



# Survey of Futurist Trends

**FINAL REPORT 507(1)**

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**FEBRUARY 2001**

**Prepared for:**  
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206 South 17th Avenue  
Phoenix, Arizona 85007  
in cooperation with  
U.S. Department of Transportation  
Federal Highway Administration

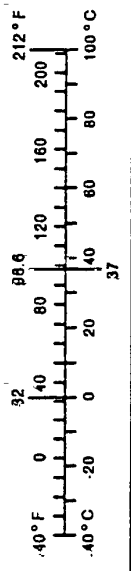
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## Technical Report Documentation Page

1. Report No. FHWA-AZ-00-507(1)		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle  <b>Survey of Futurist Trends</b>				5. Report Date <b>February 2001</b>	
				6. Performing Organization Code	
7. Authors Debra Roubik				8. Performing Organization Report No.	
9. Performing Organization Name and Address  VisionEcon Consulting 5932 W. Bell Rd.#108 Glendale, AZ 85308				10. Work Unit No.	
				11. Contract or Grant No. <b>SPR-PL-1-(57) 507</b>	
12. Sponsoring Agency Name and Address <b>ARIZONA DEPARTMENT OF TRANSPORTATION</b> <b>206 S. 17TH AVENUE</b> <b>PHOENIX, ARIZONA 85007</b>  Project Manager: John Semmens				13. Type of Report & Period Covered	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract <p>According to many economists, the criteria used to pinpoint potential areas of future development have been transformed by the inception of a "New Economy"-- with new economic rules. This report addresses this presumption. First, by probing the literature published by six different world-renowned authors and two business publications that carry out futuristic surveys, a consensus of their ideas was compiled. Then, these ideas were presented to other national and local experts in a survey form. By aggregating the views of the authors, the surveyed experts and the participants of Governor Hull's Arizona Partnership of the New Economy, a list of ten tenets for future economic development was assembled. Lastly, the validity of some of these tenets was tested with statistical methods.</p> <p>The statistical research suggested that the amount of developable land available for growth was still a significant factor in attracting employers and residents. While the strength of that link has lessened—the nation is still not fully emerged in the so-called "New Economy". Corporate tax structure still played a statistical role in growth comparisons between states, whereas it is obviously not a factor intrastate. Yet, the "New Economy" measure of venture capital invested within a community is approaching the importance of corporate tax treatment. And, the new measure of communications "connectability" is rivaling the importance of labor costs and weather amenities. Thus, while the "old" factors of growth such as developable land, corporate tax structure and labor costs can not yet be forsaken; the "new" factors of venture capital and connectability are undoubtedly gaining in importance in economic growth.</p>					
17. Key Words  economic development, economic growth, future trends, New Economy			18. Distribution Statement Document is available to the U.S. public through the National Technical Information Service, Springfield, Virginia 22161		23. Registrant's Seal
19. Security Classification  Unclassified	20. Security Classification  Unclassified	21. No. of Pages  50	22. Price		

# METRIC (SI\*) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS				APPROXIMATE CONVERSIONS TO SI UNITS			
Symbol	When You Know	Multiply By	To Find	Symbol	When You Know	Multiply By	To Find
<b>LENGTH</b>				<b>LENGTH</b>			
in	inches	2.54	centimeters	cm	mm	0.039	inches
ft	feet	0.3048	meters	m	m	3.28	feet
yd	yards	0.914	meters	m	yd	1.09	yards
mi	miles	1.61	kilometers	km	km	0.621	miles
<b>AREA</b>				<b>AREA</b>			
in <sup>2</sup>	square inches	6.452	centimeters squared	cm <sup>2</sup>	mm <sup>2</sup>	0.0016	square inches
ft <sup>2</sup>	square feet	0.0929	meters squared	m <sup>2</sup>	m <sup>2</sup>	10.764	square feet
yd <sup>2</sup>	square yards	0.836	meters squared	m <sup>2</sup>	yd <sup>2</sup>	0.39	square feet
mi <sup>2</sup>	square miles	2.59	kilometers squared	km <sup>2</sup>	ha	2.53	square miles
ac	acres	0.395	hectares	ha			acres
<b>MASS (weight)</b>				<b>MASS (weight)</b>			
oz	ounces	28.35	grams	g	g	0.0353	ounces
lb	pounds	0.454	kilograms	kg	kg	2.205	pounds
T	short tons (2000 lb)	0.907	megagrams	Mg	Mg	1.103	short tons
<b>VOLUME</b>				<b>VOLUME</b>			
fl oz	fluid ounces	29.57	milliliters	mL	mL	0.034	fluid ounces
gal	gallons	3.785	liters	L	L	0.264	gallons
ft <sup>3</sup>	cubic feet	0.0328	meters cubed	m <sup>3</sup>	m <sup>3</sup>	35.315	cubic feet
yd <sup>3</sup>	cubic yards	0.765	meters cubed	m <sup>3</sup>	m <sup>3</sup>	1.308	cubic yards
Note: Volumes greater than 1000 L shall be shown in m <sup>3</sup> .				Note: Volumes greater than 1000 L shall be shown in m <sup>3</sup> .			
<b>TEMPERATURE (exact)</b>				<b>TEMPERATURE (exact)</b>			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C	°C	9/5 (then add 32)	Fahrenheit temperature



These factors conform to the requirement of FHWA Order 5190.1A  
 \*SI is the symbol for the International System of Measurements

## EXECUTIVE SUMMARY

According to many economists, the criteria used to pinpoint potential areas of future development have been altered. They believe the inception of a “New Economy” has brought with it a whole new set of economic rules. This report addresses this presumption. First, by probing the literature published by six different world-renowned authors and two business magazines that carry out futuristic surveys, a consensus of ideas was compiled. Then, these ideas were presented to other national and local experts in survey form. By aggregating the views of the authors, the surveyed experts and the participants of Governor Hull’s Arizona Partnership for the New Economy, a list of ten tenets for future economic development was assembled.

The overwhelming consensus of these sources was that the areas that will become the most successful harvesters of economic growth in the so-called “New Economy” will be those that possess the following attributes:

- ☒ High-quality communications infrastructure
- ☒ Presence of an economic “gardening” planning process
- ☒ Innovative networking alliances within government that increase efficiencies and lower costs
- ☒ Entrepreneurial networking and venture capital organizations
- ☒ Capital-intensive, global, teacher-guided educational systems
- ☒ Cheaper, quicker, smarter transportation systems

To test the statistical validity of these measures, VisionEcon attempted to gather up gauges of these qualities. Unfortunately, due to constraints, only measures of communication “connectability”, venture capital and the educational system’s impact upon test scores could be constructed.

Nonetheless, a statistical dissection of structural employment growth indicated that the amount of developable land available for growth was still a significant factor in attracting employers and residents. In fact, while the strength of that link has lessened from explaining over 37 percent of a state’s employment growth premium (above the national average) to only 27 percent—the results suggest that the nation is still not fully emerged in the so-called “New Economy”. Interestingly, the significance of corporate tax structure has dropped as well, from more than 16 to almost 13 percent. However, a closer examination of the data indicates that the drop in significance is most likely due to a convergence in corporate tax structures across the nation.

Interestingly, the “New Economy” measure of venture capital invested within a community is quickly approaching the importance of corporate tax

treatment, explaining 9 percent of the employment growth differential in the latest business cycle. And, the “new” measure of communications “connectability” (which explains 3.9 percent) is rivaling the importance of labor costs (3.6 percent) and weather amenities (4.1 percent). Thus, while the old factors of growth such as developable land, corporate tax structure and labor costs can not yet be forsaken; the “new” factors of venture capital and connectability are undoubtedly gaining in importance in economic development.

## **The Top Ten Tenets for Economic Development in the “New” Economy**

1.	Communications and networking connectability provided through free-market mechanisms will be of utmost importance to an area.
2.	Economic development will become more like gardening: analyzing an area’s natural attributes, deciding what industry clusters would work best in that environment and transforming economic development policies to assure growth of these clusters.
3.	Government’s role needs to be transformed to become more open, decentralized and goal-focused with the duties explicitly scribed by its citizens and government held accountable for those results.
4.	The most effective organizational style for accomplishing the “New” Economy tasks that are addressed as important by citizens will be to christen private/public partnerships with the power to sanction policy changes.
5.	The organizations (private, public or alliances) that will become the most adaptable (and hence, successful in the future) will be those that are open, decentralized networks polishing up new ideas and supporting entrepreneurial ideas with capital.
6.	Individuals will have the ability to become more involved in policymaking and through communications technology will be able to help create passive alliances to sway the decision-making of policymakers.
7.	Education will become more capital-intensive and global in curriculum with teachers performing more of a role of mentor/guide for all citizens not just student in grades K-12.
8.	Citizens will travel more, not less, in the future. In fact, as the costs of travel drop toward “the free”, organizations would do best by tying their revenues to the <u>value of the services</u> provided by transportation.
9.	Global transportation corridors will become more automated, faster, cheaper and more ecological.
10.	The square footage and labor requirements for producing a dollar of gross domestic product will lessen in the future.

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## I. INTRODUCTION

The growth in Arizona has astounded many observers outside the state. Unfortunately, whenever a transportation planner inside the state experiences this same astoundment—it has the potential to create havoc in the transportation arena. To circumvent the possibility of this astoundment in the future, the Arizona Department of Transportation desired to perform a futuristic search. This search consists of four parts: 1) Analyzing viable methods of recognizing potential growth areas in the state, 2) Evaluating changes in land-use planning and their effects on transportation, 3) Identifying the most likely path for Intelligent Transportation Systems and 4) Projecting how future tourism will impact road usage. This report represents the first in this four-part series, addressing methods of recognizing economic development potential.

