1996

Kentucky Annual Economic Report 1996

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Center for Business and Economic Research
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From the Director . . .

The Center for Business and Economic Research is proud to publish the 24th *Kentucky Annual Economic Report*. The Annual Report is one of the important ways in which the Center fulfills its mission to monitor and analyze the economy of Kentucky. The 1996 Report contains seven articles that provide forecasts and address many of the major economic policy issues facing Kentuckians today.

Again this year we draw upon the expertise of the faculty at the University of Kentucky. All seven articles are either authored or coauthored by University of Kentucky economists. As the Center has become fully integrated into the University's Department of Economics, more faculty have become involved in the Center's activities. In fact, we have five new authors in the Report, four of whom are faculty at the University of Kentucky. We are especially proud that Dr. Gail Hoyt and Dr. Robert Gillette, the two faculty teaching specialists in the Department of Economics, are contributing to this report and sharing with us some of their other scholarly abilities.

In the lead article we unveil the University of Kentucky State Econometric Model. Since I became Director of the Center almost two years ago, we have worked toward increasing our ability to forecast the state economy and its components. This effort accelerated when we hired Dr. Eric Thompson, a regional economist with a Ph.D. from the University of Wisconsin. Through Dr. Thompson's work CBER now has the capability to provide detailed quarterly forecasts of the state economy. He forecasts that Kentucky Gross State Product will grow by 2.8 percent in 1996. He also provides forecasts for 1997 and 1998 and disaggregated industry breakdowns of the results of our new state forecasting model.

The second article is a national economic review and outlook by Dr. Gillette. At the national level, he finds that in 1995 the economy coasted to a "soft landing," and he forecasts 2.5 percent growth in Gross Domestic Product in 1996.

The remaining articles deal with economic policy issues facing the state today. Dr. Gail Hoyt and Melissa Lamb analyze the prospects for welfare reform in Kentucky. They discuss previous and potential reforms and the role of block grants. They also estimate the savings from capping the amount of time a person would be eligible for AFDC.

Drs. Stephan Goetz and David Debertin examine the early evidence on the economic effects of KERA. They find that before the passage of KERA, revenues per pupil were negatively related to the poverty rate but that the reverse was true by 1993-4. They also estimate managerial efficiency by school district.

Dr. Dan Black and Amitabh Chandra study the effect of economic development incentives offered by the state on economic activity. They find that Industrial Revenue Bonds have a permanent positive effect on the earnings in the counties that receive them.

As the federal government moves toward the use of block grants to the states, it is important to know how different parts of the state may be affected. Drs. William Hoyt and Frank Scott undertake a county-by-county analysis of the receipt of federal transfer income and how it might change with the advent of block grants. They find that the distribution of payments by county would change significantly under several block grant distribution schemes.

Finally, my article examines how the wages paid to Kentuckians changed between 1988 and 1994 and compares the Kentucky and overall U. S. wage structure. Some of the most important changes were that the returns to schooling increased in Kentucky, the premium paid to workers in manufacturing increased, and the gender wage gap narrowed between 1988 and 1994.

The last year has been an exciting one at the Center for Business and Economic Research. We have moved from the Mathews Building to Suite 348 in the Business and Economics Building. This location makes it easier for us to interact with the faculty in the Department of Economics and the rest of the College of Business and Economics. In addition to Eric Thompson, we have hired a number of graduate and undergraduate research assistants and have research contracts with several clients in local, state, and federal government, and the private sector. We look forward to an even more exciting 1996.

During the first half of 1996, I will be a Visiting Professor at the Economics University of Vienna, Austria. I will be pursuing new research projects while there and continuing work on Center projects. Dr. Dan Black will serve ably as Acting Director of the Center in my absence.

Mark C. Berger
Director

Center for Business and Economic Research Staff

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The Center for Business and Economic Research (CBER) is the applied economic research branch of the College of Business and Economics at the University of Kentucky. Its purpose is to disseminate economic information and provide economic and policy analysis to assist decision makers in Kentucky's public and private sectors. In addition, the Center performs research projects for federal, state, and local government agencies, as well as for private-sector clients nationwide. The primary motivation behind CBER's research agenda is the belief that systematic and scientific inquiries into economic phenomena yield knowledge which is indispensable to the formulation of informed public policy.

Recent studies completed by CBER focus on the areas of manpower, labor, and human resources; health economics; public finance; and economic growth and development. In addition to the *Kentucky Annual Economic Report*, CBER publishes *Review and Perspective*, an occasional publication with descriptive and analytical articles on the Kentucky economy. It also publishes the *College of Business and Economics Working Papers*, which report the results of current research by college faculty, and *Growth and Change*, a scholarly, refereed journal with international distribution.

Contributing Authors

Dr. Mark C. Berger, Director of the Center for Business and Economic Research since 1994, is a Professor of Economics and Ashland Oil Research Fellow at the University of Kentucky. He received a Ph.D. from The Ohio State University in 1981, at which time he joined the faculty of the University of Kentucky. His research interests include unemployment insurance, health insurance reform, welfare reform, and other public policy issues. His papers have appeared in journals such as the *American Economic Review*, the *Journal of Political Economy*, and the *Review of Economics and Statistics*. He will be a visiting professor at the Economics University of Vienna, Austria, during the spring 1996 semester.

Dr. Dan A. Black is a Professor of Economics and Ashland Oil Research Fellow at the University of Kentucky. He received his Ph.D. from Purdue University in 1983, at which time he joined the University of Kentucky. He has also served as Visiting Associate Professor at the University of Chicago in 1989-90. His research interests include labor economics and public policy. His papers have appeared in academic journals such as the *American Economic Review*, the *Review of Economics and Statistics*, and the *Journal of Labor Economics*. He is co-author with Dr. Mark Berger of a forthcoming book on on-the-job training from the Upjohn Institute. Dr. Black will serve as Acting Director of the Center for Business and Economic Research during the spring 1996 semester.

Amitabh Chandra is a Research Associate at CBER and a student in the Ph.D. program in economics at the University of Kentucky. In 1993 he received a Traveling Scholars grant to pursue research on the methodology of Carl Menger in Vienna, Austria. His research interests include the economics of higher education, poverty policy, and the history of economic thought.

