlined the noted econometrician Zvi Griliches' advice for virtuous living and the use of distributed lag models:

- (1) Do not expect the data to give a clear-cut answer about the exact form of the lag. The world is not that benevolent.
- (2) Interpret the coefficients of a distributed lag with great care, since the same reduced form can arise from very different structure.
- (3) Most distributed lag models have almost no or only weak theoretical underpinning. Thus, one has little information as to what type of lag model to accept or reject.
- (4) Finally, not all is hopeless.

DEFINITION OF VARIABLES

Koyck Geometric Lag Model

$$(4.1) \quad Y_t = \alpha_0 + \beta_0 s_t + \beta_1 s_{t-1} + \beta_2 (s_{t-2} + \lambda s_{t-3} + \lambda^2 s_{t-4}) \\ + \beta_3 us_t + \beta_4 us_{t-1} + \beta_5 (us_{t-2} + \lambda us_{t-3} + \lambda^2 us_{t-4}) \\ + \beta_6 m_t + \beta_7 m_{t-1} + \beta_8 (m_{t-2} + \lambda m_{t-3} + \lambda^2 m_{t-4}) \\ + \beta_9 P + \beta_{10} T + \mu_t$$

Almon Polynomial Lag Model

$$(4.2) \quad Y_t = \sum_{i=0}^k \beta_i s_{t-i} + \sum_{i=0}^k \beta_i us_{t-i} + \sum_{i=0}^k \beta_i m_{t-i} + \beta_i P + \beta_i T + \mu_t$$

where,

- Y_t = Business Incorporation Rate
- s_t = real per capita state income
- us_t = real per capita U.S. income
- m_t = migration rate per 100,000 population
- P = state population
- T = time trend variable (1929 = 0)
- λ = designated lambda (.25, .5, .75 .9) for geometric lag
- k = number of lagged periods (years)

Table 3.1: Definition of Variables

RESULTS AND DISCUSSION

The following chapter will be divided into three sections. The first section will be a comparative statistical analysis of the distributed lag models. The second section will be a comparative state-by-state analysis of entrepreneurship, income, and migration. The third section will be a discussion on the concepts and issues involving entrepreneurship and state economic development programs.

Distributed Lag Models.

Both the two flexible geometric lag models and the Almon polynomial model were fitted to the dependent variable of business incorporation rates per 100,000 population. The business incorporation rate was used as a proxy for entrepreneurial activity. Ideally data on business start-ups would have been used as a proxy, but such data are not available for any length of time. While not all new business formations involve new incorporations, a reasonable assumption is that new incorporations will be positively related to the rate of new business start-ups. It is also an assumption in this study that entrepreneurial activity is not limited to new firms but may also include activity within existing firms. The assumption is also made that business incorporations rate will also be positively related to entrepreneurial activity within existing firms. Therefore business incorporations rate is a proxy for entrepreneurial activity. Data on incorporation rates by state from 1948 to 1985 were obtained from Dun and Bradstreet. This use of business incorporation rates was

described previously in an article by Douglas Booth entitled "Long Waves and Uneven Regional Growth". Booth argued that because of this positive relationship, incorporation rates are a good indicator of entrepreneurial activity.

The following independent variables were used in each model: real state per capita income, real U.S. per capita income, migration rates per 100,000 population, state population, and a time trend variable. The three lagged variables included real state per capita income, real U.S. per capita income, and migration rates. The state population and time trend variables were added to help correct for autocorrelation. The time trend variable began at 0 for 1929. All annual data for the independent variables were obtained for the period 1929-1985 (see Appendix B).

Results from Model I are presented for the flexible geometric lag model. A description of the variables is presented in Table 3.1 on page 65.

$$\begin{aligned}
 (4.1) \quad Y_t = & \alpha_0 + \beta_0 s_t + \beta_1 s_{t-1} + \beta_2 (s_{t-2} + \lambda s_{t-3} + \lambda^2 s_{t-4}) \\
 & + \beta_3 u_t + \beta_4 u_{t-1} + \beta_5 (u_{t-2} + \lambda u_{t-3} + \lambda^2 u_{t-4}) \\
 & + \beta_6 m_t + \beta_7 m_{t-1} + \beta_8 (m_{t-2} + \lambda m_{t-3} + \lambda^2 m_{t-4}) \\
 & + \beta_9 P + \beta_{10} T + \mu_t
 \end{aligned}$$

The results for Model I are presented in Table 4.1. The model was run for ten states: Kansas, Arizona, Massachusetts, Pennsylvania, Indiana, Michigan, Minnesota, Tennessee, Arkansas and California. These states were selected because they were the ten states reviewed

in Chapter II and information was readily available on their respective development programs. Estimates for each state were made using four different lambda values: .25, .5, .75 and .9. The same lambda value was used for each variable within the equation. The results for each state were chosen based on the lambda that produced the lowest root mean square error. In three of the states (Indiana, Minnesota and California) the Durbin-Watson indicated that autocorrelation existed and the Yule-Walker estimates were used to correct for this autocorrelation problem. As can be seen from Table 4.1 the R^2 values ranged from .96 to .99. The lambda values varied among the states with the longer lag value (.9) being the most common.

The results from Model II are presented in Table 4.2. Model II is the same geometric lag model as Model I with only one minor adjustment. In Model II the current year U.S. income variable was dropped. This was done because the income variable showed a highly negative relationship to the dependent variable in most states in Model I. This did not make "economic sense" so the variable was dropped to see what effect it might have on the other variables. As might be expected, this had some impact on the remaining U.S. income variables, but no significant effect on the other independent variables.

The results from Model III are presented for the second-degree polynomial lag model. A description of the variables is included in Table 3.1.

$$(4.2) \quad Y_t = \sum_{i=1}^K \beta_i S_{t-i} + \sum_{i=1}^K \rho_i U_{t-i} + \sum_{i=1}^K \rho_i M_{t-i} + \beta_1 P + \beta_1 T + \mu_t$$

The results from Model III are presented in Table 4.3. Each state was run for length of lags 5 through 9. The results again were chosen based on root mean square error. None of the states in this model were corrected for autocorrelation. As can be seen from Table III the R^2 values ranged from .94 to .98. The lagged years varied among the states with the shorter lag periods (lag = 5 years) being the most common. Model III also provided the more significant results based on the t-ratios. This was probably due to the fact that the Almon model was less restrictive and provided results for each lagged year.

Comparative Analysis of Entrepreneurship, Income and Migration

Two states were chosen as the basis for our comparative analysis: Kansas and Arizona. Kansas was chosen for the obvious reasons. Arizona was chosen because it provided the clearest contrast to Kansas. The comparative analysis will be based on the three lagged variables: state income, U.S. income and migration. After comparisons are made between Kansas and Arizona, the states will be grouped for each lagged variable and analyzed according to statistical significance (see tables 4.4 to 4.6). Graphs from the polynomial lag for Kansas and Arizona are included in this chapter for illustration purposes. The graphs for the other two models for Kansas and Arizona are included in Appendix A along with graphs for the remaining eight states.

Entrepreneurship and State Income.

Coefficients for state income for both the state of Kansas and Arizona are statistically significant in all three models (see table 4.4). There was also no significant difference in the shapes of the plotted coefficients among the three models. Very significant, however, was the contrast in the shape of the plotted coefficients between the two states. Arizona showed a sharp inverse relationship between state income and business incorporations. Kansas showed a modest positive relationship. This would tend to support the hypothesis that Arizona has a pool of managers that shifts into entrepreneurship during stress periods while Kansas does not.

Michigan and Pennsylvania showed results similar to Kansas with significant positive coefficients for state income. California and Massachusetts showed results similar to Arizona with significantly negative coefficients. Four states showed insignificant results for state income: Indiana, Minnesota, Tennessee, and Arkansas.

Entrepreneurship and U.S. Income

Coefficients for U.S. income showed different results between the two states (see table 4.5). Kansas showed significant results in the first year tested but insignificant results for every year thereafter. Arizona showed exactly the opposite response. The first two years were insignificant, but the later lagged years showed significant results. The two states also offered an interesting contrast again in the shape of the plotted coefficients. Arizona showed a strong

positive relationship between U.S. income and business incorporations. Kansas showed a modest negative relationship. This would tend to support the hypothesis that Arizona has an "export" oriented economy while Kansas has an agriculturally based economy dependent on the export of raw materials and the import of finished goods.

Massachusetts and California showed results similar to Arizona with significant positive coefficients for U.S. income. Pennsylvania and Michigan showed significant negative coefficients. The five states which showed insignificant coefficients for U.S. income included Kansas, Indiana, Minnesota, Tennessee and Arkansas.