To correctly recognize these indicators, or factors, of growth, the Arizona Department of Transportation (ADOT) was vigilant enough to recognize that looking back would not give the answer. Since our economy is currently undergoing a distinctive metamorphosis—ADOT wanted to look ahead. ADOT wanted to focus in on what “new” trends would shape development of the future and how these trends would affect transportation. Hence, a major compilation of the futuristic literature, a survey of “experts”, and feedback from participants of the Arizona Partnership for the New Economy were used to single out the most probable tenets of growth.

Finally, these tenets were tested with a statistical dissection method. Interestingly, the results suggest that while the face of the economy and economic development is changing—some of the old factors are just as relevant as they were during the past decade.

## II. THE CURRENT ECONOMIC TRANSFORMATIONS

Many economists have referred to the current transformations in the economy as the sanctioning of a “New Economy”. VisionEcon, on the other hand, asserts that there is really not much “new” with the economy at all. Instead, the current changes are signaling shifts in the factors, or inputs, into the economic process—not changes in the economic process itself. To take that assertion a little closer to home, VisionEcon also contends that the classical location selection process for economic development remains intact as well. Some of the factors for growth are new, yet many of the older selection factors are almost as potent as they were during the previous decade. Hence, the “old” strategy-- of balancing an area’s attractiveness to business with its attractiveness to humanity-- still rules. For as the old saying goes: “The more things change, the more they stay the same.”

### III. THE RULES OF THE ECONOMIC GAME

To illustrate the difference between a change in the inputs to the economic process versus a change in the process itself, VisionEcon likens the economic process to the famous game of “Monopoly”. If the creators of Monopoly decided to produce a new game board with Baltic Avenue and Mediterranean Avenue worth more than Boardwalk and Park Place, the factors, or inputs, of the game would have shifted. Yet, the rules of the game are still the same. (i.e. you still collect \$200 when you pass “Go”, you would still go to jail if you roll three doubles in a row, and the game would still take forever to play.) In essence, this analogy suggests that it is not a “new” game but the “old” game with a new game board. In the new Monopoly, instead of Boardwalk-- you strive for Baltic. And in the “New” Economy, instead of striving to purchase real estate, you strive for knowledge. Instead of building massive, solid companies, you bolster adaptable, innovative companies.

The problem arises in actually finding an economist who can really explain just what those rules are. While many of the nails in the coffins of economic prophets are warranted—the damage to the value of economic input in decision-making is not. The problem rises from the forgetfulness that classical economic principles always hold up. Forget Keynesian, Supply-side, Monetarist, Phillip’s Curves and any other theory. Classical economic theory has to do with the behavior of individuals and their desire to supply goods and services to the marketplace. Almost always, economics can be boiled down to that one sentence.

The first question that usually surfaces from that one-sentence definition of economics is: “What about understanding consumption? Isn’t that the key to the economy since it represents two-thirds of economic spending?” Well, the only way a consumer can consume is obtain income. Income is simply a reward for some function that has been deemed to create “value” to the society. In essence, in order to have the resources to consume you must supply something to the marketplace. (Even if it is the policy-induced version of nothing such as that present in a welfare state.)

However, since the desire to supply goods/services is constantly in flux due to changing policies that induce individuals to change their behavior, an economist could be “right on” in forecasting economic growth yet still be completely wrong for the reasons behind that forecast. So the reasons behind a forecast are even more important than the resultant prophecy itself.

Hence, VisionEcon strives to dissect the initiating causes of a change in individuals’ desire to supply goods and/or services to the marketplace. And, those policies that change our desires to supply goods/services to the market are the key policy initiators.

To move a step further, the underlying rules of local economic development have not changed. The main goal of economic development is still to create an area that is attractive to business. Without business, there will be no jobs available to the area’s aspiring residents. Yet an area that is so overrun with

business will be sure to scare away residents. As many economists have asserted, people vote with their feet. If the jobs are not plentiful, or lucrative enough to provide a living—residents will be forced to leave.

Studies have shown that this relationship is vital. State population growth does lag what is known as the employment differential. (As will be explained later, the employment differential measures the growth in a state's employment base above the "average" growth for the nation.) A detailed analysis of this relationship appeared in the Winter 1996-97 issue of "Arizona Economic Trends" published by Arizona's Department of Economic Security.

Consequently, this report will take a look at what is really new in the inputs into this old game of economic development.

## **IV. THE “OLD” INPUTS TO ECONOMIC DEVELOPMENT**

Despite their wishes to the contrary, local policymakers are dependent upon their national counterparts for the bulk of the growth in their employment base. If the national policymakers forge constructive policies, the overall environment for local employment will be positive. In contrast, if their national counterparts pummel growth around the country, there is a limit to the Band-Aids a local policymaker can apply. With this in mind, an assessment of the changes occurring on a national and global level needs to be made.

### **A. THE OLD ECONOMY WAS LINKED TO THE INDUSTRIAL REVOLUTION**

While many decision-makers would be reluctant to admit it, the current technological revolution is centered on the microchip and the Internet just as the Industrial Revolution was dependent upon the inception of the steam engine. Thus, conceptually, there really is not much new about it.

As Peter Drucker stresses in his book, *Post-Capitalist Society*, James Watt originally redesigned the steam engine thinking that it would be used to pump water out of mines. Yet, one of England's ironmasters bid on the second engine built by Watt for a blast furnace. Watt's partner intended the engine to be used in all types of industrial processes such as textile manufacturing. Ironically, the biggest unforeseen impact of the steam engine came from its uses on water as steamships and on rails as locomotives<sup>1</sup>.

In those days the financial requirements for obtaining the inputs into the production process were very steep. Consequently, companies were forced to move away from the old cottage industry and concentrate production under one roof. More often than not this meant locating to an area with transportation capabilities. Consequently, “Old” economic development policy centered on attracting these behemoth companies by providing physical infrastructure and cheap land, while assuring that you did not scare the jobs away with high tax burdens.

### **B. LOCAL ECONOMIC DEVELOPMENT EFFECTS CONSTRAINED BY WASHINGTON, D.C.**

Generally, since national policymakers set the tone for the nation as a whole, the only way for one state to grow faster than the average state is to attract businesses away from the rest of the nation. Thus, state and local policy actions and/or idiosyncrasies can only affect an area's employment growth premiums above this national base of employment growth. VisionEcon strives to gauge the effects of all policy alternatives upon a state's “employment differential”. This differential is measured by subtracting the national average of statewide employment growth from a state's individual rate of employment

growth. In some states, this employment differential can amount to as much as two percentage points in either direction.

Therefore, the determinants of the employment differentials of a state or locale need to be dissected one factor at a time. This dissection method (from the most statistically significant business attractiveness factor to the least significant) implies that all of the “minor” business attraction factors simply fall into the remaining, unexplained category. Thus, this residual of the employment differential allows for further “dissection” when deemed necessary. The beauty of this technique is that it allows for constant evolutions without changing the underlying “rules” of the model.

### **C. OLD ECONOMY MADE AVAILABLE LAND MOST IMPORTANT**

After assessing the strength of influence of the many factors that were consistently cited as important by relocation experts, the factor that possessed the strongest influence on the employment differential during the 1990’s was the amount of land available within a state or locality for potential growth.

In essence, the more land that was available for new growth, the more vivacious the employment differential of the state or locality. If the typical behemoth company of the past decade needed land to expand and a state or locality could not provide it—with prices per square foot capturing this fact—the prospects for growth in that area diminished considerably. The behemoth company relocated and the job gains followed the company elsewhere.