Dr. David L. Debertin is a Professor of Agricultural Economics at the University of Kentucky. He received his Ph.D. in 1973 from Purdue University and served on the faculty there before coming to the University of Kentucky in 1974. Dr. Debertin also is co-editor of the *Journal of Agricultural and Applied Economics*. His fields of interest include the economics of education and rural economic development. His research has been published in journals such as the *American Journal of Agricultural Economics*, the *Review of Agricultural Economics*, the *Journal of Educational Finance*, and the *Atlantic Economic Journal*.

Dr. J. Robert Gillette is an Associate Professor of Economics at the University of Kentucky. He received his Ph.D. from Texas A&M University in 1986 and joined the faculty of the University of Kentucky in 1994. Before coming to Kentucky, he taught at Texas A&M University and Washington State University, and worked in private consulting. Dr. Gillette has authored or co-authored economic studies for various public agencies, including the Internal Revenue Service and the State of California, and for numerous private organizations.

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Dr. William H. Hoyt is an Associate Professor of Economics at the University of Kentucky. In the fall of 1994, he rejoined the faculty of the University of Kentucky after two years at Georgetown University. He received his Ph.D. from the University of Wisconsin in 1986 before coming to the University of Kentucky. His areas of interest include tax policy and public finance. His research has been published in the *American Economic Review*, the *Journal of Urban Economics*, and the *Journal of Public Economics*. His study of the Kentucky tax system was the lead article in the 1995 *Kentucky Annual Economic Report*.

Melissa D. Lamb is a free-lance writer and grant consultant. She received a Bachelor's degree in journalism from the University of Kentucky in 1988. Ms. Lamb currently serves as a marketing and grant consultant for the Kentucky Information Resources Management Commission, the City of Louisville Mayor's Office, and the Teen Pregnancy Prevention Clinic of the Alliant Medical Pavilion in Louisville. She has also worked in the Kentucky Education, Arts and Humanities Cabinet and has been a reporter for several newspapers.

Dr. Frank A. Scott, Jr. is a Professor of Economics at the University of Kentucky. He received his Ph.D. from the University of Virginia in 1979. Before coming to the University of Kentucky in 1982, he taught at Auburn University. His areas of research include industrial organization, regulation of business, the economics of health insurance and pensions, and public finance. He has published papers in academic journals such as *Industrial and Labor Relations Review*, the *Review of Economics and Statistics*, and the *Journal of Policy Analysis and Management*.

Dr. Eric C. Thompson is an Assistant Professor in the Department of Economics and CBER at the University of Kentucky. He received his Ph.D. in agricultural economics from the University of Wisconsin-Madison in 1992. Dr. Thompson was an Assistant Professor at the Center for Economic Research at West Virginia University and in the Community Economic Development Division of the West Virginia University Extension Service before coming to Kentucky in 1995. Dr. Thompson's research fields include local and state economic development, regional economics, and economic forecasting. He has published several research reports and has a paper forthcoming at the *Review of Regional Studies*.

Table of Contents

Quarterly Forecasts for the Kentucky Economy, 1996-1998 **1**
Eric C. Thompson
"Kentucky's economy is forecast to grow slightly faster than the national economy. Faster growth in per capita income, gross state product, and employment is expected for Kentucky in most quarters from 1996 to 1998. This growth is also expected to lead to lower unemployment rates in Kentucky than the nation, and to encourage population growth in Kentucky."

U. S. Economy Experiences "Soft Landing" in 1995; **11**
Look for More of the Same in 1996
J. Robert Gillette
"In 1995 the United States economy moved well into its fifth year of economic expansion since the last recession ending March 1991, and experienced the much publicized 'soft landing'. . . . In 1996, slow to moderate growth with low inflation should occur The forecast for real GDP centers around 2.5 percent growth."

Block Grants: Building Blocks for Welfare Reform in Kentucky? **15**
Gail M. Hoyt and Melissa Lamb
"Although the federal proposals do address states' increased needs during times of recession and population growth through emergency assistance loans and grants, the level of assistance is not comparable to additional funds available through entitlements. . ."

Local Economics Conditions and KERA **25**
Stephan J. Goetz and David L. Debertin
"KERA is being implemented across districts with widely diverging socioeconomic characteristics. As a result, it is not surprising that the linkages between KERA reforms, test scores, and income gains are not yet as strong as policy makers and the public might expect."

Chasing Smokestacks: An Analysis of Economic Development Incentives **31**
Dan A. Black and Amitabh Chandra
"It appears that the IRB [Industrial Revenue Bonds] incentives had a permanent impact on the earnings of the county."

County-Level Differences in Per Capita Transfer Income **39**
William H. Hoyt and Frank A. Scott, Jr.
"Transfer payments to individuals vary significantly among counties in Kentucky. Much of this variation is to be expected, given the variation in household income. Not all, however, appears attributable to differences in the characteristics of the populations of the counties."

The Earnings of Kentucky Workers, 1988-1994 **47**
Mark C. Berger
"Those persons in manufacturing jobs continued to see their earnings increase relative to those in retail trade from 1988 to 1994. . . . The difference between female and male annual earning . . . was 25.8 percent in 1988 and 17.2 percent in 1994."

Quarterly Forecasts for the Kentucky Economy, 1996-1998

Eric C. Thompson
Assistant Professor CBER and Department of Economics, University of Kentucky

Introduction

The following article describes a forecast for the Kentucky economy produced using the University of Kentucky State Econometric Model. This is the first forecast based on the model, which was developed in 1995. The model produces quarterly forecasts with significant sector and demographic detail. Forecasts are made for many mining, construction, manufacturing, retail, and service industries and government at a detailed level. Population forecasts are made by five year age groups for both men and women. Results are presented below for 20 manufacturing industries, two mining industries, three service industries, and three levels of government. Quarterly forecasts are presented below for employment and income for 1996. Annual forecasts are presented for 1996, 1997, and 1998.

Compared to its rapid growth in the first half of the 1990s, the Kentucky economy should experience more moderate growth in the next three years. But, throughout the period, the state's economy is forecast to outperform the national economy.