Entrepreneurship and Migration

Results for migration were unique in that there were significantly different results among the three models (see table 4.6). For Kansas, migration gave insignificant results for both geometric lag models but significant results for the polynomial lag model. For Arizona, migration gave insignificant results for Model I except for the current year but significant results for Model II and for the polynomial lag model. The different results make any interpretation difficult but some observations can be made. Arizona showed a strong positive relationship between migration and business incorporations during the current year with a quick drop in the lag structure after the first year. Ditto for Kansas to a somewhat lesser degree. This seems to indicate that business incorporations are the chicken and migration is the egg. People migrate to where the jobs are and generally these jobs have been shown to be of the more mobile

nature such as managerial or professional according to the survey on migration done by Greenwood.

Massachusetts, California and Pennsylvania showed results similar to Arizona with significant positive coefficients for migration. Indiana, Michigan, Tennessee, and Arkansas showed results similar to Kansas with significant negative coefficients. Only Minnesota showed insignificant results.

Entrepreneurship and Economic Development - A Brief Discussion of the Concepts and Issues.

In this brief discussion of the concepts and issues, one should keep in mind the reference made earlier of looking for a black cat in a dark room. That analogy was made in an article on price and production response. The room would seem to be even darker when one is dealing with aggregate data and the more abstract concepts of migration and entrepreneurship. All is not hopeless, however, as Griliches said and a few clear observations can be made.

The most important observation is that the results seem to support the hypothesis that entrepreneurship, income and migration are connected. Each lagged variable showed strongly significant results when regressed against the dependent variable of business incorporations. The results became even more significant when all three models showed similar results. Analyzing these results in the context of the information in the Greenwood survey, one can make some additional "spin-off" observations that were alluded to earlier in the introduction. First, in-migration seems to establish a post de facto

'entrepreneurial pool' within selected states. During periods of state economic stress or U.S. economic growth, this pool was tapped and an entrepreneurial-managerial shift occurred, leading to a response of increased entrepreneurial activity. Arizona, Massachusetts, and California showed inverse relationships between state income and entrepreneurial activity. This would seem to indicate that when people in these states were faced with unemployment or other forms of stress, they chose to start up their own business instead of migrating out of the state. In direct contrast to this the states of Kansas, Michigan and Pennsylvania showed an opposite response. Though not presented in this study, these states have shown a strong net out-migration rate during periods of stress (see Appendix B).

Based on our review of state development programs, what are some of the general characteristics that affect an individual state's response. Those states that seem to have the strongest, positive response of entrepreneurial activity have one thing in common: a flexible, industrial base. Some states such as Arizona and California seem to have achieved this base naturally, or to borrow a phrase used earlier, through war and sunshine. Massachusetts, Michigan, Pennsylvania and Indiana responses are consistent with the long wave theory of economic growth postulated by Douglas Booth in his article on "Long Waves and Uneven Regional Growth". The essence of that view is that regions experienced long waves of sustained rapid economic growth followed by relatively lengthy periods of slow economic growth or decline. The stress period leads to more industrial flexibility

through a managerial - entrepreneurial shift which sets the stage for a return to a more rapid rate of growth. Massachusetts returned to the growth state in the early 1980's. Pennsylvania, Michigan and Indiana may be entering that stage in the late 1980's.

In retrospect, all of the state economic development programs discussed earlier seemed to lead to the establishment of a flexible, industrial base. This may have been a direct or indirect objective, formal or informal, explicit or implicit. Either way, it seems safe to say at this stage that one common objective of state development programs is to establish a flexible, industrial base. Tennessee is attempting to do that through recruitment. Massachusetts, Pennsylvania, Michigan and Indiana through retention: Arizona and California through expansion. The agricultural states of Kansas, Arkansas, and Minnesota have a more difficult task considering they don't have a traditional industrial base to build on.

Again, the emphasis remains the same. Each state has a unique situation, with unique problems and therefore unique solutions to achieve economic development objectives. Thus, it may be difficult to imitate successful development programs in other states. Along the same line, it may be premature to reject some strategies for economic development such as recruitment. In some agriculturally-oriented states, it may be necessary to recruit traditional industries before expanding into flexible industries.

Table 4.1

MODEL 1

VARIABLES	KANSAS ARIZONA		MASS PENN		MINN WICH		MICH TENN		ARK CAL	
INTERCEPT	-330 (-2.8)**	66 (1.7)*	331 (4.93)**	270 (4.7)**	158 (2.09)**	279 (7.9)**	488 (4.1)**	-351 (-3.7)**	-580 (-3.5)**	-74 (-1.4)
STATE INCOME	0.05 (2.5)**	0.14 (2.3)**	0.05 (1.83)*	0.027 (.82)	0.007 (.37)	-0.004 (-.29)	0.03 (1.4)	-0.02 (-.58)	0.05 (1.4)	0.22 (4.8)**
STATE INCOME (lag 1)	0.03 (1.7)*	-0.13 (-1.9)*	0.08 (1.99)	0.007 (.25)	-0.01 (-.86)	0.026 (1.3)	-0.005 (-.25)	-0.05 (-1.3)	0.01 (.47)	0.07 (1.8)*
STATE INCOME (lag 2-5)	0.04 (4.3)**	-0.09 (-2.1)**	-0.03 (-1.51)	0.03 (2.1)**	-0.004 (-.41)	0.028 (3.9)**	-0.027 (-1.4)	0.02 (1.1)	-0.01 (-.85)	0.08 (2.3)**
U.S. INCOME	-0.07 (-2.6)**	-0.12 (-1.5)	-0.02 (-.89)	-0.002 (-.07)	0.018 (.57)	0.024 (.82)	-0.009 (-.32)	0.05 (1.4)	-0.01 (-.43)	-0.2 (-3.6)
U.S. INCOME (lag 1)	-0.01 (-.37)	0.04 (.8)	-0.00 (-2.08)	-0.01 (-.48)	0.017 (.54)	-0.06 (-1.6)	-0.02 (-.96)	0.02 (.63)	-0.02 (-.62)	-0.14 (-2.8)
U.S. INCOME (LAG 2-5)	-0.009 (-.91)	0.11 (2.5)**	0.05 (2.86)**	-0.04 (-2.4)**	0.009 (.66)	-0.02 (-2.8)**	0.03 (1.8)*	-0.02 (-.8)	0.008 (.05)	-0.15 (-2.8)**
MIGRATION	0.003 (1.67)*	0.009 (2.8)**	0.007 (4.24)**	0.003 (1.9)*	0.001 (.77)	0.005 (1.88)*	0.005 (2.2)**	0.003 (2.1)**	0.006 (.44)	0.003 (1.2)
MIGRATION (lag 1)	0.003 (.2)	0.002 (1.39)	0.003 (2.29)**	0.002 (2.1)**	0.0004 (.21)	0.002 (1.22)	0.003 (1.8)*	-0.002 (-1.8)*	-0.0009 (-.75)	0.003 (.96)
MIGRATION (lag 2-5)	0.001 (1.5)	0.001 (.601)	0.02 (1.54)	-0.0006 (-1.2)	-0.001 (-1.2)	-0.001 (-1.03)	0.0003 (.25)	-0.003 (-3.8)**	-0.001 (-2.1)**	0.006 (2.01)**
POPULATION	0.13 (2.1)**	0.27 (5.7)**	-0.09 (-5.82)**	-0.03 (-0.95)**	-0.07 (-2.7)**	-0.07 (-10)**	-0.26 (-6.9)**	0.11 (4.2)**	0.14 (4.4)**	-0.06 (-4.95)**
TIME TREND	-1.2 (-2.5)**	-9.4 (-2.2)**	3.09 (2.81)**	5.7 (5.8)**	4.17 (1.9)*	12.9 (8.8)**	13.3 (4.9)**	-2.8 (-2.1)**	3.94 (4.4)**	40.4 (5.4)**
R2	0.98	0.94	0.98	0.98	0.97	0.98	0.99	0.98	0.98	0.94
D.W.	1.6	1.55	1.55	1.53	1.12	1.13	0.85	1.6	1.5	0.93
LAMBDA	0.9	0.5	0.5	0.9	0.75	0.9	0.75	0.9	0.9	0.25
BD01 MSE	9.4	20.4	7.9	5.1	8.2	8.21	8.4	6.8	9.7	15.5
T-SKAT0	-0.8	-1.1	-3.89	-0.81	-2.5	-1.9	-3.5	-0.6	-1.1	-3.01