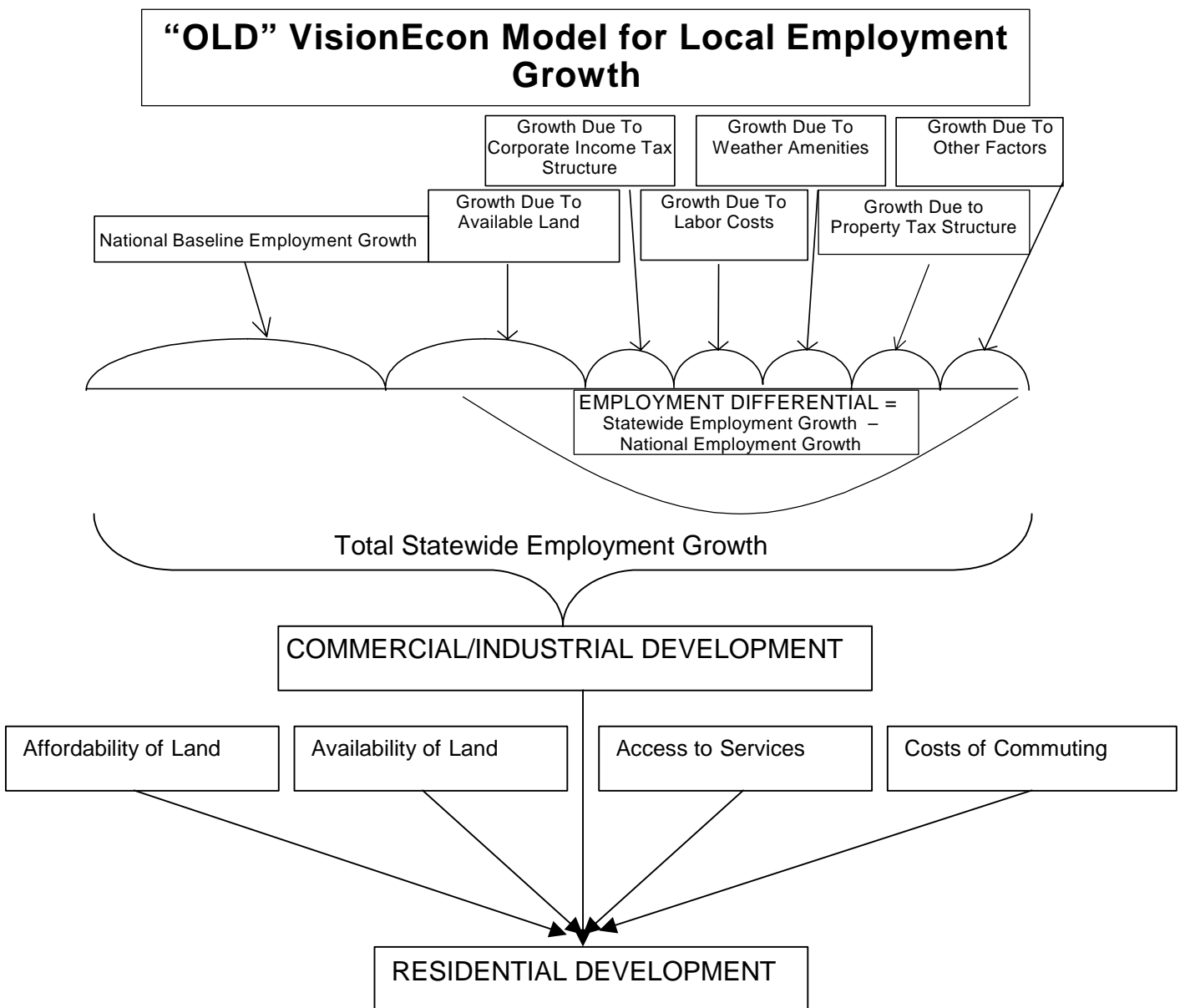
### **D. OLD ECONOMY TAX STRUCTURE AND THE OTHER FACTORS**

In the same vein, if a company was not happy with the tax treatment it received, it would look elsewhere. This location selection process occurred periodically, when a company’s profits began to get squeezed. A company would then begin to assess which cost factors could be retailored to increase profits. While national income taxes can be difficult to escape, state income taxes become a bargaining chip since companies can move to tax-friendlier states. In consequence, a corporation or individual could choose the rate it paid for state income tax. Because of this fact, statistically, income tax policy was the second most effective factor affecting a state’s employment growth.

On average, for every 1 percent move in the effective marginal corporate tax rate for a capital and labor intensive company, statewide employment growth would move in the opposite direction by 0.3 percent. That is, a 1 percent reduction in the marginal tax rate would increase growth by 0.3 percent. In fact, after an adjustment period, the tax revenues resulting from this growth would more than recoup the revenues forgone from a tax cut. That is the great irony of income tax reductions. Patient public administrators who support income tax reductions eventually see substantially improved government finances than they would have with no income tax reductions.

This dissection of the employment differential followed a sequential process. The third- most important factor reflected relative labor costs, the fourth weighed the effects of the so-called “sunshine factor” (or weather amenities) and how that attracted business. And, finally, effective property tax rates were the final factor impacting employment growth. As the following illustration depicts, this type of statistical dissection method assures that as you progress to other factors affecting business location decisions, their statistical influence on that decision diminishes.

**Figure 1**



## **V. THE NEW ECONOMIC DEVELOPMENT WORLD ACCORDING TO THE EXPERTS**

Now, enter the “New” Economy and the steam engine of the twenty-first century-- the microchip. While of course, the first uses were tied to the personal computer (or PC), now microchips can be found in everything from toasters to cars. And, the most important, unforeseen impact has been through the Internet where “dumb” appliances with microchips will eventually be used to relay information to networks and create “smart” results.<sup>2</sup> Whereas, the physical infrastructure of yesterday was transportation, the physical infrastructure of today is communications capabilities. And, because of the Internet-- now more than ever—you do not want to scare the jobs away with high tax burdens because a company can set up shop almost anywhere in the world.

So, in order to get a more sweeping view of the “New” Economy trends and the effects on economic development policy, VisionEcon combed the literature of six different world-renowned authors and two business publications that carry out futuristic surveys. A summary of these publications was compiled and the results appear in Appendix A. Overall, the common themes of these futurists were classified into one of seven categories: 1) Economic Structure, 2) Government Structure, 3) Organizational Structure, 4) Industrial Structure, 5) Societal Structure, 6) Educational Structure and 7) Transportation Structure. The authors’ opinions of the economic changes in store are listed under the sections “According to the Authors”.

This summary was then sent to other experts in the fields of economics, economic development, technology and transportation. Three of these experts who responded were local business leaders. The remaining one is a prominent national economist. These experts evaluated the tenets in three ways: 1) the strength of their truth, 2) their importance in future economic development and 3) the estimated strength of that link to the growth in an area (or its correlation to growth). The comments of these experts are condensed under the heading “According to the Experts”. A final consolidation of all the research is made under the sections listed as the “Predominant Message for Economic Development”. Finally, by weighing the opinions of the authors, the experts and the participants of the Arizona Partnership for the New Economy (APNE-- a task force commissioned by Governor Jane Hull) a list of the top ten tenets was compiled and presented.

### **A. “NEW ECONOMY” ECONOMIC FOUNDATION**

#### **1. According to the Authors**

The majority of the authors believed that there are three things about this “New” economy that have the potential to change the supply of goods/services to the market. First, most of the authors stressed the importance of an area having “connections”. As simply stated by Kelly, in *The New Rules for the New*



*Economy*: “The new economy is about communication, deep and wide.”<sup>3</sup> Without a communications infrastructure, or pursuing a market niche tied to the wealth generated by the new technology, a community would be tying itself to the low-profit margin industries of old. And, low profit margins are assured to bring low levels of desire to supply goods/services to a community’s marketplace.

Secondly, almost all of the authors mentioned the fact that the economy does not act like an industrial-age machine, but is better characterized as a biological model or an ecosystem. (In fact, the level of connectability and networking will work to exponentially increase the rewards an individual receives from supplying goods/services much as the right environment would create an exponential growth model for cells.) As Brian Wesbury states in his book *The New Era of Wealth*, “Models of the economy that treat it as a machine [will] miss these dynamic changes and underestimate the wealth that the new economy can create.”<sup>4</sup> When connectability is available to an individual it opens up all kinds of opportunities and ideas that could not be acted upon before the connections were made. Additionally, the desire to supply goods/services increases exponentially.

Lastly, many of the authors mentioned the fact that innovators who offered any type of product that could boast of saving time were sure to reap the greatest rewards. Any innovation that can save production time will keep a firm one-step ahead of competitors and any device that saves employees time makes them that much more productive overall.

## **2. According to the Experts**

Incredibly, the experts did not wholeheartedly agree that communication was the foundation of the “New” Economy. However, this disparity appeared to be more a matter of semantics than anything else. A comment from Charlie Martin, the President of Kinetic Thinking in Phoenix, suggested that “communication-enabling applications” would be the foundation; meanwhile, Harry George of Solstice Capital in Tucson, rebuked the survey question itself by claiming it was a tautology.

Overwhelmingly, the experts agreed that the biological analogy was much more useful in analyzing growth patterns in the future. Yet, according to our experts saving time was not an absolute value-maker in the “New” Economy. The experts were also unsure of how fuel would impact the economic landscape in general or economic development in the future.

## **3. Future Economic Foundations and the Predominant Message for Economic Development**

While the surveyed experts were ambivalent on the need for communications infrastructure, the participants of the Governor Hull’s Arizona Partnership for the New Economy meetings were not. The loudest battlecries

heard were from economic development officials who had lost relocation prospects due to the lack of adequate communications capabilities. To those participants representing rural communities in these forums, it was obvious—connect and network, or die. To them, the Internet could be just the economic boost they needed. The inception of the Internet implied that these communities could more easily attract export-based industries that were no longer geographically affixed to one area.

Also, discussions from these forums, or Hot Teams as they were referred to, reinforced the notion of viewing economic development as more of a biological system. In fact, the new term “economic gardening” seemed very appropriate. As in gardening, a community is presented with its basic soil structure, but the policymakers can adjust the chemicals (economic development factors) in the soil by adding compounds to counter one chemical or maximize another. Economic development has the same potential. First, a community needs to assess its “soil”—its natural attributes that differentiate it from other communities. Then it needs to decide what vegetation would work best with its basic soil structure. This would entail an analysis that deliberately targets a combination of high-growth, high-wage industry clusters and economically stable industry clusters of the economy. After deciding on what to grow, policymakers need to research the ingredients necessary for “growing” those industries. By reviewing its current policies, all the possible economic development combinations can be evaluated until finally adding one to the soil. Of course, the garden also needs to be weeded and watered on a continual basis-- pulling weeds in some spots, changing irrigation patterns in others. Only then will a plentiful harvest be raised.

Because many rural communities have already learned that this process is vital to their destiny, they will be pushing for a statewide communications policy more than the experts would expect. Unfortunately, the intricacies of a communications policy are complex. Thus, any policy must incorporate the findings of the following section. In essence, a healthy communications strategy requires that the government leave the details to the free market system. If communications becomes a government function, the necessary “churn” factor of weeding out practices that do not perform, would be eliminated. Weeds would then end up overtaking every community’s garden.

Consequently, the communities that are the most active in assessing, researching, and formulating a deliberate economic development policy will be the communities of growth. In fact, as an added benefit, these communities will also tend to be communities of “smart” growth as well.

## **B. “NEW ECONOMY” GOVERNMENT**

### **1. According to the Authors**

Government was the one area that the authors believed was in for the most transition. Due to the high-tech ease of disseminating and understanding information, this sector is projected to become more open, decentralized and

democratic. Gone will be the hierarchical practices of “protecting your turf” either financially or physically and clinging to specific government practices. Instead governments will become more goal-oriented entities with commissioned duties to perform, and accountable for the results of those duties.