Growth in the Kentucky economy is expected to be as broad-based as it is consistent. Not only are the service and retail industries forecast to grow, but a majority (15 of 20) of manufacturing industries are expected to add employment from 1996 to 1998. In contrast, only five of 20 manufacturing industries nationally are expected to add jobs. In fact, the forecast of faster job growth in the Kentucky economy is primarily due to the faster growth forecast for manufacturing and construction industries.

Faster job growth is expected to lead to wage and salary income growth of 1.7 percent per year. Growth in wages, salaries, and benefits is forecast to account for 68.9 percent of total income growth in Kentucky. Growth in transfer income, while rapid, will account for 23.7 percent of income growth.

The Kentucky Forecast

The rate of growth in the Kentucky economy is forecast to be slightly higher than national growth (see the Appendix for a description of the national forecast). In most quarters and years, Kentucky's growth is expected to exceed national growth by a few tenths of a percent whether the measure is gross product, employment, or per capita income. While this difference may seem slight, its cumulative impact could be substantial. To give one example, Kentucky's employment growth rate is expected to exceed national growth by an average of 0.2 percent annually. This small percentage, though, translates into an additional 9,870 jobs for Kentucky from 1996 to 1998.

Despite a forecast for continued national decline . . . job growth is expected in nearly every manufacturing industry in Kentucky.

Kentucky's more rapid growth is not a function of the types of industries located in the state because Kentucky does not have a particularly large share of the nation's rapidly growing industries, such as computer equipment or software development. Rather, the key to stronger growth is the faster rate of growth in a broad group of manufacturing and construction industries.

Recent Developments

The rate of growth in the Kentucky economy slowed in 1995. This slack followed a nationwide trend as the national economy slowed in 1995 after two years of rapid job growth in 1993 and 1994.

The Kentucky economy is estimated to have added 40,000 jobs in 1995.[1] This 2.6 percent rate of growth is strong but substantially less than the 3.3 percent rate of non-farm job growth in 1994, when the state's economy added 50,000 jobs. Non-farm employment grew by 3.0 percent in the United States in 1994 but will have grown only at a 2.3 percent rate in 1995.

It is worth noting that the rate of job growth in the Kentucky economy exceeded the national job growth rate in both 1994 and 1995. This faster growth was in large part due to the performance of manufacturing industries in Kentucky. Manufacturing employment grew by 10,000 jobs in Kentucky in 1994 for a growth rate of 3.3 percent. Nationally, manufacturing employment grew just 1.4 percent. Manufacturing employment is estimated to have grown by 6,000 jobs, or 1.9 percent, in Kentucky in 1995, but only by 0.4 percent nationally.

While stronger manufacturing growth is one reason for Kentucky's more rapid job growth, manufacturing employment in Kentucky is subject to the same pressures (such as productivity growth and overseas competition) as manufacturing nationally. Both nationally and in Kentucky, manufacturing employment fell in the second and third quarters of 1995. Continued declines in manufacturing nationally could indicate that manufacturing growth in Kentucky will be limited in the future.

Strong growth in service employment is another reason for rapid job growth in Kentucky. Service sector employment grew 3.9 percent in 1994 and 2.9 percent in 1995. This amounted to a growth of 14,600 jobs in 1994 and an estimated growth of 11,100 jobs in 1995.

The decline in job growth in Kentucky in 1995 is not evident for income. Real total personal income grew 3.6 percent in Kentucky and 3.2 percent nationally in 1994. Growth rates for 1995 remained roughly the same. Income in Kentucky is estimated to have grown 3.2 percent in 1995 compared to an estimate of 3.5 percent for the United States.[2] Growth rates for population in Kentucky also were similar for the two years. Population growth in Kentucky trailed national growth by about 0.1 percent in 1994 and is estimated to have trailed national growth by 0.2 percent in 1995.

The Next Year

The forecast for 1996 calls for a faster rate of growth in Kentucky than in the United States. Following the national pattern, the economy in Kentucky should enjoy strong growth in the first quarter of 1996 before slowing to a moderate rate of growth for the rest of the year. As Figure 1 illustrates, growth in gross state product, a measure of the output of the Kentucky economy, is forecast to reach 3.3 percent on a annual basis in the first quarter of the year before slowing to an average growth of 2.7 percent in the second through fourth quarters. Non-farm employment growth is forecast to be more steady, growing at a 2.0 percent rate or above in all but the fourth quarter. These growth rates are expected to be sufficient to keep unemployment low; unemployment is forecast to remain at or near 4.8 throughout the year. Growth in gross state product and employment is also forecast to lead to rising incomes in 1996. Growth in real personal income should reach an annual growth rate of 2.4 percent in the first quarter of the year before falling to an increase of approximately 1.5 percent in the remaining three quarters.

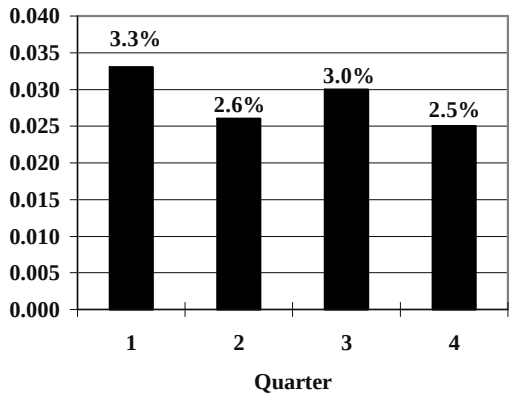

FIGURE 1: 1996 Kentucky Gross State Product Growth

Among industries, the retail and service sectors are forecast to account for the largest shares of employment growth. Growth in total employment from the fourth quarter of 1995 to the fourth quarter of 1996 is forecast to be 35,100. Service employment is expected to grow by 13,000 jobs, or 37.0 percent of total employment growth. Retail and wholesale trade employment should grow by 8,300 jobs, or 23.6 percent of overall growth. Manufacturing employment is forecast to grow by 2,700 jobs, or 7.7 percent of total growth. The modest growth in manufacturing relative to recent years in Kentucky reflects a national decline in manufacturing employment.