#tula-Welker Estimates

** Statistically significant at 5 percent level

* Statistically significant at 10 percent level

Table 4.1: Results from Geometric Lag for Ten States

Table 4.2

MODEL:11										
VARIABLES	KANSAS ARIZONA		MASS PENN		MIND NICH		MICHN TENN		ARK NCAL	
INTERCEPT	-389 (-3.1)**	38 (.92)	354 (5.7)**	270 (4.8)**	170 (2.4)**	275 (8.06)**	487 (3.9)**	-341 (-3.6)**	-306 (-4.2)**	-63 (-.95)
STATE INCOME	0.02 (1.16)	0.08 (2.1)**	0.03 (1.9)*	0.02 (1.9)*	0.01 (1.8)*	0.004 (.38)	0.02 (2.3)**	0.02 (1.6)*	0.04 (1.8)*	0.07 (2.5)**
STATE INCOME (lag 1)	0.05 (2.3)**	-0.12 (-2.1)**	0.1 (3.3)**	0.006 (.28)	-0.01 (-.8)	0.02 (1.1)	-0.066 (-1.3)	-0.06 (-1.4)	0.02 (.7)	0.07 (1.4)
STATE INCOME (lag 2-5)	0.04 (.6)**	-0.1 (-3.5)**	-0.03 (-1.8)*	0.05 (2.16)**	-0.02 (-1.1)	0.02 (3.9)**	-0.02 (-1.7)*	0.02 (1.1)	-0.01 (-1.1)	0.07 (1.75)*
U.S. INCOME										
U.S. INCOME (lag 1)	-0.06 (-2.4)**	0.014 (.23)	-0.11 (-3.9)**	-0.01 (-.5)	0.02 (.78)	-0.04 (-1.6)*	-0.02 (-.9)	0.03 (.8)	-0.03 (-.98)	-0.16 (-2.6)**
U.S. INCOME (LAG 2-5)	-0.005 (-.46)	0.11 (3.4)**	0.05 (2.4)**	-0.04 (-2.5)**	0.02 (1.1)	-0.02 (-2.8)**	0.04 (2.6)**	-0.02 (-.8)	0.003 (.24)	-0.12 (-2.1)**
MIGRATION	0.002 (.77)	0.007 (2.2)**	0.000 (4.8)**	0.003 (2.04)**	0.002 (.9)	0.005 (2.1)**	0.005 (2.3)**	0.003 (1.8)*	0.0005 (.36)	0.006 (1.8)*
MIGRATION (lag 1)	-0.0003 (-.18)	0.005 (2.3)**	0.003 (2.5)**	0.002 (2.3)**	0.001 (.7)	0.002 (1.17)	0.003 (1.9)*	-0.002 (-2.1)**	-0.0008 (-.7)	0.006 (1.8)*
MIGRATION (lag 2-5)	0.001 (1.4)	0.003 (2.3)**	0.002 (2.02)**	-0.0007 (-1.3)	-0.001 (-.7)	-0.001 (-.9)	0.0005 (.42)	-0.003 (-3.8)**	-0.001 (-2.1)**	0.007 (2.2)**
POPULATION	0.16 (2.3)**	0.29 (6.6)**	-0.1 (-6.7)**	-0.03 (-6.1)**	-0.07 (-3.2)**	-0.07 (-10)**	-0.26 (-4.8)**	0.12 (1.5)**	0.14 (4.6)**	-0.06 (-3.8)**
TIME TREND	-7.13 (-3.1)**	-13 (-3.6)**	3.3 (5.2)**	5.6 (6.8)**	4.7 (2.5)**	13.3 (9.6)**	13.3 (4.8)**	-2.7 (-1.9)*	3.8 (4.6)**	46.9 (3.9)**
R90	0.98	0.96	0.98	0.98	0.98	0.98	0.99	0.98	0.98	0.95
D.V.	1.6	1.4	1.68	1.5	1.21	1.2	0.7	1.5	1.5	0.97
LAMBDA	0.9	0.75	0.5	0.9	0.25	0.9	0.75	0.9	0.9	0.5
ROOT RISE	10.3	19.9	7.8	5.1	7.1	8.4	6.4	6.9	9.7	15.5
T-RATIO	-1.1	-1.6	-0.5	-0.8	-2.9	-1.9	-4.2	-0.8	-1.1	-5.01

#Dole-Mellor Estimates

** Statistically significant at 5 percent level

* Statistically significant at 10 percent level

Table 4.2: Results from Geometric Lag for ten states without current year U.S. Income Variable.

Table 4.3

ALUM DISTRIBUTED LAG											
VARIABLES	KANSAS ARIZONA		MISS FEIN		IND	NICH	KIMM	TEHR	ARK	CAL	
	(lag9)	(lag5)	(lag7)	(lag5)	(lag5)	(lag8)	(lag5)	(lag5)	(lag9)	(lag5)	
INTERCEPT	-662 (-5.21)**	30 (.65)	355 (3.6)**	201 (5.1)**		169 (3.06)**	367 (11.1)**	483 (4.8)**	-379 (-3.9)**	-671 (-3.56)**	103 (1.62)**
POPULATION	0.29 (4.31)**	0.27 (4.91)**	-0.1 (-4.2)**	-0.036 (-6.3)**		-0.0721 (-3.82)**	-0.103 (-16.7)**	-0.255 (-5.6)**	0.116 (4.7)**	0.234 (5.36)**	-0.11 (-5.6)**
TIME TREND	-15.06 (-7.3)**	-10.3 (-2.5)**	2.71 (1.6)**	6.13 (6.01)**		4.378 (2.99)**	15.57 (10.7)**	13.39 (5.6)**	-2.73 (-1.9)**	6.88 (6.85)**	73.05 (5.7)**
STATE(0)	0.0411 (3.4)**	0.01 (.26)	0.062 (7.1)**	0.017 (.76)		-0.0125 (-1.07)	0.0367 (4.6)**	0.0267 (1.07)	-0.048 (-1.34)	0.026 (1.47)	0.22 (5.96)**
STATE(1)	0.0419 (4.3)**	-0.0512 (-1.78)**	0.037 (7.1)**	0.028 (1.9)**		-0.0075 (1.08)	0.0366 (5.99)**	0.0056 (.32)	-0.022 (-.97)	0.014 (.91)	0.13 (5.6)**
STATE(2)	0.0416 (5.03)**	-0.0888 (-3.3)**	0.017 (3.8)**	0.036 (2.3)**		-0.0037 (-.52)	0.0401 (6.7)**	-0.0087 (-.54)	-0.002 (-.11)	0.0045 (.29)	0.07 (3.6)**
STATE(3)	0.0402 (5.1)**	-1.025 (-4.1)**	0.0017 (.27)	0.0299 (2.1)**		-0.0011 (-.15)	0.04 (7.1)**	-0.016 (-1.62)	0.009 (.36)	-0.003 (-1.20)	0.02 (1.14)
STATE(4)	0.0377 (4.8)**	-0.0923 (-4.2)**	-0.008 (-1.1)	0.026 (1.8)**		0.0003 (.05)	0.035 (6.9)**	-0.017 (-1.23)	0.013 (.57)	-0.008 (-1.57)	-0.01 (-1.53)
STATE(5)	0.0361 (4.4)**	-0.0581 (-4.2)**	-0.013 (-1.8)**	0.016 (1.7)**		0.0007 (.17)	0.0361 (6.7)**	-0.012 (-1.34)	0.01 (.68)	-0.012 (-1.82)	-0.024 (-1.5)
STATE(6)	0.0294 (4.1)**		-0.014 (-2.2)**				0.0294 (6.4)**			-0.014 (-1.99)	-0.021 (-2.1)**
STATE(7)	0.0237 (3.79)**		-0.0096 (-2.5)**				0.02 (6.23)**			-0.013 (-1.12)	
STATE(8)	0.0169 (3.53)**						0.011 (6.1)**			-0.011 (-1.22)	
STATE(9)	0.0089 (3.32)									-0.006 (-1.29)	
US(0)	-0.0137 (-1.36)	-0.0251 (-.43)	-0.038 (-3.1)**	-0.0016 (-.07)		0.0257 (1.5)	-0.022 (-2.5)**	-0.035 (-1.32)	0.052 (1.36)	-0.007 (-.47)	-0.27 (-6.4)**
US(1)	-0.013 (-1.67)**	0.0425 (1.32)	-0.019 (-2.6)**	-0.0232 (-1.6)**		0.0169 (1.9)**	-0.033 (-4.7)**	-0.006 (-.33)	0.027 (1.52)	-0.006 (-1.49)	-0.19 (-6.6)**
US(2)	-0.0122 (-1.7)**	0.0635 (3.2)**	-0.004 (-.7)	-0.0361 (-2.5)**		0.0099 (1.47)	-0.041 (-6.5)**	0.013 (.45)	0.008 (.35)	-0.0061 (-1.46)	-0.12 (-4.8)**