The international journalist, Thomas Friedman, was the one author that regularly honed in on this trend. While the other authors used the availability of information to the citizens of autocracy as the impetus to change in government, Friedman was the only one to point to market forces. He coined the phrase “The Electronic Herd”<sup>5</sup> in his book *The Lexus and the Olive Tree*, to stand for the international financial markets. According to Friedman, any country that did not introduce free-market principles into their governing process would be faced with a mass exodus of financing options for growth. As this free-market pressure increases around the globe, Friedman claims that two things happen: “your economy grows and your politics shrinks.”<sup>6</sup>

## **2. According to the Experts**

The experts tended to agree that while government would be pressed to be more open, decentralized, and actively democratic in the future, that did not imply that government would. In fact, the experts were unsure of whether government would be held accountable at all or whether it could become more focused. The overwhelming comment was that while government should—it probably would not.

Instead, half of the experts saw government’s strongest purpose was in assuring the protection of property rights and individual security.

## **3. Future Government’s Predominant Message for Economic Development**

In this instance again, VisionEcon would tend to side with the authors. Many of the local experts have been so saturated in the malfunctioning of local government that it has become difficult for them to distinguish the underlying global currents developing in the public arena. David Osborne and Ted Gaebler best describe this current in their book, *Reinventing Government*. The Internet’s role in allowing mass-customization will rub off into the government arena as Osborne and Gaebler state in their book, “People today expect to be valued as customers—even by government.”<sup>7</sup> They believe that the entrepreneurial spirit of the “New” Economy will be compelled upon the government sector as well. As an illustration, the titles of their chapters read: “Catalytic Government”, “Community-Owned Government”, “Competitive Government”, “Mission-Driven Government”, and “Results-Oriented Government”...need they say more?

The role of government can be expected to become just as Peter Drucker envisioned in his book, *Post-Capitalist Society*. Drucker sees the role of all future organizations as one of maintaining focus in a world that is becoming populated

by specialists. Thus, the organization's role is to keep the mission for society crystal clear. Osborne and Gaebler call this function "steering". In addition, the successful organization of this "New" Economy will be a destabilizer and organized for constant change.<sup>8</sup> Thus, the state and local areas that embrace this revolution in government will be the economic development success stories of the "New" Economy. If a measure could be developed, the areas with the highest levels of innovation, alliance-building and customer-driven changes in government will become the growth machines of the future.

## **C. "NEW ECONOMY" ORGANIZATIONS**

### **1. According to the Authors**

The second area that the authors deemed destined for a major revival was organizational structures. With the advent of the Internet, many of the authors mentioned the need for organizations that fostered what the famous economist Joseph Schumpeter coined as "creative destruction". Creative destruction is the fostering of constant change in order to encourage the consistent innovation necessary in a knowledge-based economy. In fact, some of the authors saw a whole new species of organization arising in the future. Drucker named this new species as a "third sector" of the economy. Not private such as business, not public such as the government, but instead a social sector of citizenry set out to accomplish specific tasks. Even Kelly asserts that, "The great benefits reaped by the new economy in the coming decades will be due in large part to exploring and exploiting the power of decentralized and autonomous networks."<sup>9</sup>

All of the authors stressed the importance of a system of open, decentralized networks where individuals shape new ideas. However, Wesbury was one author that stressed the need for organizations to support entrepreneurial ventures. According to Wesbury, "Economies that limit the ability of these entrepreneurs to find capital will pay for it through lower growth rates, higher unemployment and a brain drain."<sup>10</sup>

### **2. According to the Experts**

The experts were split down the middle in every one of these tenets. No consensus was present at all on whether organizations will emerge for tasks of creative destruction or to accomplish specific tasks of a non-profit nature. In addition, the experts were split as to whether organizations would emerge to perform networking and coordinated efforts.

### **3. Future Organization's Predominant Message for Economic Development**

Again, the experience gained from Governor Hull's Arizona's Partnership for the New Economy meetings tends to support the authors' views more than that of the experts. One would have grown weary counting the number of times a form of the words, "We need a public/private partnership" was heard. (In most cases, this form of collaboration was needed to analyze issues that simply were not issues prior to the high-tech revolution.) Also, it became apparent that many of these issues could only be resolved by building anew some of the old organizations that were not created to accomplish these tasks.

#### **D. "NEW ECONOMY" INDUSTRY**

##### **1. According to the Authors**

The overall consensus among the authors was that industry would be under increasing pressure to speed up the learning-curve process of production and would be less likely to be overflowing with huge profit margins. Kelly was the most eloquent in explaining this concept. He stressed that the openness of a networked economy would imply a faster learning experience for all participants—including a firm's competitors. Thus Kelly's theory is that most "prices [will] move inexorably toward the free".<sup>11</sup>

While Kelly does not claim that producers will be handing out all of their wares to anyone who still shops the "brick and mortar" mall store instead of the Internet, he does use the behavior of cell phone services and the TV dish networks as some examples. Basically, products are given away and then producers make their profits off of their service prices. But eventually, as the costs of running our cars and using our cell phones drops toward the free, this will actually work to encourage us to travel more and add more options and services to our overall packages.

In the end, these trends imply that only the companies that can move quickly will be able to increase their profit margins by adding new products and services to their portfolios. Hence, firms will become smaller, more agile, and require less "physical" space. As Barry Asmus states in *When Riding a Dead Horse, For Heaven's Sake... Dismount!*, "Business will be a move away from buildings, toward relationships and towards the customer. The signature office buildings of large corporations will give way to technologically connected spaces: cars, small offices, and homes."<sup>12</sup> In addition, the customer will become more involved in the production process: filling out the sales slips and billing invoices, customizing the product and working on shipping details. Thus, the end result implies that the company needs less of a workforce and the customer gets a more customized product at lower prices.

## **2. According to the Experts**

All four of the experts surveyed agreed with the assumption that the customer would become a major contributor in the firm's process. Hence, this tenet suggests that we will all eventually become pseudo-employees of our favorite companies. While one may be tempted to assume that this reduction in employees would compel smaller companies, Harry George, a venture capitalist from Solstice Capital, believed the logic was not so cut and dry. While he believed that the "small, agile and quick" would be at an advantage in a knowledge-based economy, there will still exist a "real" or "hard-good" economy with large economies of scale. Hence, in his view, the "New Economy" was not a death sentence to large companies with payrolled employees.

Nonetheless, three out of the four experts agreed that less retail and physical space would be demanded in the future. Martin, of Kinetic Thinking, even mentioned the point that as better inter-communications created a more efficient supply chain, inventory storage will be reduced as well.

## **3. Future Industry's Predominant Message for Economic Development**

The predominant message from the literature and the survey was that the square-footage requirements for producing a dollar of gross domestic product are expected to drop. With space requirements dropping, the tendency to seek and usurp open land will lessen. Hence, the transportation system of tomorrow will have less of an expand-and-conquer nature. Instead, transportation will perform more of a role of linking firms with their supply chains and their customers.

The second most embraced tenet claims that companies linked to the manufacturing process will seek fewer employees. But, contrary to conventional wisdom, the consensus appeared to stress that these tasks would not be overtaken by outsourced or contract workers. Instead, the customer, or at least the companies' partners or alliances would be performing more of these functions. George, the venture capital (VC) expert, even saw the economy of the distant future as a conglomeration of robots—with the majority of humans needing something to do! This development would suggest that the accessibility of the work force would play a more subordinate role in the future. While we will not all become contract workers representing companies in nations oceans away, the sheer number of workers in the larger manufacturing companies can be expected to continue to fall.

## **E. "NEW ECONOMY" SOCIETY**

### **1. According to the Authors**

One phrase that perpetually appeared in the literature was "the empowered" individual. All of the authors believed that the current technological

innovations were invaluable in presenting information-- once hoarded by governments and hierarchical institutions—to the average person on the street. Thus, individuals were more likely to become politically involved and culturally connected.

Most of the authors stressed that society will be striving to become involved and wishing to make a difference once exposed to this new wealth of information. Many of the authors focused in on ecological pursuits, yet cultural connections were mentioned by three of the authors. Drucker christened this movement as “tribalism” where “people need roots in a transnational world”. This tenet is echoed almost word-for-word six years later by Friedman in his illuminating, vigorous book on every aspect of international change.

## **2. According to the Experts**

While most of the experts agreed with the idea that technology was now giving individuals the power to be more involved, one expert could not classify this tenet as a given truth. According to the dissenting expert, individuals still would have the freedom to not become involved or politically active. Therefore, surprisingly, the tenet that gained the most support from the surveyed experts was that the future of the societal structure would be dictated by the quest to save time.

Even more surprising, the experts were not as unequivocal as the authors who contended that cultural connections and environmental issues would take a top seat in societal concerns in the future. And, they were not undivided on whether the stimulation from the high-tech realm would change the way we vacation. However, more of a consensus was apparent on the implausibility of “virtual” vacations than on any other subject.

## **3. Future Society’s Predominant Message for Economic Development**

Due to the disparity between the view of the authors and the experts, only nebulous messages can be drawn from these results. On one hand, the new technologies will grant individuals the ability to become more involved politically and culturally. However, these individuals will also be looking to technology to free up their already overburdened time constraints. Therefore, whether individuals do become involved remains debatable.

VisionEcon proposes that the experts are correct in that most individuals will not take the time or effort to become involved. However, the authors are also correct in that technology will allow one concerned individual to change the course of policy decisions. Even now, one dedicated individual armed with Internet access to decision-making proceedings and e-mail can be a conduit for a thousand or more uninvolved citizens. In the end, that concerned citizen could change the way an organization creates policy. Consequently, decision-makers

will need to be prepared for the active participation of outside parties into their realm of decision-making.

Nonetheless, the experts appear to be less saturated in the technological realm and are more practical with their assertions that the Internet and technology will not overtake our every aspect of our world. While it will allow us to seek connections with others, it will not overtake the traditional ways of finding those connections. And while it may allow us to gain serenity by viewing images of white-sand beaches on our computers, it will not diminish our desire for real, sensory vacations.