Growth in the Kentucky economy is forecast to remain moderate over the next three years. Rates of growth, however, will vary, similar to national forecasts. In particular, growth in 1997 is expected to

be slightly lower than growth in the other two years. According to many measures, the fastest rates of growth will be for 1998. Gross state product growth is forecast to exceed 3.0 percent in 1998, while employment and income growth are expected to be near 2.0 percent.

Gross State Product and Employment

Gross state product (GSP) is a comprehensive measure of economic activity which includes capital consumption, profits, business tax payments, as well as employment and earnings. As a result, analysis of gross state product data can sometimes lead to a different perspective than analysis of a less comprehensive measure, such as employment growth.

Discussion of employment growth data below will indicate that retail and service industries are forecast to account for most of the employment growth in Kentucky over the next three years. But, analysis of gross state product forecasts for Kentucky indicates that goods-producing industries such as manufacturing, mining, agriculture, and construction are expected to account for a substantial share of Kentucky's economic growth. Estimates of gross state product for 1995 indicate that goods-producing industries currently account for 38.2 percent of Kentucky's gross state product. Manufacturing alone is estimated to account for 26.4 percent of gross state product. Non-goods-producing industries such as services and wholesale and retail trade are estimated to account for the remaining 61.8 percent of gross state product.

Growth forecasts indicate that goods-producing industries will continue to play a substantial role in the state's economy. Figure 2 indicates that goods-producing industries are expected to account for 43.8 percent of growth in gross state product from the fourth quarter of 1995 to the fourth quarter of 1998. Manufacturing is forecast to account for 35.3 percent of that growth, retail and wholesale trade businesses 16.7 percent, and services 14.5 percent of growth. As these predictions illustrate, manufacturing and other goods-producing industries remain key to the growth of the Kentucky economy.

Strong growth in GSP is consistent with growing employment. However, an increasing GSP does not *guarantee* that employment will likewise increase. Productivity, or GSP per worker, can grow rapidly enough in some industries that total employment will decline even as gross product grows. This trend is occurring nationally in many manufacturing, mining, and construction industries. Figure 3 shows indices

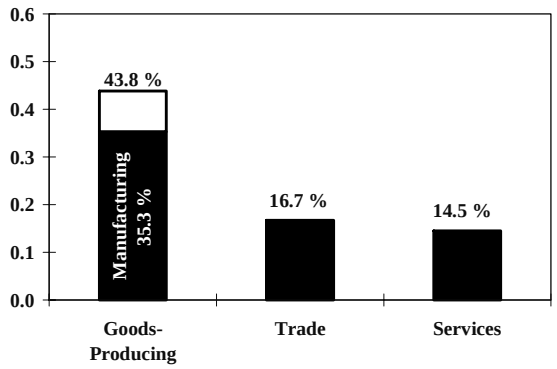

FIGURE 2: Share of 1996 to 1998 Gross State Product Growth in Selected Industry Groups

for employment in 1996 through 1998 compared to employment in the fourth quarter of 1995. As depicted, goods-producing employment is forecast to decline in the United States from the fourth quarter of 1995 through the fourth quarter of 1998. Employment is forecast to decline at an annual rate of 0.6 percent. But, the trend is different among goods-producing industries in Kentucky, which are expected to add employment in Kentucky. Employment is forecast to increase at a rate of 0.9 percent each year.

Faster growth among goods-producing industries is a primary reason why employment in Kentucky is forecast to grow faster than employment in the United States. This is because employment growth in most other industries is not forecast to be greater in Kentucky than nationally. This trend is also illustrated in Figure 3, which shows that national growth will be slightly greater for non-goods-producing industries. Non-goods-producing industries are forecast to grow by 2.3 percent per year in Kentucky compared to 2.5 percent nationally. Non-goods-producing industries include the services, retail, government, transportation, communications and public utilities, and finance, insurance, and real estate industries.

Income

Income growth in Kentucky over the next three years is expected to match national growth. Figure 4 shows indices of real total personal income for Kentucky and the United States. Real income refers to income adjusted for inflation. Both Kentucky and the nation should achieve an annual real personal income growth of 1.7 percent.

Kentucky's rate of income growth is not the result of a similar forecast for population growth,

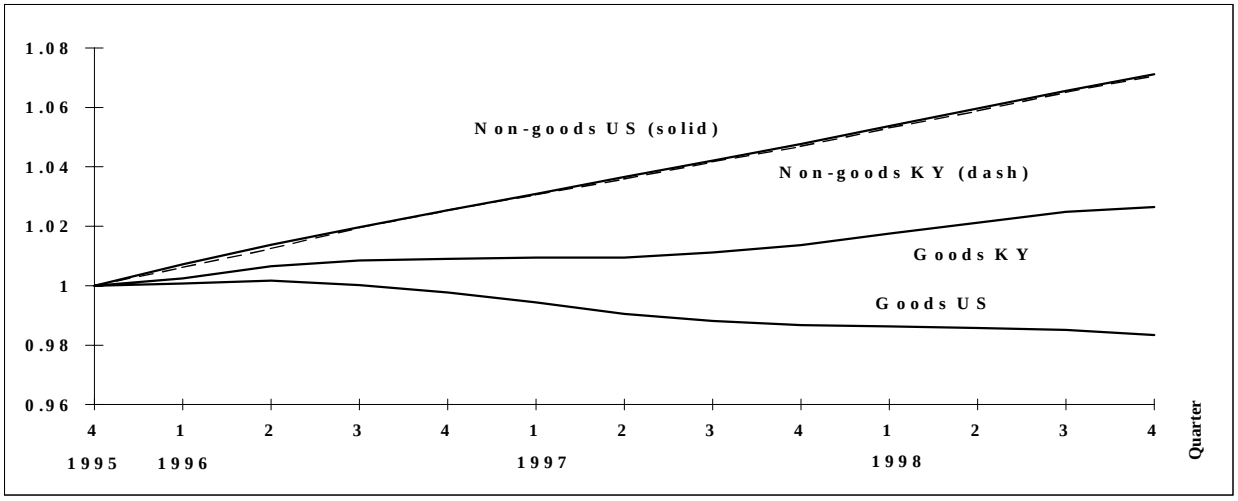

FIGURE 3: Indices of Employment Forecasts for Goods- and Non-goods-Producing Industries