VARIABLES	KANSAS	ARIZONA	MASS	PCMA	MD	NECH	MINN	TENN	ARK	CAL
US(3)	-0.0112 (-1.56)	0.0997 (3.81)**	0.0662 (.8)	-0.0401 (-2.4)**	0.0647 (.99)	-0.045 (-7.4)**	0.023 (1.56)	-0.003 (-.12)	-0.0094 (-.41)	-0.07 (-2.5)**
US(4)	-0.0991 (-1.32)	0.0912 (3.7)**	0.013 (1.4)	-0.0355 (-2.3)**	0.0013 (.16)	-0.044 (-7.6)**	0.024 (1.4)	-0.008 (-.34)	-0.0048 (-.35)	-0.03 (-1.9)
US(5)	-0.0688 (-1.13)	0.0579 (3.6)**	0.015 (1.75)*	-0.022 (-2.2)**	-0.0023 (-.04)	-0.043 (-7.5)**	0.017 (1.52)	-0.007 (-.44)	-0.0041 (-.31)	-0.007 (-.29)
US(6)	-0.0073 (-.98)		0.014 (1.92)*			-0.038 (-7.3)**			-0.0033 (-.27)	0.003 (.23)
US(7)	-0.0057 (-.86)		0.009 (2.1)**			-0.028 (-7.1)**			-0.0025 (-.24)	
US(8)	-0.004 (-.78)					-0.016 (-7.1)**			-0.0017 (-.22)	
US(9)	-0.002 (-.71)								-0.0009 (-.21)	
MIGRATE(0)	-0.0026 (-1.7)*	0.0065 (2.5)**	0.005 (2.9)**	0.0038 (2.9)**	0.0007 (.33)	-0.0004 (-.29)	0.0037 (1.36)	0.001 (1.37)	-0.0018 (-2.5)**	0.0007 (.33)
MIGRATE(1)	-0.0024 (-2.3)**	0.0052 (3.2)**	0.003 (2.1)**	0.0019 (2.1)**	-0.0004 (-.31)	-0.0017 (-1.22)	0.002 (1.14)	-0.0005 (-.58)	-0.0018 (-3.3)**	0.002 (1.6)*
MIGRATE(2)	-0.0022 (-3.2)**	0.0041 (2.7)**	0.001 (1.1)	0.0036 (.91)	-0.0017 (-1.15)	-0.0026 (-2.1)*	0.0007 (.64)	-0.002 (-2.4)*	-0.00182 (-3.7)*	0.003 (2.6)*
MIGRATE(3)	-0.0019 (-4.1)**	0.0031 (2.3)**	0.0003 (.27)	-0.0002 (-.58)	-0.0016 (-1.8)*	-0.0032 (-2.6)**	-0.0001 (-.16)	-0.0029 (-3.1)**	-0.00172 (-3.7)**	0.0035 (2.5)**
MIGRATE(4)	-0.0017 (-3.8)**	0.0022 (2.1)**	-0.0005 (-.4)	-0.0006 (-2.1)**	-0.0015 (-2.1)**	-0.0034 (-3.3)**	-0.0005 (-.81)	-0.0008 (-3.4)**	-0.0015 (-3.3)**	0.0034 (2.4)**
MIGRATE(5)	-0.0015 (-2.9)**	0.0014 (1.5)	-0.0009 (-1.09)	-0.0005 (-3.1)**	-0.0009 (-2.2)**	-0.0034 (-3.6)**	-0.0004 (-1.14)	-0.0018 (-3.5)**	-0.0014 (-2.9)**	0.0028 (2.2)**
MIGRATE(6)	-0.0012 (-2.27)**		-0.001 (-1.6)*			-0.003 (-3.8)**			-0.0012 (-2.6)**	0.0016 (2.1)**
MIGRATE(7)	-0.0009 (-1.82)*		-0.0007 (-2.8)**			-0.0023 (-3.9)**			-0.0009 (-2.3)**	
MIGRATE(8)	-0.0006 (-1.52)					-0.0015 (-3.9)**			-0.0006 (-2.14)**	
MIGRATE(9)	-0.003 (-1.31)								-0.0003 (-1.99)**	
R90	0.98	0.95	0.97	0.97	0.96	0.98	0.97	0.97	0.98	0.96
SW	2.12	1.29	1.38	1.62	1.17	1.41	0.94	1.79	1.97	1.47
ROOT MSE	7.49	21.65	8.3	5.1	7.9	6.5	8.9	7.2	8.1	14.4

** Statistically significant at the 5 percent level

* Statistically significant at the 10 percent level

Table 4.3: Results from Polynomial Lag for ten states

Table 4.4

STATE INCOME	POSITIVE COEFFICIENTS			NEGATIVE COEFFICIENTS			SIGNIFICANT COEFFICIENTS			
	KANSAS (lag9)	MICH (lag8)	PEKK (lag5)	ARIZONA (lag5)	CAL (lag6)	MISS (lag7)	IND (lag5)	MINN (lag5)	TEXA (lag5)	ARK (lag9)
STATE(0)	0.0411 (3.4)**	0.0347 (4.6)**	0.017 (.76)	0.01 (.28)	0.22 (5.98)**	0.062 (7.1)**	-0.0125 (-1.07)	0.0267 (1.07)	-0.049 (-1.34)	0.036 (1.47)
STATE(1)	0.0419 (4.3)**	0.0304 (5.09)**	0.026 (1.9)*	-0.0512 (-1.78)*	0.13 (5.6)**	0.037 (7.1)**	-0.0075 (1.08)	0.0056 (.32)	-0.022 (-.77)	0.014 (.91)
STATE(2)	0.0416 (5.03)**	0.0401 (6.7)**	0.0304 (2.3)**	-0.0888 (-5.3)**	0.07 (3.6)**	0.017 (3.8)**	-0.0037 (-.52)	-0.0087 (-.54)	-0.002 (-.11)	0.045 (.29)
STATE(3)	0.0402 (5.1)**	0.04 (7.1)**	0.0299 (2.1)**	-1.025 (-4.1)**	0.02 (1.74)	0.0017 (.27)	-0.0011 (-.15)	-0.016 (-1.02)	0.009 (.36)	-0.003 (-.20)
STATE(4)	0.0377 (4.8)**	0.038 (6.9)**	0.024 (1.8)*	-0.0923 (-4.2)**	-0.01 (-.53)	-0.008 (-1.1)	0.0003 (.05)	-0.017 (-1.23)	0.013 (.57)	-0.008 (-.57)
STATE(5)	0.0361 (4.4)**	0.0341 (6.7)**	0.014 (1.7)*	-0.0581 (-4.2)**	-0.026 (-1.5)	-0.013 (-1.8)*	0.0007 (.17)	-0.012 (-1.34)	0.01 (.68)	-0.012 (-.82)
STATE(6)	0.0294 (4.1)**	0.0286 (6.4)**			-0.021 (-2.1)**	-0.014 (-2.2)**				-0.014 (-.99)
STATE(7)	0.0237 (3.79)**	0.02 (6.23)**				-0.0096 (-2.5)**				-0.013 (-1.12)
STATE(8)	0.0169 (3.53)**	0.011 (6.1)**								-0.011 (-1.22)
STATE(9)	0.0089 (3.32)									-0.006 (-1.29)

Table 4.5

U.S. INCOME	POSITIVE COEFFICIENTS			NEGATIVE COEFFICIENTS		SIGNIFICANT COEFFICIENTS				
	ARIZONA (lag5)	MISS (lag7)	CAL (lag5)	PEKK (lag5)	MICH (lag8)	KANSAS (lag9)	IND (lag5)	MINN (lag5)	TEXA (lag5)	ARK (lag9)
US(0)	-0.0231 (-4.3)	-0.038 (-5.1)**	-0.27 (-6.4)**	-0.0016 (-.07)	-0.602 (-2.5)**	-0.0137 (-1.36)	0.0257 (1.5)	-0.025 (-1.32)	0.052 (1.36)	-0.007 (-.47)
US(1)	0.0425 (1.32)	-0.019 (-2.8)**	-0.19 (-6.6)**	-0.0232 (-1.8)*	-0.033 (-4.7)**	-0.013 (-1.87)*	0.0169 (1.9)*	-0.006 (-.33)	0.027 (1.12)	-0.106 (-4.9)
US(2)	0.0035 (2.2)**	-0.004 (-.7)	-0.12 (-4.8)**	-0.0361 (-2.5)**	-0.041 (-6.5)**	-0.0122 (-1.7)*	0.0099 (1.47)	0.013 (.65)	0.008 (.35)	-0.0661 (-4.6)
US(3)	0.0997 (3.81)**	0.0042 (.8)	-0.07 (-2.5)**	-0.0401 (-2.4)**	-0.045 (-7.4)**	-0.0112 (-1.56)	0.0047 (.39)	0.023 (1.16)	-0.003 (-.12)	-0.0654 (-4.1)
US(4)	0.0912 (3.7)**	0.013 (1.4)	-0.03 (-1.19)	-0.0355 (-2.3)**	-0.046 (-7.6)**	-0.0101 (-1.32)	0.0013 (.16)	0.024 (1.4)	-0.008 (-.34)	-0.0048 (-.35)
US(5)	0.0579 (3.6)**	0.015 (1.75)*	-0.007 (-.29)	-0.022 (-2.2)**	-0.043 (-7.5)**	-0.0088 (-1.13)	-0.0023 (-.34)	0.017 (1.52)	-0.007 (-.46)	-0.0041 (-.31)
US(6)	0.014 (1.92)*	0.003 (.23)			-0.038 (-7.3)**	-0.0073 (-.98)				-0.0033 (-.27)
US(7)	0.009 (2.1)**				-0.008 (-7.1)**	-0.0057 (-.86)				-0.0025 (-.24)
US(8)					-0.016 (-7.1)**	-0.004 (-.78)				-0.0017 (-.22)
US(9)										-0.0009 (-.21)