## **F. “NEW ECONOMY” EDUCATION**

### **1. According to the Authors**

The author’s consensus on education was fairly predictable. The four elements of education that will be influential in the future are: 1) Education will become capital intensive, with schools/ institutions requiring advanced communications connections. Most believed that equipment needs would submerge the need for teachers. Logically, with the Internet and on-line educational programs, the need for teachers may become more diluted. 2) Education will become a global phenomenon. Not only will a learner be exposed to the curriculum of his/her country, but also that of the best in the world. 3) Education will not remain a strictly Kindergarten-through-twelfth-grade operation. Access to learning facilities will become an ongoing requirement for all workers. 4) The educational system will be forced to become more open with less delineation, fewer restrictions and with teachers playing the roles of mentors/guides.

### **2. According to the Experts**

Nowhere else in the survey was a consensus more indistinguishable. While the experts were totally divided on whether schools would become more capital- intensive and whether teachers would serve a different role, they seemed to show some, yet partial, support for the views that educational facilities would become more globally connected. The educational visions were so diffused that the experts could not even muster more than partial support for the tenet that educational facilities would be shifting to more perpetual-learning facilities.

### **3. Future Education’s Predominant Message for Economic Development**

Right now, education is an issue tugging at the heartstrings of every local leader in Arizona. Consequently, the authors probably possess more unbiased, visionary judgments on this issue. Therefore, VisionEcon would tend to favor the



authors' tenets for education: education facilities will become more capital-intensive, more global in their curriculum, transform into perpetual learning sources, and be forced to change the role of teachers. Hence, states and areas that do not embrace these tenets will be seen as less desirable in the "New" Economy.

## **G. "NEW ECONOMY" TRANSPORTATION**

### **1. According to the Authors**

According to the Texas Transportation Institute, the cost of wasted fuel and time caused by traffic congestion exceeds \$72 billion per year. As the learning-curve process speeds up and time becomes more of a competitive edge to firms, organization and individuals—pressure will continue to build to do something to save that time. And, economic development officials who incorporate some type of Intelligent Transportation System (ITS) within their gardening exercises will actually be giving their communities a competitive edge in business.

In addition, according to Glen Hiemstra, a writer for *The Futurist* magazine, as computer chips become cheaper and more integrated into dumb appliances as purported by Kelly, cars will become "smart". Cars will have the capabilities of sensing "safe zones"<sup>13</sup> braking or accelerating when deemed necessary, or telling direction using Global Positioning Satellite Systems (GPS) and eventually will be driving themselves on interstate "Guideways"<sup>14</sup>.

Another pressure point for transportation will come from the globalization effects of the "New" Economy. As firms can do business from anywhere and send goods to anywhere—the pressures will be immense to cut the costs and time involved in transporting goods from halfway around the globe. Hiemstra claims that the advances in car technology will "morph" into trains. Such trains on guideways would start moving goods making the long-haul truck driver shortage a thing of the past.

Kelly brings up an interesting point in regard to transportation. As transportation costs less in terms of time and money, we may actually begin to travel and ship more.<sup>15</sup> Hence, transportation is likely to become more important in the future—not less.

### **2. According to the Experts**

The experts echoed this idea by claiming that local transportation needs would not become less important in the future. In fact, the experts leaned toward the position that the majority of us would not work from home or shop from home. Yet, there was some support to the argument that we would be looking to our computer screens for learning-- more than we ever have.

In terms of the argument that the “New”/ Knowledge-based/Networked Economy would give rural communities a huge shot in the arm by allowing firms and individuals to do business and live anywhere they want, the experts were torn right down the middle.

### **3. Future Transportation’s Predominant Message for Economic Development**

Just as the authors stressed, cars will become smarter, faster and more ecological due to technological changes and the pressures to save time, money and the environment. However, the experts knew “in their guts” just what Kelly was getting to—all these advancements will encourage individuals to travel more to work, shop and socialize. Hence, physical transportation, global and local, will become more important in the “New” economy, not less. And policymakers would best succeed by following Kelly’s advice and “anticipate the cheapness”<sup>16</sup> by charging for the service provided from fast, smart, environmentally friendly transportation.

## VI. THE “NEW” INPUTS TO ECONOMIC DEVELOPMENT

Now, what to do with all of this wonderful information? The following table represents a summary of the ten most important tenets that were proposed and supported in the research above.

**Table 1**

### **The Top Ten Tenets for Economic Development in the “New” Economy**

1.	Communications and networking connectability provided through free-market mechanisms will be of utmost importance to an area.
2.	Economic development will become more like gardening: analyzing an area’s natural attributes, deciding what industry clusters would work best in that environment and transforming economic development policies to assure growth of these clusters.
3.	Government’s role needs to be transformed to become more open, decentralized and goal-focused with the duties explicitly scribed by its citizens and government held accountable for those results.
4.	The most effective organizational style for accomplishing the “New” Economy tasks that are addressed as important by citizens will be to christen private/public partnerships with the power to sanction policy changes.
5.	The organizations (private, public or alliances) that will become the most adaptable (and hence, successful in the future) will be those that are open, decentralized networks polishing up new ideas and supporting entrepreneurial ideas with capital.
6.	Individuals will have the ability to become more involved in policymaking and through communications technology will be able to help create passive alliances to sway the decision-making of policymakers.
7.	Education will become more capital-intensive and global in curriculum with teachers performing more of a role of mentor/guide for all citizens not just student in grades K-12.
8.	Citizens will travel more, not less, in the future. In fact, as the costs of travel drop toward “the free”, organizations would do best by tying their revenues to the <u>value of the services</u> provided by transportation.
9.	Global transportation corridors will become more automated, faster, cheaper and more ecological.
10.	The square footage and labor requirements for producing a dollar of gross domestic product will lessen in the future.

What this summary of the research professes is that communities that possess the following attributes will become the most successful harvesters of economic growth in the “New Economy”:

- ✘ High-quality communications infrastructure
- ✘ Presence of an economic “gardening” planning process
- ✘ Innovative networking alliances within government that increase efficiencies and lower costs
- ✘ Entrepreneurial networking and venture capital organizations
- ✘ Capital-intensive, global, teacher-guided educational systems
- ✘ Cheaper, quicker, smarter transportation systems

Armed with this new list of economic development factors, VisionEcon attempted to amass statistical measures of each. Unfortunately, this process faced overpowering time, monetary, and data availability constraints. Therefore, the only obtainable, historical, statistical measures of these “New” factors for statewide growth were: 1) a VisionEcon communications connectability measure, 2) venture capital investment levels and 3) SAT scores obtained by high school graduates. At this point, a repeat of the statistical tests were run with the “old” economy measures of land availability, corporate tax structure, labor costs, weather amenities and property tax structure. VisionEcon then reapplied this dissection method to those measures of both old and new.

As exhibited in Appendix B, all indications were that the availability of land still remains the most important attribute for growth, however, its significance has fallen considerably from that of the previous business cycle. When the impact of land differences is removed, corporate tax structures still have the second-most important hold on an economy’s future. And, the “New” Economy measures fall in place as shown below:

**Table 2**

**Importance of Economic Development Factors to the Structural Employment Differential**

Economic Development Factor	Percentage of Employment Differential Explained by Variable <sup>1</sup>	
	“Old” Economy Measures <sup>2</sup>	“New” Economy Measures
Available Land	37.3%	27.4%
Corporate Tax Structure	16.2%	12.6%
Labor Costs	5.1%	3.6%
Weather Amenities	5.4%	4.1%
Property Tax Structure <sup>3</sup>	0.3%	1.1%
Venture Capital Investment Levels	Not considered	9.0%
Connectability	Not considered	3.9%
SAT Scores	Not considered	SD <sup>4</sup>

Source: VisionEcon

1 Employment differential and economic development factors averaged over most recent business cycle.

2 Old models ran over previous business cycle and updated to include data revisions.

3 Property taxes only significant at the 30% level.

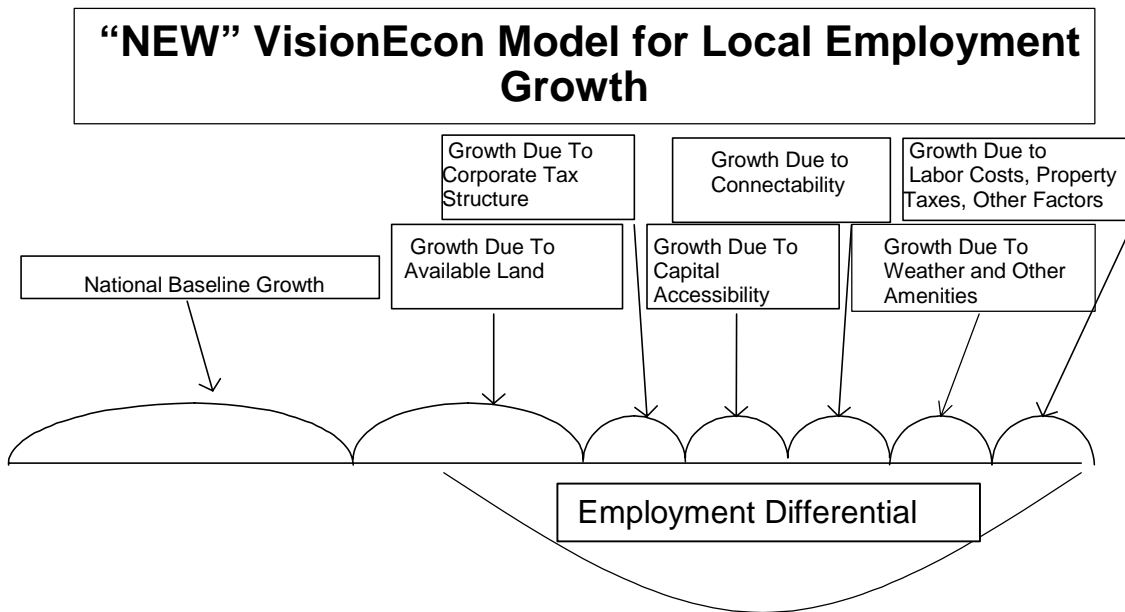
4 A statistical discrepancy (SD) was measured in testing SAT scores. Logically, one would assume that as SAT scores increase in an area’s economic growth would accelerate. Unfortunately, statewide statistical comparisons suggest the opposite. According to the numbers, high SAT scores have been associated more with states that possess slow economic growth.