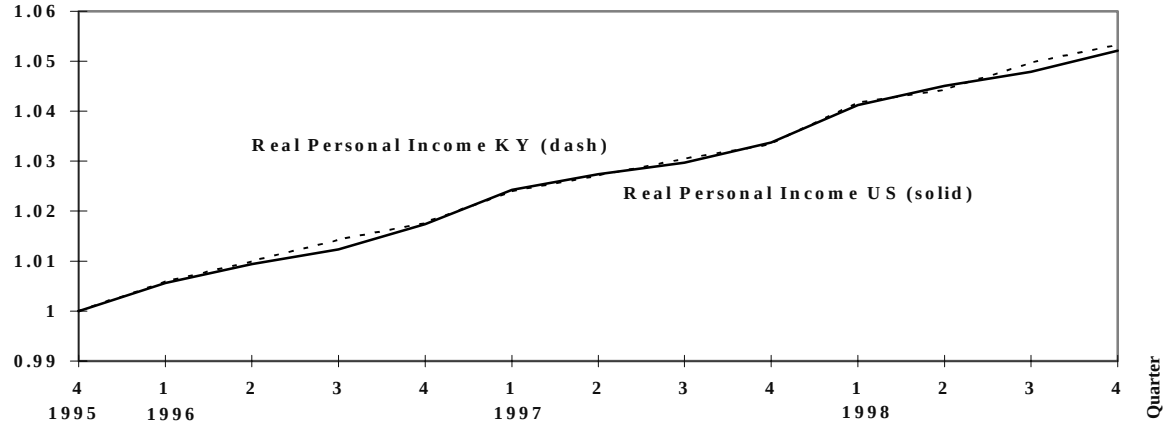

FIGURE 4: Indices of Real Personal Income Forecasts for Kentucky and the United States

which is forecast to grow more slowly in Kentucky than nationally. Rather, increase in income is due to a faster growth forecast for income per person in Kentucky. Per person, or per capita, income in Kentucky is forecast to grow by 0.9 percent compared to 0.8 percent nationally. Kentucky's more rapid expansion is resulting in faster-rising average incomes for its residents.

Population

Population growth in Kentucky, after stagnating in the late 1980s, resumed in the early 1990s. A change in migration rates into and out of Kentucky has been the key factor leading to this recent increase. Rising in-migration, reduced out-migration, or both, has lead to a strong rise in net migration, which is the number of persons migrating to Kentucky minus the number migrating out of the state. This positive net migration allowed the state to grow faster than it would have based solely on the natural increase of population.[3]

Net migration has increased to the point where Kentucky's population is forecast to grow at nearly the same rate as the nation's population. From 1996 to 1998, Kentucky's population is forecast to grow by 0.85 percent annually while the nation's population is forecast to average 0.91 percent growth. This state figure translates into an average increase of 33,000 residents each year. Of that total, 21,900 is due to net migration.

This strong growth, however, is not forecast in all population groups. As nationally, Kentucky's forecast shows an aging population. Little increase is expected among younger age groups. The five to 19 age group, which closely approximates the school age population, is forecast to remain roughly unchanged

from 1996 to 1998. Growth will average less than 0.1 percent per year. At the same time, some older age groups should grow rapidly. In particular, population is forecast to grow quickly among the older portions of the labor force. The population of 50 to 59 year olds is expected to grow by 8.0 percent over the three year period. This translates into a 2.6 percent average annual increase. Population is also forecast to grow quickly among the oldest portion of the population. The number of persons over age 85 should grow by 14.8 percent over the next three years for an annual average increase of 4.7 percent.

Forecast Detail

Growth of the Kentucky economy is forecast to be consistent as well as broad-based in the next three years. Underlying differences, however, exist in the growth of different industries and different sources of income. These differences are explored below.

Employment

The strong employment picture in Kentucky is the result of broad-based growth. As nationally, the majority of growth is forecast to occur in retail and service industries. But, in Kentucky, nearly *all* industries are forecast to add employment although some, including coal mining and federal government employment, are expected to lose employment.

Manufacturing clearly has been one of the strengths of the Kentucky economy in recent years. Manufacturing employment has increased by 16,000 jobs in the last few years in Kentucky while growing very slowly nationally. Despite a forecast for national decline, manufacturing employment is forecast to continue to grow in Kentucky at an annual rate of 1.0 percent. Further, at least some job growth is expected in nearly every manufacturing industry in Kentucky. Fifteen of the 20 manufacturing industries listed in Table 1 are forecast to add employment. Only furniture and fixtures, electric machinery, food products, tobacco, and leather products are forecast to reduce employment. Even in these industries, declines are not expected to exceed several hundred jobs. The most rapidly growing manufacturing industries in Kentucky are forecast to be transportation equipment, rubber and miscellaneous plastic products, and paper products.

Employment growth in construction industries mirrors that of manufacturing. Construction employment is forecast to grow by 1,100 jobs per year from 1996 to 1998 for a 1.5 percent annual growth rate. This rate of growth is in contrast to a 0.2 percent decline for the nation. Coal mining remains one declining portion of Kentucky employment. It should be noted, though, that the drop in coal mining employment has moderated in recent years. After declining by 1,400 jobs per year in the last five years, coal mining employment is forecast to decline by 600 jobs per year from 1996 to 1998.

Goods-producing industries are forecast to grow faster in Kentucky than nationally, which is not the case in most other industries. Non-goods-producing industries, which include retail, services, and government employment, are forecast to grow at roughly the same rate in Kentucky as nationally, particularly in trade and service industries. Growth in these industries is largely the result of local growth in population and income. These industries are growing at a similar rate in Kentucky and the nation because income and population are also growing at a similar rate.

Both nationally and in Kentucky, however, some service industries are experiencing substantial growth. Changing patterns in consumer spending and business practices have created a rapidly growing demand for these industries. Two such service industries, health services and business services, are listed separately in Table 1. A trend towards outsourcing services rather than keeping in-house staff is one of the reasons the business services sector is growing more quickly. Business services also includes the rapidly growing information services and software design industries. Consumer spending on health services is also rising more rapidly than spending in general.