Table 4.6

MIGRATION	POSITIVE				NEGATIVE					INSIGNIFICANT
	COEFFICIENTS				COEFFICIENTS					COEFFICIENTS
VARIABLES	ARIZONA	MISS	PENNA	CAL	KANSAS	IND	MICH	TEXAS	ARK	MINN
	(lag5)	(lag7)	(lag5)	(lag6)	(lag9)	(lag5)	(lag8)	(lag5)	(lag9)	(lag5)
MIGRATE(0)	0.0065 (2.3)**	0.005 (2.9)**	0.0038 (2.9)**	0.0027 (.35)	-0.0026 (-1.7)*	0.0007 (.33)	-0.0094 (-2.9)**	0.001 (1.37)	-0.0018 (-2.5)**	0.0037 (1.36)
MIGRATE(1)	0.0052 (3.2)**	0.003 (2.1)**	0.0019 (2.1)**	0.002 (1.6)*	-0.0024 (-2.3)**	-0.0004 (-.31)	-0.0017 (-1.22)	-0.0005 (-.58)	-0.00187 (-3.3)**	0.002 (1.14)
MIGRATE(2)	0.0041 (2.7)**	0.001 (1.11)	0.0006 (.91)	0.003 (2.6)**	-0.0022 (-3.2)**	-0.0017 (-1.15)	-0.0026 (-2.1)*	-0.002 (-2.4)*	-0.00182 (-3.7)**	0.0007 (.64)
MIGRATE(3)	0.0031 (2.3)**	0.0003 (.27)	-0.0002 (-.58)	0.0035 (2.5)**	-0.0019 (-4.1)**	-0.0016 (-1.8)*	-0.0032 (-2.8)**	-0.0029 (-3.1)**	-0.00172 (-3.7)**	-0.0021 (-.16)
MIGRATE(4)	0.0022 (2.1)**	-0.0025 (-.4)	-0.0006 (-2.1)**	0.0034 (2.4)**	-0.0017 (-3.8)**	-0.0015 (-2.1)**	-0.0034 (-3.3)**	-0.0028 (-3.4)**	-0.0015 (-3.3)**	-0.0005 (-.81)
MIGRATE(5)	0.0014 (1.5)	-0.0009 (-1.09)	-0.0005 (-3.1)**	0.0028 (2.2)**	-0.0015 (-2.9)**	-0.0009 (-2.2)**	-0.0034 (-3.6)**	-0.0018 (-3.5)**	-0.0014 (-2.9)**	-0.0006 (-1.14)
MIGRATE(6)		-0.001 (-1.6)*		0.0016 (2.1)**	-0.0012 (-2.27)**		-0.003 (-3.8)**	-0.0012 (-2.6)**		
MIGRATE(7)		-0.0007 (-2.04)**			-0.0009 (-1.82)*		-0.0023 (-3.9)**	-0.0009 (-2.3)**		
MIGRATE(8)					-0.0006 (-1.52)		-0.0013 (-3.9)**	-0.0006 (-2.14)**		
MIGRATE(9)					-0.003 (-1.31)			-0.0035 (-1.99)**		

Table 4.4 to 4.6: Results for state income, U.S. income and migration variables for ten states

STATE INCOME POLYNOMIAL LAG

KANSAS

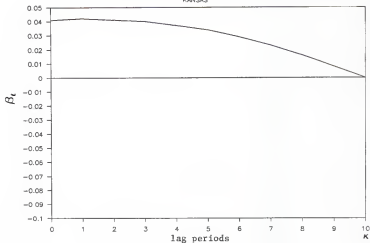


Figure 4.1: Kansas State Income Polynomial Lag

STATE INCOME POLYNOMIAL LAG

ARIZONA

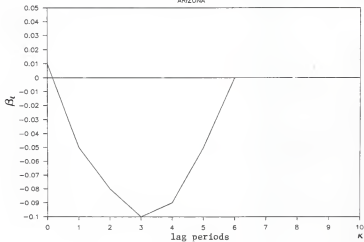


Figure 4.2: Arizona State Income Polynomial Lag

U.S. INCOME POLYNOMIAL LAG

KANSAS

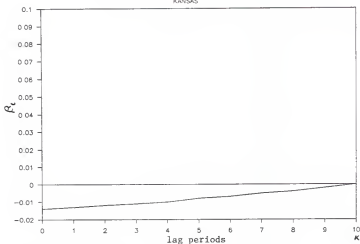


Figure 4.3: Kansas/U.S. Income Polynomial Lag

U.S. INCOME POLYNOMIAL LAG

ARIZONA

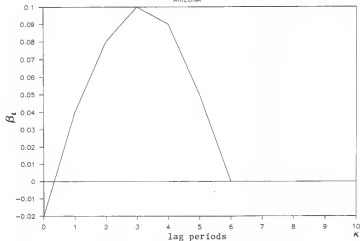


Figure 4.4: Arizona/U.S. Income Polynomial Lag

MIGRATION POLYNOMIAL LAG

KANSAS

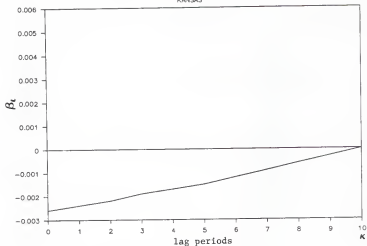


Figure 4.5: Kansas/Migration Polynomial Lag

MIGRATION POLYNOMIAL LAG

ARIZONA

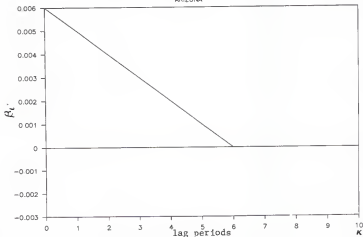


Figure 4.6: Arizona/Migration Polynomial Lag

CONCLUSION

Over fifty years ago Justice Oliver Holmes made his observation about the advantage of making social experiments within the insulated chambers of the individual states. A similar trend seems to be developing today. Massachusetts seeks innovative methods in an attempt to distribute its rapid growth. Arkansas seeks innovative methods in restructuring its educational system. Michigan, Pennsylvania and Indiana seek innovative methods in restructuring their industrial base. Each state in this study was selected because it is seeking innovative solutions to economic development problems. The key word here is innovative -- innovative methods, innovative programs, innovative solutions. This emphasis on innovation is why so many of the new development programs have placed a special emphasis on the concepts of entrepreneurship and entrepreneurial climate.

Schumpeter described two elements that require the role of an entrepreneur -- change in technology and change in production organization. Kirzner similarly described the entrepreneur's role with three elements -- commodity adjustment, change in technology, or change in organization of industry. Four states showed a positive relationship between migration and new business incorporations: Arizona, Massachusetts, Pennsylvania and California. Each of these states reflects on the described elements of entrepreneurship. Arizona went through a stage of commodity adjustment. The state of copper, cotton, citrus and cattle has become a state of hi-tech. Massachusetts went through a stage of change in technology. During

the post-war period Massachusetts was a state dependent on heavy industry. During the 1980's Massachusetts has successfully made the transition from heavy industry to hi-tech. Pennsylvania has begun the transition of a change in organization of industry. Pennsylvania's Ben Franklin Partnership program focuses on a strategy of entrepreneurship and innovation and seeks to reform the management within its large industrial base. Throughout its history, California seems to reflect all three elements noted by Kirzner. California has gone through the commodity adjustment stage from gold to agriculture to oil. It has gone through the technology change with its prewar dependence on heavy industry to its postwar emphasis on hi-tech. It has also reflected the change in organization. Large corporations dominate the defense industries in Southern California while smaller businesses dominate the hi-tech manufacturing industry in the Silicon Valley. Thus, this overall focus on entrepreneurship and entrepreneurial climate seemed to be justified as a means of partially achieving development goals and objectives.

Where does the state of Kansas fit within the framework of this analysis on entrepreneurship and entrepreneurial climate. For state income Kansas showed a positive relationship between entrepreneurship and state income and was grouped with Michigan and Pennsylvania. This seems to indicate that entrepreneurial activity is not a response to state economic stress. Both Michigan and Pennsylvania have sought to focus on their industrial base and seek solutions through a reorganization of their industries. Is this an option for Kansas? For U.S. income Kansas showed an insignificant response. This seems

to indicate that Kansas is not an "export" oriented state and is dependent on the production of raw commodities. Arizona was in this position several years ago but made the transition to export industries. Is Kansas in the position to do something similar? For migration Kansas showed an inverse relationship between migration and entrepreneurship along with the states of Indiana, Michigan, Tennessee, and Arkansas. This seems to indicate that there is not an "entrepreneurial climate" in these states. This is in contrast to states that can be classified as having an entrepreneurial climate: Arizona, California, Massachusetts and Pennsylvania.