## VII. THE ECONOMIC BLOSSOMS IN ARIZONA’S FUTURE

The above analysis helps to enlighten two interesting conditions of the economic development playing field. First, the statistical dissection of structural employment differentials suggests that land availability has become less important, just as the authors and experts claimed. Secondly, because all states are catching on to the importance of corporate tax structure, the effective marginal corporate tax rates of all the states are converging. In fact, the average of the marginal corporate tax rates of all 50 states and the District of Columbia for a representative capital- and labor-intensive corporation have fallen between the previous and most current business cycle. In fact, the range between the high and low states has shrunk by almost 7%. This convergence helps to explain the reduction in correlation to employment—not the lack of importance of corporate tax rates!

Nonetheless, at this point in time, land and taxes will remain playing an important role in a company’s location decision—and in the resultant growth of employment. As the “New” Economy takes shape in this early evolution, the current VisionEcon Employment Model portrays the following system.

**Figure 2**



In conclusion, where Arizona will stand in terms of economic development in the “New” Economy will be dependent upon whether the state can accomplish further work on minimizing the corporate income tax burden and introduce more venture capital investment into Arizona communities. But beyond that, the communities of growth will be found performing an economic version of “gardening”. They will till the soil, and hence lay the foundation, by assuring

access to quality telephony and wireless communications. They will water their gardens by their willingness to renovate education and transportation. As educational demands change from the mechanical distribution of K-12 education to requests for a capital-intensive, global and perpetually learning system, policymakers need to champion these changes. Also, as the transportation systems evolve into new roles as high-tech transportation service-providers-- providing swift, global connections while protecting the environment and allowing residents the pleasure of travel—they will also need to renovate themselves. Finally, they will pull weeds, and hence assure the health of the garden, by encouraging innovative alliances between the public and the private sector that increase efficiency and lower the costs of governing. These communities—the successful gardeners-- will undoubtedly become the “New” blossoms bursting forth in the Arizona deserts and on Arizona’s peaks.

**APPENDIX A**  
**CONSENSUS OF AUTHORS AND EXPERTS**



	Government Structure	Organizational Structure	Industry
Peter Drucker 1994	Pluralistic Societies of Organizations No national borders for information Transnational org: Environment Terrorism Arms Control Abandonment of things that do not work Concentrate on results Analysis of half-successes Forget "doing"-be a policy maker	Organizations as special purpose, of equals "Creative Destruction" Decentralized, self-supervision Outsourcing Core Tasks Alliances and partnerships Knowledge needs to be focused  Methods for turning knowledge into performance	Do not follow supply-demand equations No longer possible to make huge profits in doing, moving things or controlling money
Kevin Kelly 1998	Top-down, bottom-up governance	Network has become the central metaphor Exploit decentralized forces Swarm power with a voice of leadership More loyalty to a network than a particular firm Values flow in webs "Relationship technology" Rank opportunities before efficiencies	Instantaneous transactions Open systems, but universal standards Tending toward the free Costs drop according to learning curve Invent New faster than commoditize old Company staffed by customers Responsibility toward peerage of customers
Thomas Friedman 2000	Free markets- open economy Protection from creative destruction will imply falling behind Without strategy there is only drift Striking a balance btwn Lexus (matl betterment) and Olive Tree (identity) Outsource government? Democratize decisionmaking Deconcentrate power Kill keptocracies Quality of the nation state increases while the size goes down Democratic, open and accountable- the more flexibility Behave more like companies	"Supermarkets" (powerful financial market participants) Wealth creation becomes geographically dispersed Decentralization of power Networks as shapers Freely displace labor	Study global framework then produce MDS disease that occurs when org. are too slow to respond Become service business: tailored products human touch tailored service
Business 2.0 Visionaries 2000		Maximizing wealth	Cutting out middlemen Lowest time cost Consumer as a participant "Virtual experiences", being there
Faith Popcorn 1997		Tearing down the "old-boy network" City traffic centers transmitting info to offices to avoid rush-hour tie-ups For-wheel drive cars reflect desires to "return to the country" and this trend will continue Yet, the generations that come will have less tolerance for pollution	Fantasy Adventure Customization, personal service
Brian Wesbury 2000	Low tax, reg. Environment	Knowledge will beget knowledge Culture of competition and Entrepreneurship Limiting capital to entrepreneurs will kill economies	Demand for retail space due to growth will lessen New Era does not need as much space
Barry Asmus 1995	Top-down social engineering rejected Mobility when faced with tax increases, govt. reg. Rigid, hierarchical structures too slow Modern networks will allow all to participate in political life Needs to match benefits with costs	Contract Society Bringing people together sets stage for new ideas	Small, agile, quick Office bldg. give way to technologically connected spaces (cars, homes, small offices)
Glen Hemstra and excerpts from ITS Handbook The Futurist Magazine September-October 2000			

	Society	Education	Economic Foundation
Peter Drucker 1994	"Social" sector to create a citizenry	Become capital intensive Abandon social goals Teachers as mentors-leaders Delineation between school-work will become blurred Open Access Prepare for a global world	
Kevin Kelly 1998	Connect everything Networks	Constant communication spread experience	Communication Biological System Tipping Points in growth paths Doing the right thing as opposed to the same thing better
Thomas Friedman 2000	Movement from rural to urban We have a bank, office, bookstore, brokerage, factory, school in our homes Glocalizations- saving cultures Backlash to globalization		Speed Fluidity Communication the impetus From PC Densities to connectability Evernet- constant connectability Harvesting knowledge
Business 2.0 Visionaries 2000	Modern global civilization at odds with environment People struggling with purposelessness Consumers driving e-commerce	International health and education	PC era coming to a close Machines will become more like people
Faith Popcorn 1997	Clanning-Tribalism Small Indulgences Anchoring-spiritual, familial origins Connections, relational, not rigid Time pressures Vigilante Consumer, Icon Toppling and Save our Environment		
Brian Wesbury 2000	Increase in individual responsibility Densities will drop		Ecosystem
Barry Asmus 1995	People want info, want to participate Enlightened empowerment, de-politicize Self-supervision Allow society to make a difference		Biology as Model, "Natural" systems Time is currency
Glen Hiemstra and excerpts from ITS Handbook The Futurist Magazine September-October 2000			

	Transportation
Peter Drucker 1994	
Kevin Kelly 1998	Automobiles will never be free, but, the cost per mile of driving will drift toward the free. With cheaper costs-- we travel more Vendors must anticipate this cheapness If there is pressure to increase productivity (and save time-- VisionEcon comment), the serious question will be-- "Can a machine do this?"
Thomas Friedman 2000	
Business 2.0 Visionaries 2000	
Faith Popcorn 1997	Cars are turning into virtual homes
Brian Wesbury 2000	
Barry Asmus 1995	Standard auto as we know them, will be replaced Electric cars will redefine transportation Coal, oil, gas and nuclear will be replaced by sunlight
Glen Hiemstra and excerpts from ITS Handbook The Futurist Magazine September-October 2000	ITS systems apply communications, info technology advances Advanced traffic control *Coordinating signals, accident detection, etc. *Traffic congestion info available to public * GPS systems that provide optimum route based on traffic, accidents Collision avoidance systems Electronic toll collections TRANSPORTATION PROFESSIONALS NEED TO BUILD ALLIANCES with other stakeholders Hybrids and fuel cells will extend the auto-based lifestyle into the future Future of cars also assured by high-tech, intelligent cars and intelligent transportation systems Built-in sensors will establish safe zones, applying accelerator and brakes Internet and GPS will allow cars to know where they are at all times Transit unlikely to grow much over the next 25 years

	Government Structure	Organizational Structure	Industry
Consensus of Authors	Open, decentralized, democratic Not rigid or hierarchical Accountable for results Protection of property rights Provide focus or strategy Transnationalism, regionalism ??? (Or just the need for public alliances)	Creative destruction Networking/Relational Decentralized Focusing knowledge on core tasks, opportunities Contract Society Competition and entrepreneurship	Learning curve implies smaller profit margins, (tending toward the free-providing services) Small, agile, quick Customization Less space Customer as participant Lowest time costs

Society	Education	Economic Foundation	Transportation
Empowerment Politically involved Time pressures Tribalism, clanning, glocalizations	Capital intensive, connected Global Constant Open, teachers as mentors	Communication Biology as Model, "Natural" systems Time is currency	Cars will tend toward cheaper fuel systems Cars will be more intelligent, high-tech

# SURVEY RESULTS

Participants: National Economist Based in Chicago  
 Local Economic Development Official  
 Local Venture Capitalist  
 Local Entrepreneur in High-tech Field