Growth in government employment in Kentucky also is forecast to track growth in the rest of the economy. However, a distinction should be drawn between the growth of federal government employment and state and local government employment. Federal employment is expected to decline as federal spending is reduced. At the same time, state and local government employment will continue to grow at a moderate rate of about 1.7 percent. This figure is somewhat less than the 2.4 percent growth forecast for state and local government employment nationally. A slow growth forecast for state government employment in Kentucky is one reason for this lower Kentucky growth rate.

In summary, service, retail, government, and other non-goods-producing industries will account for most of the job growth in Kentucky. But, the strong performance of manufacturing and construction is the source of faster overall rate of job growth in Kentucky than nationally.

TABLE 1
Growth Rates for Non-Farm Employment
by Industry, Seasonally Adjusted

	1995 Employment	1996 Quarterly Growth (at an Annual Rate) (%)				Annual Growth (%)			Growth	Growth Rates (%)	
	4th Q	1st Q	2nd Q	3rd Q	4th Q	1996	1997	1998	KY	KY	US
Total Non-farm	1653.7	2.1	2.3	2.3	1.8	2.1	1.7	2.0	32.9	2.0	1.8
Goods-Producing	411.2	1.0	1.6	0.8	0.2	0.9	0.4	1.3	3.6	0.9	-0.6
Mining	27.2	1.9	-0.5	-3.7	-3.7	-1.5	-3.4	-2.9	-0.7	-2.6	-1.3
Coal Mining	23.4	2.3	-0.4	-4.1	-4.0	-1.6	-3.6	-3.3	-0.6	-2.8	NA
Construction	74.7	3.6	2.2	1.6	0.3	1.9	0.8	1.7	1.1	1.5	-0.2
Manufacturing	309.3	0.3	1.6	1.0	0.5	0.9	0.7	1.5	3.2	1.0	-0.6
Food Products	22.8	-1.2	0.3	-0.1	0.4	-0.2	-0.2	-0.3	-0.1	-0.2	0.0
Tobacco	4.5	-2.9	-6.6	-6.6	-4.9	-5.2	-5.4	-5.1	-0.2	-5.3	-3.3
Textiles	9.1	-1.2	0.1	1.8	3.6	1.1	1.6	0.9	0.1	1.2	-0.1
Apparel	27.9	3.0	3.4	1.2	-0.1	1.9	0.3	1.0	0.3	1.0	0.0
Paper Products	12.0	3.2	1.0	1.3	2.5	2.0	2.7	3.0	0.3	2.6	-0.1
Printing and Publishing	21.0	1.3	1.6	1.8	1.8	1.6	1.7	1.9	0.4	1.7	0.9
Chemicals	14.9	2.6	6.6	0.6	-1.5	2.0	-0.7	-0.1	0.1	0.4	0.4
Petroleum and Coal Refining	3.6	2.2	1.2	0.9	0.6	1.2	-0.2	-0.5	0.0	0.2	-1.9
Rubber and Plastic Products	19.0	2.2	6.5	9.4	4.5	5.6	4.5	5.6	1.0	5.2	0.3
Leather Products	1.5	-7.1	-3.6	-5.6	-7.0	-5.9	-4.6	-3.7	-0.1	-4.7	-2.2
Lumber Products	13.7	1.4	1.5	1.1	1.1	1.3	1.8	2.3	0.3	1.8	-0.4
Furniture and Fixtures	4.6	2.9	2.7	-1.9	-1.2	0.6	-2.3	-1.7	-0.1	-1.1	0.6
Stone, Clay, and Glass Products	10.9	-0.2	0.7	1.9	0.4	0.7	0.8	0.7	0.1	0.7	-0.9
Primary Metals	17.2	0.1	3.9	-0.1	1.2	1.3	-0.3	0.8	0.1	0.6	-1.4
Fabricated Metals	21.9	0.0	2.4	1.8	-0.5	0.9	0.4	1.2	0.2	0.8	-0.2
Non-electric Machinery	33.9	-0.9	-0.2	1.3	0.9	0.3	-0.7	1.0	0.1	0.2	-1.6
Electric Machinery	29.0	3.4	-3.5	-3.0	-2.5	-1.4	-0.7	-0.7	-0.3	-0.9	-0.3
Transportation Equipment	33.3	-5.4	3.6	0.7	1.0	-0.1	2.6	5.7	0.9	2.8	-3.7
Instruments and Related Products	3.8	0.7	1.9	2.6	2.1	1.8	-0.5	-1.4	0.0	0.0	-1.6
Miscellaneous Manufacturing	4.8	0.2	0.3	-0.8	0.0	0.0	1.8	1.4	0.1	1.1	1.1
Non-goods-Producing	1242.5	2.5	2.5	2.8	2.3	2.5	2.1	2.3	29.3	2.3	2.5
TCPU	90.4	2.5	2.3	1.6	1.6	2.0	1.8	1.8	1.7	1.9	0.9
Trade	401.6	2.1	1.9	2.8	1.5	2.1	1.9	2.0	8.1	2.0	2.0
Wholesale	78.1	2.0	0.0	5.3	-0.4	1.7	1.6	1.4	1.3	1.6	1.7
Retail	323.6	2.2	2.4	2.2	2.0	2.2	1.9	2.1	6.8	2.1	2.1
FIRE	64.1	2.4	1.7	1.4	0.7	1.5	0.7	1.6	0.8	1.3	0.8
Services	393.0	3.0	3.3	3.5	3.5	3.3	3.6	3.7	14.4	3.5	3.6
Health Services	139.8	2.8	3.2	3.7	4.0	3.4	4.1	3.9	5.5	3.8	3.7
Business Services	72.3	4.1	5.0	5.1	5.1	4.8	5.5	5.8	4.1	5.4	NA
Government	293.3	2.3	2.6	2.7	2.4	2.5	0.8	1.0	4.3	1.4	1.7
Federal	41.9	-0.1	-0.5	-0.5	-0.8	-0.5	-0.5	-0.1	-0.2	-0.4	-0.9
State and Local	251.4	2.8	3.2	3.2	2.9	3.0	1.0	1.2	4.4	1.7	2.4
State	88.7	0.4	1.0	1.1	1.1	0.9	1.0	0.9	0.8	0.9	NA
Local	162.8	4.1	4.3	4.3	3.9	4.2	1.0	1.4	3.6	2.2	NA