A general observation to be made here is that quality of life may be an important factor in the concept of "entrepreneurial climate". Massachusetts and Pennsylvania are noted for their excellence in higher education. Arizona and California are noted for their climate and sunshine. It is obviously impossible for most states to imitate the sunshine or climate of Arizona and California. It may be equally difficult to imitate the tradition of excellence in higher education over limited period of time. Most development programs require public support in one form or another--usually through state funding. Thus the programs are designed to provide short-term results in order to maintain this support. This is usually done at the expense of long-term development. Quality of life implies qualities that require long-term development--such as excellence in education; or qualities that can't be recreated--such as climate. If this is the case, developing an entrepreneurial climate that is comparable to Arizona or Massachusetts may be beyond the scope of most development programs.

However, most development programs remain in a Schumpeterian circular flow--imitators instead of innovators. The development of an entrepreneurial climate within the state's political and academic sector may be a prerequisite to developing an entrepreneurial climate within the business sector. It must be remembered in any state development program that entrepreneurship is not limited to the business sector. There are important roles for entrepreneurs--as defined by Schumpeter and Kirzner--within the political and academic sectors of the respective states.

APPENDICES

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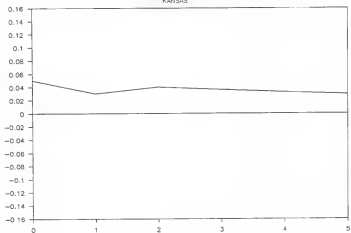
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APPENDIX A

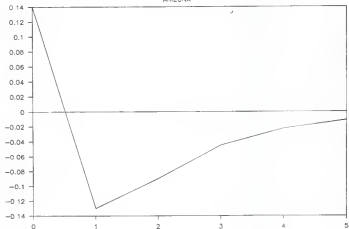
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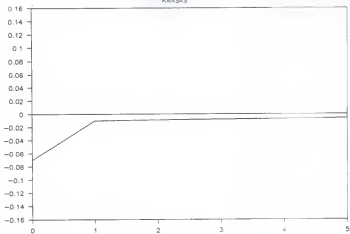
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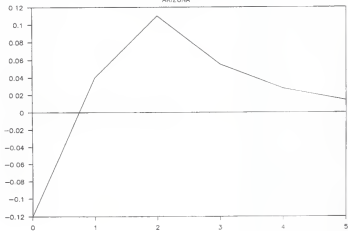
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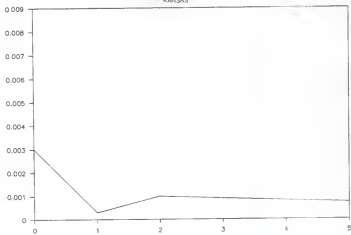
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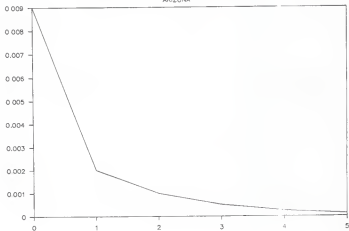
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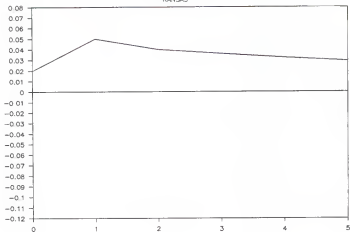
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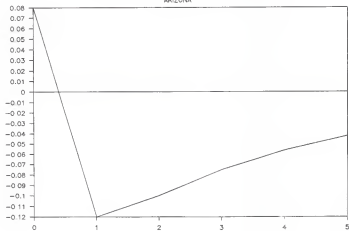
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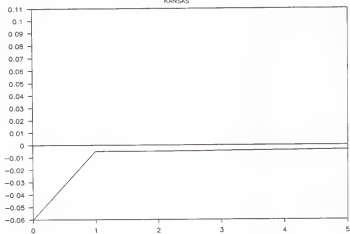
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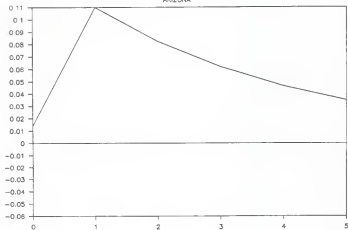
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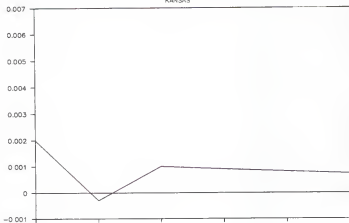
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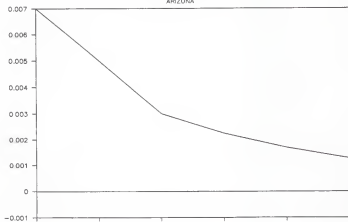
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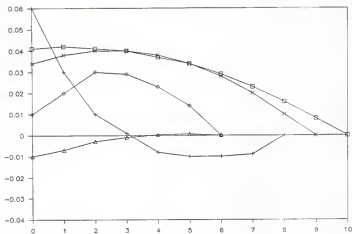


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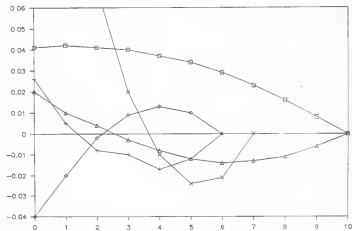
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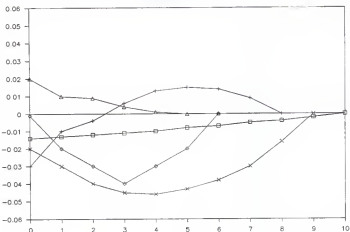


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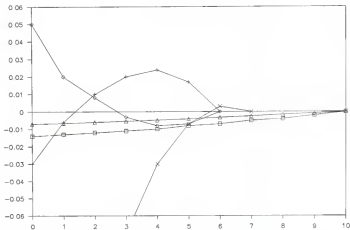


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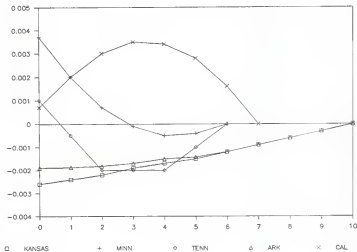
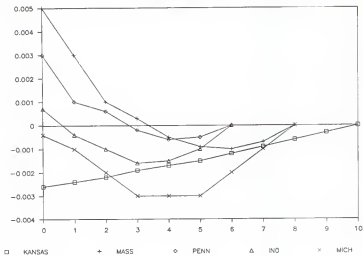


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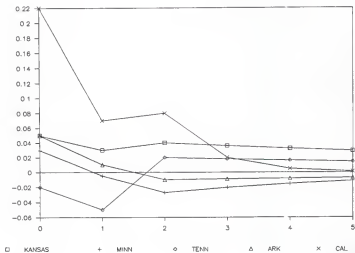
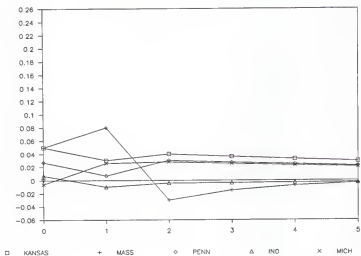


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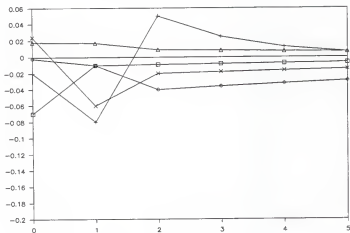
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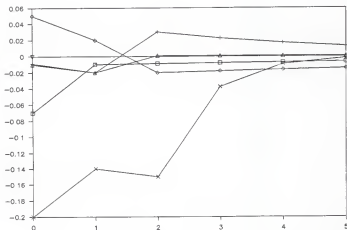
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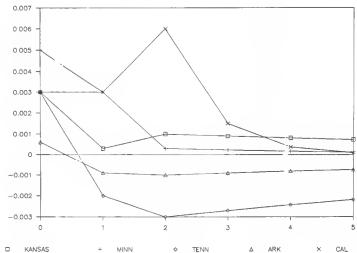
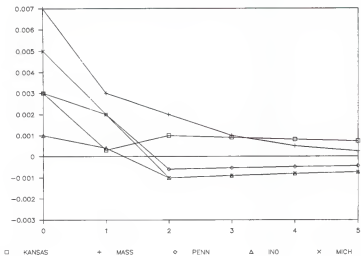


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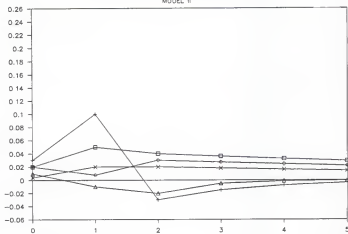
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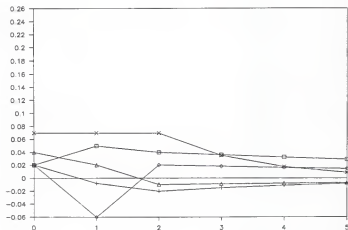