## Futuristic Trends for the Economy and Transportation

Part One: Truths	Truth of this Statement		
	Absolute Truth	Partial Truth	Falsehood
<b>Economic Structure:</b>			
Communication facilities will be the "infrastructure" of the Network/Knowledge/"New" (NKN) Economy.	1	3	
The NKN Economy will act more as a biological system where certain conditions are conducive to growth- but do not guarantee growth.	4		
Price will no longer be the measure of value in our economic system-- time will.		3	
Economies will be come less fuel dependent with/without oil price increases.	1	2	
<b>Government Structure:</b>			
Governments will become open, decentralized, and more actively democratic in order to foster economic growth.	1	3	
Governments will be held accountable for results.	1	2	
Government's role will become more of a strategic one-- focusing on transnational and/or regional concerns and addressing these through public/private alliances.		3	
Property rights and security issues will become the foremost indicators of economic prosperity.	2	1	1
Tax structures will become simpler, consumption- or fee-based and more equal between countries/states.	1		2
Government will need to become a "marketer" of the new technology in order to convince "backlash" groups (those who want to shun the new technology) of the benefits of these changes.		3	1

Part One: Truths	Truth of this Statement		
	Absolute Truth	Partial Truth	Falsehood
<b>Organizational Structure:</b>			
Many organizations will be created specifically for the task of the "Creative Destruction" of "Old" Economy power centers.	2		2
The majority of organizations will have decentralized structures and perform more of a networking, relational, and collaborative role.	1	2	1
Organizations will have short life spans- helping to <b>focus</b> knowledge on core tasks and opportunities.	1	2	1
<b>Industry Structure:</b>			
The majority of firms will be small, agile and quick.	2	1	
The firms in the future will be composed mostly of contract workers, rather than employees.		2	2
The learning curve and the tending "toward the free" phenomenon imply that firms will eke out smaller profit margins, but provide more customization, tailored services or save/create time.		2	2
The customer in the future will be a major participant in the firm's process.	4		
The firms of the future will require less retail and office space.	3	1	
The composition of these firms will also comprise less hard-good middlemen but more informational middlemen.	2	2	

Part One: Truths	Truth of this Statement		
	Absolute Truth	Partial Truth	Falsehood
<b>Societal Structure:</b>			
Individuals, through the Internet, will become more empowered and politically involved.	3		
The search for connections with others-- such as tribalism, clanning or "glocalizations" will become more important.	2	2	
Individuals will continue to seek any solutions that save them time.	3	1	
Leisure activities will become more extreme: either taking a high adventure, high-tech flavor or an escape from the outside world.	2	2	
Vacations will become more rare and will be replaced by "virtual getaways".		1	3
Environmental issues will increase in importance.	2	2	
As "backlash" groups emerge, the income gap will widen.		1	1
<b>Educational Structures:</b>			
Educational facilities will become more capital- and less labor-intensive with teachers serving more of a role of a mentor or facilitator.	1	2	1
Facilities will become more connected, and share more of a global curriculum.	2	2	
Education facilities will become less Kindergarten-12th grade and more perpetual-learning facilities.	2	2	
<b>Transportation Structures:</b>			
Global market access (air cargo facilities, etc.) will become more a more important factor than local transportation needs.		1	2
The majority of people will work where they live.	1	1	2
The majority of students will study where they live.		3	1
The majority of people will shop where they live.		2	2
Densities will decline as people move further out toward rural areas.	2		2

## **APPENDIX B**

### **STATISTICAL DISSECTION PROCESS**

#### **VARIABLE NAMES**

**EMPDIFFx** = Difference between statewide employment growth over business cycle and the nationwide employment growth over same business cycle

Source: Bureau of Labor Statistics (BLS)

**LAND\_USx** = State's available land for development per establishment as a percent of national average

Source: Bureau of the Census, Bureau of Land Management, National Park Service and BLS

**CORPTX\_US** = State's effective marginal corporate tax rate for a sample multi-state corporation as a percent of the national average

Source: The Federation of Tax Administrators, VisionEcon

**PROP\_USx** = State's effective tax rate on \$1 million piece of industrial property as a percent of national average

Source: Minnesota Taxpayers Association

**WAGE\_USxx** = State's average annual pay as a percent of national average

Source: BLS

**TEMP\_Usx** = State's mean temperature relative to national average

Source: U.S. National Oceanic and Atmospheric Administration Climate Diagnostics Center

**VC\_US** = State's invested venture capital as a percent of personal Income relative to national average

Source: PriceWaterhouseCoopers LLP, Bureau of Economic Analysis

**CON\_US** = A weighted average of state's high-speed communications and telephony penetration rates relative to national average

Source: Federal Communications Commission, Bureau of Census, VisionEcon

**SAT\_US** = State's SAT scores for graduating seniors as a percent of national average

Source: College Entrance Examination Board

## CORRELATION REPORT

### Pearson Correlations Section (Row-Wise Deletion)

	EMPDIFFx
EMPDIFFx	1.000000
LAND_USx	0.514959
CORPTX_US	-0.383978
PROP_USx	-0.193189
WAGE_USxx	-0.541094
TEMP_USx	0.046439
VC_US	-0.232295
CON_US	-0.013745
SAT_US	0.266398



## MULTIPLE REGRESSION REPORT- WAGES

### Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
WAGE_USxx	51	-0.3267974	16.44569	-23.85641	62.76537
EMPDIFFx	51	4.8328E-02	1.066557	-2.919196	3.224858

### Correlation Matrix Section

	WAGE_USxx	EMPDIFFx
WAGE_USxx	1.000000	-0.519413
EMPDIFFx	-0.519413	1.000000

### Regression Equation Section

Independent Variable	Regression Coefficient	Standard Error	T-Value (Ho: B=0)	Prob Level	Decision (10%)	Power (10%)
Intercept	0.03731	0.12894	0.2894	0.77349	Accept Ho	0.11379
WAGE_USxx	-3.368E-02	7.916E-03	-4.2549	0.00009	Reject Ho	0.99461
R-Squared	0.269790					

Root Mean Square Error	0.9206504	R-Squared	0.2698
Mean of Dependent	4.832518E-02	Adj R-Squared	0.2549
Coefficient of Variation	19.05115	Press Value	44.39013
Sum  Press Residuals	33.36343	Press R-Squared	0.2195

### Normality Tests Section

Assumption	Value	Probability	Decision(10%)
Skewness	3.3844	0.000713	Rejected
Kurtosis	2.6261	0.008638	Rejected
Omnibus	18.3506	0.000104	Rejected

Durbin-Watson Value 2.1529

## MULTIPLE REGRESSION REPORT- AVAILABLE LAND

Dependent EMPDIFFx

### Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
LAND_USx	49	-2.38698E-14	127.9089	-99.69806	486.7306
EMPDIFFx	49	0.0566286	1.087725	-2.919196	3.224858

### Correlation Matrix Section

	LAND_USx	EMPDIFFx
LAND_USx	1.000000	0.523384
EMPDIFFx	0.523384	1.000000

### Regression Equation Section

Independent Variable	Regression Coefficient	Standard Error	T-Value (Ho: B=0)	Prob Level	Decision (10%)	Power (10%)
Intercept	0.05662	0.13380	0.4232	0.67407	Accept Ho	0.12938
LAND_Usx	4.450E-03	1.056E-03	4.2110	0.00011	Reject Ho	0.99386
R-Squared		0.273931				

Root Mean Square Error	0.9366552	R-Squared	0.2739
Mean of Dependent	0.0566286	Adj R-Squared	0.2585
Coefficient of Variation	16.54032	Press Value	47.37973
Sum  Press Residuals	36.3042	Press R-Squared	0.1657

#### Normality Tests Section

Assumption	Value	Probability	Decision(10%)
Skewness	0.2179	0.827524	Accepted
Kurtosis	1.0492	0.294103	Accepted
Omnibus	1.1482	0.563208	Accepted

Durbin-Watson Value 2.3422

**CORRELATION REPORT- WITHOUT LAND**

**Pearson Correlations Section (Row-Wise Deletion)**

	W_OLAND
CORPTX_US	-0.396334
PROP_USx	-0.047636
WAGE_USxx	-0.297233
TEMP_USx	0.255597
VC_US	-0.072537
CON_US	0.208925
SAT_US	0.042955
W_OLAND	1.000000

**MULTIPLE REGRESSION REPORT- CORPORATE TAXES**

**Descriptive Statistics Section**

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
CORPTX_US	49	0.4925167	52.11436	-100	96.44682
W_OLAND	49	3.469447E-18	0.926847	-2.532087	2.107378

**Correlation Matrix Section**

	CORPTX_US	W_OLAND
CORPTX_US	1.000000	-0.416639
W_OLAND	-0.416639	1.000000

**Regression Equation Section**

Independent Variable	Regression Coefficient	Standard Error	T-Value (Ho: B=0)	Prob Level	Decision (10%)	Power (10%)
Intercept	3.649E-03	0.12164	0.0300	0.97619	Accept Ho	0.10014
CORPTX_US	-7.409E-03	2.358E-03	-3.1420	0.002902	Reject Ho	0.92667
R-Squared		0.173588				

Root Mean Square Error	0.8514869	R-Squared	0.1736
Mean of Dependent	3.469447E-18	Adj R-Squared	0.1560
Coefficient of Variation	0	Press Value	37.464
Sum  Press Residuals	33.40428	Press R-Squared	0.0914

**Normality Tests Section**

Assumption	Value	Probability	Decision(10%)
Skewness	1.1121	0.266099	Accepted
Kurtosis	0.7520	0.452030	Accepted
Omnibus	1.8023	0.406102	Accepted

Durbin-Watson Value 2.3516

## CORRELATION REPORT- WITHOUT LAND AND TAXES

### Pearson Correlations Section (Row-Wise Deletion)

	W_OLANDTX
PROP_USx	-0.128851
WAGE_USxx	-0.253611
TEMP_USx	0.259867
VC_US	-0.042202
CON_US	0.177961
SAT_US	-0.077971
W_OLANDTX	1.000000

**MULTIPLE REGRESSION REPORT-WAGES**

**Descriptive Statistics Section**

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
WAGE_USxx	49	-0.3995593	16.40854	-23.85641	62.76537
W_OLANDTX	49	1.561251E-17	0.8425706	-1.914655	2.337034