Income

Transfer income has been growing at a faster rate than wage and salary income in both Kentucky and the United States. The forecasts of income by source presented in Table 3, however, indicate that transfer income will not be the main source of income growth in Kentucky in the next three years. In fact, transfer income is forecast to grow only slightly faster in

TABLE 2
Growth Rates for Real Gross State Product (GSP)
by Major Industry Group, Seasonally Adjusted

	1995 GSP 4th Q	1996 Quarterly Growth (at an Annual Rate) (%) 1st Q	2nd Q	3rd Q	4th Q	Annual Growth 1996	1997	1998	Annual Averages Growth	Growth Rate (%)
Total	69454.0	3.3	2.6	3.0	2.5	2.9	2.3	3.2	1983.3	2.8
Agriculture	2476.7	7.4	-9.7	6.3	5.2	2.1	-2.3	10.2	81.6	3.3
Mining	2815.3	6.7	5.3	2.3	1.3	3.9	1.0	1.5	60.4	2.1
Construction	2882.2	1.4	0.5	0.6	0.2	0.7	0.7	1.4	26.5	0.9
Manufacturing	18344.1	3.0	3.8	3.7	2.5	3.3	3.4	4.4	700.2	3.7
TCPU	6596.5	3.4	3.3	3.0	3.0	3.2	3.1	3.2	214.5	3.2
Trade	10093.7	4.0	2.9	2.9	2.9	3.2	3.0	3.3	330.3	3.2
FIRE	8825.4	1.8	1.9	1.9	1.7	1.8	1.6	1.8	154.8	1.7
Services	9404.3	3.1	2.9	2.9	2.8	3.0	2.9	3.0	286.7	3.0
Government	8015.7	3.0	3.2	3.1	2.7	3.0	0.7	1.0	128.3	1.6

TABLE 3
Growth Rates for Real Personal Income
by Source, Seasonally Adjusted

	1995 Income 4th Q	1996 Quarterly Growth (at an Annual Rate) (%) 1st Q	2nd Q	3rd Q	4th Q	Annual Growth (%) 1996	1997	1998	Annual Averages Growth KY	Growth Rates (%) KY	US
Total Personal Income	47797.1	2.4	1.7	1.7	1.3	1.8	1.5	1.9	849.8	1.7	1.7
Wage and Salary Income	26098.7	2.2	1.6	1.7	1.5	1.8	1.8	1.8	470.8	1.8	1.7
Other Labor Income (Benefits)	3410.9	-0.5	4.0	3.5	3.1	2.5	3.5	3.8	115.2	3.3	3.7
Proprietors' Income	3654.2	1.1	1.3	0.9	-0.1	0.8	-0.2	0.6	15.0	0.4	0.9
Residential Adjustment	-126.4	-11.8	-13.5	-12.1	-7.8	-11.3	-7.1	-9.4	-12.8	-9.2	NA
Contributions to Social Insurance	2212.2	2.1	1.9	1.8	1.6	1.8	2.1	2.2	46.0	2.0	2.4
Transfer Income	9370.1	5.4	1.7	1.6	0.6	2.3	1.1	2.9	201.7	2.1	2.0
Dividends, Interest, Rent	6739.4	1.4	1.3	1.8	1.9	1.6	1.7	1.4	107.0	1.6	1.3
Per Capita Income	12372.2	1.7	0.8	0.9	0.5	1.0	0.7	1.0	0.1	0.9	0.8

Kentucky than wage and salary income. And, since it is already the largest source of income in the state, wage and salary income will remain the primary source of income growth.

Of the $2.55 billion (1982-84 dollars) of real income growth forecast for Kentucky over the next three years, $1.41 billion is forecast due to growth in incomes are forecast to account for 68.9 percent of income growth in Kentucky. Growth in transfer income is forecast to account for 23.7 percent of income growth.[4]

The above figures show the relative importance of the different components of income to the Kentucky economy but do not show the relative rates of growth for each component. These rates of growth are shown in Table 3. These figures indicate that transfer income is forecast to rise at a slightly faster rate in Kentucky than wage and salary income. Transfer income is expected on average to grow 0.4 percent faster. But, by far the fastest rate of growth is forecast for benefit income. Benefit income, which includes health insurance costs, is forecast to grow by 3.3 percent a year. These rates of growth for Kentucky are similar to what is forecast for the nation.

Another interesting pattern is the decline of Kentucky's residential adjustment, which is the difference between what Kentuckians earn working in other states minus what residents of other states earn working in Kentucky. The decline in residential adjustment indicates that one expected result of Kentucky's forecast employment growth is an increase in workers from nearby states finding work in Kentucky, a decrease in the number of Kentuckians working in nearby states, or both.

Risks to the Forecast

The forecast presented for the Kentucky economy is based in part on the baseline October forecast for the United States economy produced by DRI/McGraw Hill. This baseline national forecast represents a moderate, most likely scenario for the economy over the next three years. Use of this moderate national forecast implies that the Kentucky forecast is also a moderate forecast. It represents a moderate scenario for the state's economy among a group of possible scenarios. The national economy

has other potential outcomes, which in turn could be played out in the Kentucky economy. The three alternative national scenarios are examined below.

First, the DRI/McGraw-Hill forecast may have overstated the strength of the United States economy. In this scenario, the national economy will remain weak and perhaps even slip into recession. This scenario would show stagnant employment and output growth in early 1996 but more rapid growth than the baseline forecast in 1997 and 1998. DRI has assigned a probability of ten percent to this scenario.

Second, the economy could grow more quickly than believed in the baseline forecast due to rising productivity and higher than expected business investment. This scenario also assumes that low inflation would discourage the Federal Reserve from raising interest rates despite stronger growth. DRI has assigned a probability of 20 percent to this scenario.

A final possibility also involves more rapid growth than the baseline forecast in the United States and Kentucky economies in 1996 and 1997. But, rising bond yields would lead to a slowdown in 1998 in this boom and bust scenario. DRI has assigned a probability of 15 percent to this scenario.