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MODEL II



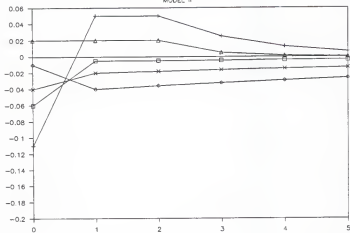
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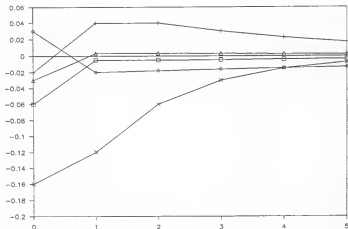
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MODEL II



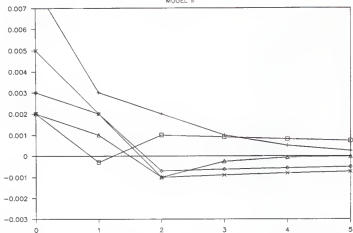
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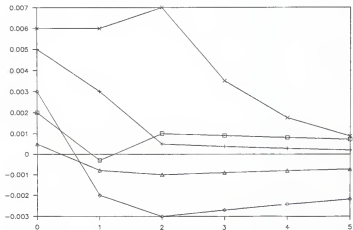
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MIGRATION GEOMETRIC LAG

MODEL II



□ KANSAS + MASS ○ PENN Δ IND x MICH



□ KANSAS + MINN ○ TENN Δ ARK x CAL

APPENDIX B

NEW BUSINC RATE PER 100,000 POP

YEAR	MASS	PENN	INDIANA	MICH	MINN	KAHNAS	TENN	ARK	ARIZONA	CALIF
1946	117	48	56	70	61	42	48	31	109	98
1947	86	42	54	60	59	46	42	36	107	83
1948	71	31	41	49	46	33	33	30	103	74
1949	64	27	36	36	40	27	29	24	76	59
1950	66	28	37	39	41	31	30	26	84	65
1951	63	28	35	37	31	31	24	22	102	62
1952	66	32	32	34	35	29	30	24	94	71
1953	75	33	41	46	44	29	36	24	84	77
1954	77	37	43	57	48	39	39	23	118	90
1955	84	41	50	62	56	49	44	32	125	111
1956	84	40	48	60	54	47	44	30	117	106
1957	89	40	46	48	51	34	44	38	140	95
1958	91	44	45	54	62	49	50	43	157	97
1959	99	58	59	63	77	62	66	63	207	126
1960	98	52	62	60	72	57	66	56	190	95
1961	101	54	63	60	69	62	65	66	156	88
1962	104	56	59	65	64	56	61	59	159	86
1963	99	56	60	63	68	55	62	61	150	88
1964	98	60	67	71	74	64	65	87	139	88
1965	98	61	72	74	74	64	70	98	131	78
1966	99	58	72	74	71	71	68	95	124	70
1967	98	65	67	73	76	70	70	101	128	72
1968	109	71	75	89	94	82	85	90	146	84
1969	130	83	83	109	115	95	101	120	183	115
1970	136	71	90	94	109	94	94	107	207	103
1971	151	80	98	92	112	97	99	111	215	111
1972	160	88	120	102	123	113	108	116	227	112
1973	155	85	114	107	131	124	110	132	230	120
1974	137	86	109	102	131	132	101	138	212	109
1975	143	91	97	110	136	143	110	136	192	109
1976	152	95	114	125	148	160	121	144	227	143
1977	164	106	127	145	163	173	138	169	274	193
1978	167	112	142	168	177	173	142	157	320	207
1979	188	118	160	170	185	195	153	161	317	240
1980	197	125	146	180	172	204	143	172	307	242
1981	219	114	153	186	177	206	165	176	353	253
1982	206	113	151	189	180	184	160	167	330	217
1983	219	123	162	204	198	220	168	180	358	219
1984	244	134	171	215	219	210	163	208	394	236
1985	272	150	180	241	220	194	183	223	405	232

PER CAPITA PERSONAL INCOME, BY STATE - 1929-86

YEAR	MASS	PENN	INDIANA	MICH	MINN	KANSAS	TENN	ARK	ARIZONA	CALIF	U.S.
1938	677	553	449	535	474	382	280	236	436	714	509
1939	719	589	495	591	497	383	295	246	461	741	539
1940	768	627	541	649	509	421	316	253	468	803	575
1941	888	752	706	799	587	546	410	338	537	951	693
1942	1050	909	897	1032	764	839	521	476	748	1180	876
1943	1217	1101	1092	1276	896	1025	674	542	839	1470	1059
1944	1297	1208	1177	1338	972	1129	808	639	985	1564	1161
1945	1332	1237	1217	1273	1062	1111	876	702	1063	1516	1192
1946	1345	1277	1167	1274	1133	1075	827	730	1059	1653	1212
1947	1376	1352	1264	1419	1205	1268	869	745	1121	1719	1294
1948	1468	1454	1389	1493	1340	1270	906	863	1179	1743	1387
1949	1417	1416	1290	1443	1227	1210	873	778	1165	1665	1330
1950	1633	1541	1512	1701	1410	1443	994	825	1330	1852	1496
1951	1793	1697	1694	1874	1548	1578	1081	927	1566	2044	1652
1952	1866	1773	1766	1962	1592	1783	1137	992	1662	2167	1733
1953	1910	1870	1930	2161	1665	1722	1229	1035	1654	2204	1804
1954	1893	1804	1795	2031	1671	1762	1222	1044	1623	2172	1785
1955	2026	1889	1894	2183	1729	1732	1281	1142	1677	2313	1876
1956	2146	2032	1991	2214	1783	1795	1368	1194	1767	2419	1975
1957	2247	2137	2028	2229	1874	1882	1419	1207	1802	2489	2045
1958	2283	2134	2006	2165	1988	2074	1448	1280	1861	2508	2068
1959	2369	2200	2128	2264	2016	2076	1532	1378	1947	2648	2161
1960	2453	2247	2198	2338	2110	2159	1544	1376	2030	2704	2216
1961	2533	2260	2229	2311	2182	2232	1624	1497	2065	2764	2265
1962	2637	2371	2368	2467	2237	2323	1703	1564	2160	2867	2370
1963	2716	2440	2473	2611	2351	2403	1786	1655	2210	2973	2458
1964	2825	2599	2603	2810	2418	2527	1893	1785	2268	3111	2590
1965	2985	2749	2858	3094	2651	2733	2067	1888	2382	3234	2770
1966	3200	2982	3056	3314	2866	3000	2267	2106	2547	3447	2987
1967	3448	3173	3167	3438	3047	3141	2405	2228	2743	3640	3170
1968	3747	3402	3419	3775	3296	3397	2634	2417	3010	3956	3436
1969	4234	3784	3679	4055	3731	3518	2935	2600	3436	4485	3808
1970	4514	4042	3771	4133	3995	3770	3151	2827	3789	4746	4051
1971	4769	4253	4057	4457	4207	4090	3396	3055	4071	4958	4296
1972	5129	4627	4400	4919	4548	4565	3745	3368	4420	5360	4665
1973	5566	5106	5054	5494	5349	5238	4236	3912	4851	5836	5182
1974	6043	5640	5383	5862	5741	5642	4615	4331	5240	6433	5648
1975	6467	6102	5769	6191	6103	6095	4923	4582	5408	6951	6073
1976	7004	6700	6444	6990	6604	6639	5456	5056	5893	7646	6651
1977	7632	7338	7116	7866	7437	7266	5947	5589	6436	8373	7294
1978	8458	8110	7903	8738	8242	8163	6691	6306	7367	9411	8136
1979	9444	8995	8692	9575	9226	9290	7389	6945	8316	10526	9033
1980	10612	9893	9248	10165	10062	9941	8027	7470	9161	11603	9919
1981	11787	10869	10103	10867	11017	11207	8804	8333	10063	12723	10949
1982	12751	11425	10339	11098	11549	11863	9187	8624	10268	13236	11841
1983	13807	11949	10821	11857	12076	12224	9726	9117	10998	13927	12098
1984	15298	12738	11845	13001	13402	13137	10635	9955	11969	15097	13114
1985	16393	13540	12431	14003	14147	13907	11284	10553	12818	16036	13907

MIGRATION: COMPONENTS OF CHANGE RATE PER 100,000

(thousands)