**Correlation Matrix Section**

	WAGE_USxx	W_OLANDTX
WAGE_USxx	1.000000	-0.252976
W_OLANDTX	-0.252976	1.000000

**Regression Equation Section**

Independent Variable	Regression Coefficient	Standard Error	T-Value (Ho: B=0)	Prob Level	Decision (10%)	Power (10%)
Intercept	-5.190E-03	0.11771	-0.0441	0.96501	Accept Ho	0.10032
WAGE_Usxx	-0.0129902	7.2464E-03	-1.7926	0.07947	Reject Ho	0.54882
R-Squared		0.063997				

Root Mean Square Error	0.8237903	R-Squared	0.0640
Mean of Dependent	1.561251E-17	Adj R-Squared	0.0441
Coefficient of Variation	0	Press Value	35.55285
Sum  Press Residuals	31.95481	Press R-Squared	-0.0433

**Normality Tests Section**

Assumption	Value	Probability	Decision(10%)
Skewness	1.3448	0.178691	Accepted
Kurtosis	0.9037	0.366169	Accepted
Omnibus	2.6251	0.269133	Accepted

Durbin-Watson Value 2.2006

**MULTIPLE REGRESSION REPORT- TEMPERATURE**

Dependent W\_OLANDTX

**Descriptive Statistics Section**

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
TEMP_USx	48	1.31033	15.60177	-23.55613	42.73751
W_OLANDTX	48	1.300004E-02	0.8465062	-1.914655	2.337034

**Correlation Matrix Section**

	TEMP_USx	W_OLANDTX
TEMP_USx	1.000000	0.259867
W_OLANDTX	0.259867	1.000000

**Regression Equation Section**

Independent Variable	Regression Coefficient	Standard Error	T-Value (Ho: B=0)	Prob Level	Decision (10%)	Power (10%)
Intercept	-5.475E-03	0.11968	-0.0457	0.96371	Accept Ho	0.10034
TEMP_Usx	1.409E-02	7.724E-03	1.8252	0.07446	Reject Ho	0.56125
R-Squared	0.067531					

Root Mean Square Error	0.8262613	R-Squared	0.0675
Mean of Dependent	1.300004E-02	Adj R-Squared	0.0473
Coefficient of Variation	63.55838	Press Value	35.17562
Sum  Press Residuals	30.87308	Press R-Squared	-0.0444

**Normality Tests Section**

Assumption	Value	Probability	Decision(10%)
Skewness	0.6800	0.496500	Accepted
Kurtosis	1.1091	0.267405	Accepted
Omnibus	1.6924	0.429038	Accepted

Durbin-Watson Value 2.5187

**CORRELATION REPORT- WITHOUT LAND, TAXES AND TEMPERATURE**

**Pearson Correlations Section (Row-Wise Deletion)**

	W_OLANDTXTEMP
PROP_USx	-0.125209
WAGE_USxx	-0.252723
VC_US	-0.024284
CON_US	0.213686
SAT_US	0.016627
W_OLANDTXTEMP	1.000000

**MULTIPLE REGRESSION REPORT- WAGES**

Dependent W\_OLANDTXTEMP

**Descriptive Statistics Section**

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
WAGE_USxx	49	-0.3995593	16.40854	-23.85641	62.76537
W_OLANDTXTEMP	49	-1.249807E-02	0.8135819	-1.975084	2.038933

**Correlation Matrix Section**

	WAGE_USxx	W_OLANDTXTEMP
WAGE_USxx	1.000000	-0.252723
W_OLANDTXTEMP	-0.252723	1.000000

**Regression Equation Section**

Independent Variable	Regression Coefficient	Standard Error	T-Value (Ho: B=0)	Prob Level	Decision (10%)	Power (10%)
Intercept	-1.750E-02	0.11367	-0.1540	0.87827	Accept Ho	0.10390
WAGE_Usxx	-1.253E-02	6.997E-03	-1.7907	0.07978	Reject Ho	0.54808
R-Squared		0.063869				

Root Mean Square Error	0.7955021	R-Squared	0.0639
Mean of Dependent	-1.249807E-02	Adj R-Squared	0.0440
Coefficient of Variation	-63.64997	Press Value	33.26052
Sum  Press Residuals	30.51347	Press R-Squared	-0.0469

**Normality Tests Section**

Assumption	Value	Probability	Decision(10%)
Skewness	1.2266	0.219981	Accepted
Kurtosis	0.9645	0.334784	Accepted
Omnibus	2.4348	0.295999	Accepted

Durbin-Watson Value 2.3606

**CORRELATION REPORT- WITHOUT LAND, TAXES, TEMPERATURE AND WAGES**

Filter VC\_US<300

**Pearson Correlations Section (Row-Wise Deletion)**

	W_OCORPCOSTTEMP
PROP_USx	-0.046627
VC_US	0.416208
CON_US	0.376059
SAT_US	-0.159142
W_OCORPCOSTTEMP	1.000000



## MULTIPLE REGRESSION REPORT- VENTURE CAPITAL

Filter VC\_US<300  
 Dependent W\_OCORPCOSTTEMP

### Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
VC_US	46	-24.55986	77.40205	-100	242.1223
W_OCORPCOSTTEMP	46	2.262964E-02	0.7924805	-1.818563	2.020787

### Correlation Matrix Section

	VC_US	W_OCORPCOSTTEMP
VC_US	1.000000	0.416208
W_OCORPCOSTTEMP	0.416208	1.000000

### Regression Equation Section

Independent Variable	Regression Coefficient	Standard Error	T-Value (Ho: B=0)	Prob Level	Decision (10%)	Power (10%)
Intercept	0.12728	0.11283	1.1281	0.26540	Accept Ho	0.29955
VC_US	4.261E-03	1.403E-03	3.0363	0.00401	Reject Ho	0.91056
R-Squared	0.173229					

Root Mean Square Error	0.7287207	R-Squared	0.1732
Mean of Dependent	2.262964E-02	Adj R-Squared	0.1544
Coefficient of Variation	32.20205	Press Value	25.8273
Sum  Press Residuals	26.69758	Press R-Squared	0.0861

### Normality Tests Section

Assumption	Value	Probability	Decision(10%)
Skewness	1.4973	0.134321	Accepted
Kurtosis	1.1156	0.264575	Accepted
Omnibus	3.4865	0.174951	Accepted

Durbin-Watson Value 2.1811

**CORRELATION REPORT- WITHOUT CORPORATE COSTS, TEMPERATURE AND VENTURE CAPITAL**

Filter VC\_US<300

**Pearson Correlations Section (Row-Wise Deletion)**

	W_OCOSTTEMPVC
PROP_USx	-0.078797
CON_US	0.300891
SAT_US	0.077828
W_OCOSTTEMPVC	1.000000

**MULTIPLE REGRESSION REPORT- CONNECTABILITY**

**Multiple Regression Report**

Dependent W\_OCOSTTEMPVC

**Descriptive Statistics Section**

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
CON_US	46	-5.802386	23.62562	-100	43.81848
W_OCOSTTEMPVC	46	-5.551115E-17	0.7205783	-1.558002	2.001527

**Correlation Matrix Section**

	CON_US	W_OCOSTTEMPVC
CON_US	1.000000	0.300891
W_OCOSTTEMPVC	0.300891	1.000000

**Regression Equation Section**

Independent Variable	Regression Coefficient	Standard Error	T-Value (Ho: B=0)	Prob Level	Decision (10%)	Power (10%)
Intercept	5.324E-02	0.10557	0.5044	0.61652	Accept Ho	0.14155
CON_US	9.177E-03	4.384E-03	2.0929	0.04216	Reject Ho	0.66127
R-Squared	0.090536					

Root Mean Square Error	0.6949506	R-Squared	0.0905
Mean of Dependent	-5.551115E-17	Adj R-Squared	0.0699
Coefficient of Variation	0	Press Value	23.24321
Sum  Press Residuals	25.52796	Press R-Squared	0.0052

**Normality Tests Section**

Assumption	Value	Probability	Decision(10%)
Skewness	1.8470	0.064753	Rejected
Kurtosis	0.8441	0.398621	Accepted
Omnibus	4.1237	0.127215	Accepted

Durbin-Watson Value 2.2760

**MULTIPLE REGRESSION REPORT-PROPERTY TAXES**

Dependent FINALRES

**Descriptive Statistics Section**

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
PROP_USx	46	1.751618	40.28618	-76.73034	95.53373
FINALRES	46	-3.469447E-18	0.6871856	-1.196297	1.87353

**Correlation Matrix Section**

	PROP_USx	FINALRES
PROP_USx	1.000000	-0.168343
FINALRES	-0.168343	1.000000

**Regression Equation Section**

<b>Independent Variable</b>	<b>Regression Coefficient</b>	<b>Standard Error</b>	<b>T-Value (Ho: B=0)</b>	<b>Prob Level</b>	<b>Decision (10%)</b>	<b>Power (10%)</b>
Intercept	5.029E-03	0.10110	0.0498	0.96054	Accept Ho	0.10040
PROP_Usx	-2.871E-03	2.534E-03	-1.1328	0.26342	Accept Ho	0.30113
R-Squared		0.028339				

Root Mean Square Error	0.6850327	R-Squared	0.0283
Mean of Dependent	-3.469447E-18	Adj R-Squared	0.0063
Coefficient of Variation	0	Press Value	22.80471
Sum  Press Residuals	24.8266	Press R-Squared	-0.0732

**Normality Tests Section**

<b>Assumption</b>	<b>Value</b>	<b>Probability</b>	<b>Decision(10%)</b>
Skewness	1.7654	0.077498	Rejected
Kurtosis	1.2989	0.193992	Accepted
Omnibus	4.8037	0.090553	Rejected

Durbin-Watson Value 2.2633

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