YEAR	MASS	PENN	INDIANA	MICH	MINN	KANSAS	TENN	ARK	ARIZONA	CALIF
1938	-181	990	-382	831	-402	-1357	178	155	0	1550
1939	-1278	-1067	-235	1125	217	-1535	1149	-154	609	1607
1940	-1547	372	-234	1514	-72	-2629	648	-1544	1572	2392
1941	549	-1092	116	596	-2662	-3093	168	-3307	5850	5118
1942	-1171	-2600	-259	-983	-4089	-1381	-2629	-2114	9329	5987
1943	-3346	-4350	-1093	-608	-5556	3199	-304	-4521	11698	5548
1944	-2521	-2667	-2184	-384	-2578	-5906	-4021	-5138	-14725	4500
1945	-552	-2675	-874	-748	-592	-3752	-1529	-2864	-3821	4204
1946	5350	6274	4867	5113	5123	2856	4471	-851	5263	3134
1947	2150	1039	456	1534	1004	-1601	1886	1047	3936	1177
1948	1505	822	995	211	526	1226	31	-2043	1966	1252
1949	168	730	565	-80	686	2308	-704	-327	0	-1076
1950	-2838	-152	-305	515	1134	1461	-211	1887	1852	281
1951	-1697	-1625	2393	-400	-1296	256	89	-2209	1401	2676
1952	-1269	-838	-289	496	-1023	-152	-2148	-4951	4751	2810
1953	2143	310	-741	748	-984	-802	-2621	-4831	3803	3494
1954	978	166	281	1571	321	637	-566	-4556	1822	2314
1955	-1741	-73	802	1153	189	812	-29	-2319	3242	1416
1956	-1002	-921	516	562	525	-330	-1640	-2758	4179	2691
1957	-467	-1415	-44	-555	-641	-1128	-1019	58	4178	2250
1958	419	-253	-305	-483	-453	-747	-375	-1796	3772	2634
1959	938	418	-867	-425	-119	-648	-28	171	3251	2282
1960	-349	-230	-171	-779	0	-459	168	725	2498	1002
1961	-154	-544	-339	-913	-521	-547	28	55	4057	2072
1962	-535	-1350	-1312	-946	-515	-543	352	1867	2319	1777
1963	-763	-53	84	298	-597	-631	373	576	1649	2148
1964	357	-17	-124	269	-622	-359	472	566	581	1154
1965	-206	189	245	898	-252	-178	-52	-616	191	1090
1966	-372	-231	502	729	-334	309	0	51	624	289
1967	111	-402	80	337	193	-176	280	-101	613	569
1968	-184	119	-59	-300	164	262	-127	-252	960	172
1969	-256	-59	195	57	135	689	-25	0	354	432
1970	3234	-576	520	225	1892	-3913	-2369	-4472	3324	1657
1971	279	252	190	78	467	-623	1295	1775	5063	988
1972	35	-109	207	-144	-103	-89	1319	1734	4532	500
1973	104	-362	37	-154	-26	44	675	1360	4473	762
1974	-364	-404	-205	-241	-179	-353	997	1380	3419	770
1975	-521	59	-578	-647	153	0	912	2176	1707	1012
1976	-453	-303	-204	-493	202	261	1127	-138	1662	1080
1977	-383	-319	-18	-240	-100	172	1085	1086	2268	1065
1978	-314	-396	146	-184	-75	0	780	936	2624	1331
1979	-296	-269	-164	-248	49	-128	987	616	3566	937
1980	-331	-497	-947	-810	-221	-254	65	44	1950	824
1981	-104	-261	-911	-1476	-170	84	280	-130	1918	1323
1982	-540	-328	-784	-1711	-363	41	21	-260	1553	1126
1983	-87	-244	-822	-1369	-531	0	-43	215	1444	1091
1984	173	-311	-273	-563	-312	-205	317	426	1920	881
1985	52	-539	-455	-374	-143	-408	315	85	2537	1199
1986	-257	-59	-509	-44	-214	-285	229	42	2501	1360

POPULATION

(thousands)

YEAR	MASS	PENN	INDIANA	MICH	MINN	KANSAS	TENN	ARK	ARIZONA	CALIF
1946	4449	9771	3657	5867	2713	1751	3064	1762	646	9925
1947	4604	10014	3729	6064	2789	1749	3182	1815	686	10194
1948	4719	10217	3820	6175	2850	1795	3236	1811	712	10467
1949	4772	10410	3896	6270	2916	1863	3267	1835	726	10499
1950	4686	10507	3937	6407	2997	1916	3315	1908	756	10677
1951	4654	10461	4096	6497	3010	1950	3372	1901	785	11134
1952	4650	10503	4148	6650	3030	1977	3352	1838	842	11635
1953	4806	10662	4182	6822	3050	1994	3319	1780	894	12251
1954	4910	10817	4264	7066	3113	2042	3359	1734	933	12746
1955	4882	10939	4363	7285	3172	2093	3415	1725	987	13133
1956	4891	10972	4458	7467	3240	2119	3415	1704	1053	13713
1957	4929	10954	4529	7569	3274	2128	3434	1733	1125	14264
1958	5010	11058	4583	7667	3313	2142	3471	1726	1193	14880
1959	5117	11234	4613	7767	3366	2160	3522	1756	1261	15467
1960	5160	11329	4673	7833	3422	2180	3577	1792	1321	15870
1961	5219	11392	4730	7893	3470	2183	3622	1806	1407	16497
1962	5263	11355	4736	7933	3513	2215	3673	1853	1471	17072
1963	5344	11424	4799	8058	3531	2231	3718	1875	1521	17668
1964	5448	11519	4856	8187	3558	2217	3771	1897	1556	18151
1965	5502	11620	4922	8357	3592	2209	3798	1894	1584	18585
1966	5535	11664	4999	8512	3617	2206	3822	1899	1614	18858
1967	5594	11681	5053	8630	3659	2200	3859	1901	1646	19176
1968	5618	11741	5093	8696	3703	2197	3878	1902	1682	19394
1969	5650	11741	5143	8781	3758	2216	3897	1913	1737	19711
1970	5689	11801	5195	8882	3806	2236	3926	1923	1775	19971
1971	5738	11886	5253	8974	3853	2247	4014	1972	1896	20346
1972	5760	11908	5302	9029	3870	2256	4095	2019	2008	20585
1973	5781	11891	5338	9078	3889	2266	4147	2059	2124	20869
1974	5774	11871	5362	9118	3904	2269	4214	2101	2223	21174
1975	5758	11906	5366	9118	3933	2281	4276	2160	2285	21538
1976	5744	11897	5389	9129	3965	2301	4347	2170	2346	21936
1977	5738	11894	5426	9171	3989	2321	4423	2209	2425	22352
1978	5736	11879	5470	9218	4015	2336	4486	2243	2515	22836
1979	5738	11888	5501	9266	4050	2351	4560	2271	2636	23257
1980	5737	11864	5490	9262	4076	2364	4591	2286	2718	23668
1981	5753	11878	5490	9211	4112	2389	4639	2300	2816	24265
1982	5744	11882	5485	9119	4133	2410	4666	2308	2898	24783
1983	5762	11894	5476	9056	4146	2428	4691	2326	2977	25308
1984	5792	11890	5493	9062	4164	2442	4729	2347	3073	25780
1985	5819	11863	5500	9088	4192	2449	4767	2360	3193	26358
1986	5832	11888	5504	9145	4214	2460	4803	2372	3319	26981

ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT:
A COMPARATIVE STUDY OF TEN STATES

by

DENNIS B. VOBORIL

B.S., University of Kansas, 1977

AN ABSTRACT OF A MASTER'S THESIS

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MASTER OF SCIENCE

Department of Agricultural Economics

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Manhattan, Kansas

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ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT:
A COMPARATIVE STUDY OF TEN STATES

Economic Development programs are receiving added attention at the state level as individual states seek to compete in today's increasingly competitive economic and political environment. In recent years, some state development programs have focused on the concept of entrepreneurship as a means of partially achieving development goals and objectives. This new emphasis on entrepreneurship has led to a renewed effort in the research and analysis of entrepreneurial activity and its consequences. To date, however, very little economic or empirical analysis has been done on the topic of entrepreneurship.

The objective of this study is to determine the relationship between entrepreneurship, income and migration. The conceptual model was established within the following framework: Business incorporation is a function of state income, national income, and migration. Business incorporations as the dependent variable is an indicator for entrepreneurial activity. The three independent variables are real state income, real U.S. income and migration rates. State income is an indicator of "domestic demand", or the demand for local entrepreneurship due to state economic growth. U.S. income is an indicator of "export demand", or the demand for local entrepreneurship due to national economic growth. Migration is an indicator of the supply of local entrepreneurship which is caused by the commonly shared determinants of income, risk, information and personal characteristics. Data for business incorporation rates are

taken from Dun & Bradstreet for the years 1946-1985. Data on income and migration were taken from government publications for the years 1929-1985. Ten states were used in the study because information was readily available on their development programs. The ten states were Massachusetts, Pennsylvania, Michigan, Indiana, Minnesota, Kansas, Tennessee, Arkansas, Arizona and California.

Results of the study indicate that relationships between entrepreneurship, income and migration vary among the different states. For state income, states that showed an inverse relationship between business incorporations and state income indicates that these states have a pool of managers that shifts to entrepreneurship during periods of stress. For U.S. income, states that showed a positive relationship between business incorporations and U.S. income indicates that these states have an "export" oriented economy. For migration, results indicate that in-migration is an indicator of entrepreneurial climate although migration had no direct impact on business incorporations after the initial year. A general observation to be made is that important determinants of "entrepreneurial climate" include migration, education and quality of life.