Conclusions

The forecast for moderate growth in the Kentucky economy is based on a moderate, baseline forecast for the national economy. While the Kentucky economy is expected to follow the national economy, it will differ in several important respects. Kentucky's economy is forecast to grow slightly faster than the national economy. Faster growth in per capita income, gross state product, and employment is expected for Kentucky in most quarters from 1996 to 1998. This growth is also expected to lead to lower unemployment rates in Kentucky than the nation, and to encourage population growth in Kentucky. Population is forecast to grow in Kentucky at just below the national rate, which is a vast increase relative to stagnant growth in the late 1980s.

While most job growth is forecast to occur in retail and service industries, job growth in manufacturing and construction is expected to be the key source of faster growth in Kentucky's economy. Retail and service employment in Kentucky are forecast to grow at about the same rate as nationally. Manufacturing employment is forecast to grow by 1.0 percent each year in Kentucky while declining 0.6 percent annually in the nation. Manufacturing is also expected to be the fastest-growing component of gross state product in Kentucky. In addition, despite the growing importance of transfer payments, the wage, salary, and benefit returns from working are forecast to be the primary source of income growth in Kentucky during the next three years.

Notes

[1] Complete employment data was only available for the first three quarters of 1995 so fourth quarter values are estimates.

[2] Personal income and population data for Kentucky are not yet available for 1995. Thus, income and population values needed to be forecast for 1995 based on the Kentucky employment data which is available and national values for income growth. Kentucky employment growth and unemployment data are key inputs into forecasts of the migration component of population and the wage and salary, benefits, and proprietor's income components of personal income.

[3] Moderate series birth and survival rates were taken from Michael Price, Thomas Sawyer, and Martye Scobee, *How Many Kentuckians: Population Forecast 1995-2020,* Population Research, Kentucky State Data Center, University of Louisville, 1993.

[4] This forecast assumes significant reductions in welfare, medical programs, federal employee pensions, and other transfer payments like those currently under consideration by the federal government.

Appendix: National Forecast

The forecast for Kentucky is based on baseline national forecasts from the Data Resources, Inc. (DRI)/McGraw-Hill publication *Review of the U. S. Economy* for October 1995. National variables forecast by DRI/McGraw-Hill are key variables in nearly every part of the University of Kentucky State Econometric Model.[1]

The baseline national forecast from DRI/McGraw-Hill shows an economy which has successfully achieved a "soft landing" and is moving toward moderate growth for 1996 through 1998. The economy is even expected to grow robustly in the near term. Gross domestic product growth should reach 3.0 percent in the first quarter of 1996. But, throughout the remainder of 1996 and beyond, economic growth is forecast to be more moderate. Gross domestic product is forecast to grow by 2.4 percent in 1996, 2.6 percent in 1997, and 2.6 percent in 1998. Non-farm employment is forecast to grow by 1.9 percent in 1996, 1.6 percent in 1997, and 1.7 percent in 1998. The unemployment rate will be near 5.7 percent in 1996, 5.9 percent in 1997, and 6.0 percent in 1998.

This moderate forecast results from a mixed performance in different sectors of the economy. Improvements in manufacturing productivity, exports, and foreign direct investment are factors expected to spur the economy. Output per hour of work is forecast to rise by 4.0 percent annually in manufacturing industries. Strong productivity growth and an increasingly global economy should spur exports, which are expected to grow between eight and nine percent in each of the next three years while imports are forecast to grow by just seven percent annually. Foreign direct investment will grow by four percent annually after averaging just 1.4 percent growth in 1994 and 1995.

One steadying influence on the economy will be consumer confidence, which is expected to remain just below current levels in 1996 through 1998. Investments will be another steadying influence. Non-residential investment, which grew at a double-digit pace in 1994 and 1995, is expected to steady in the next three years to an average growth rate of 4.6 percent per year. Housing (residential fixed investments) fell for 1995 but is expected to rise to 0.9 percent growth in 1996 and 3.6 percent growth in 1998. However, housing is forecast to fall 0.9 percent in 1997.

The main drag on the economy for the short term could be contraction of the federal government's contribution to the gross domestic product. That contribution is expected to decline by 5.8 percent in 1996, 3.3 percent in 1997, and 4.2 percent in 1998.[2] The direct impact of this contraction will be to reduce demand for goods and services, which in turn will slow economic growth. It is unclear, however, how substantial that impact will be since reduced federal spending would lead to lower deficits. The federal budget deficit is forecast to decline in nominal terms from $160.5 billion in 1995 to $119.1 billion in 1998. Lower deficits could lead to lower interest rates, which may spur demand and compensate for some of the reduced demand by the federal government.

Inflation is expected to increase by 3.0 percent in each of the next three years. In the context of moderate inflation and declining deficits, the Federal Reserve is expected to have some leverage to lower interest rates. The prime interest rate is expected to fall from a 1995 average of 8.8 percent to 8.3 percent in 1996, 8.1 percent in 1997, and 8.0 percent in 1998.

Notes

[1] National industrial production and productivity by industry are variables in manufacturing and mining, gross state product, and employment equations. National consumer spending and industry employment variables are important inputs for retail and service equations. National data on income growth by source is a key variable in input growth equations.

[2] DRI forecasts assume that a version of the seven year deficit balancing plan will be adopted but that the government will begin having problems following the plan in 1998 when planned cuts become greater.

U. S. Economy Experiences "Soft Landing" in 1995; Look for More of the Same in 1996

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Introduction

In 1995 the United States economy moved well into its fifth year of economic expansion since the last recession ending March 1991 and experienced the much publicized "soft landing." The Federal Reserve (Fed) engineered this "soft landing" with a series of interest rate hikes from February 1994 to February 1995. The "soft landing" refers to the slowing down of an overheating economy on the verge of driving up inflation, to an economy growing near its full-employment growth rate with low inflation. The delicate balance of slowing the economy without also causing a recession (a "hard landing") appeared in jeopardy in the second quarter of 1995 when the economy stumbled, and many wondered whether the Fed had over-tightened monetary policy.

In 1996, slow to moderate growth with low inflation should occur. The forecast for real GDP centers around 2.5 percent growth.

Along with explaining where the U. S. economy has been in 1995, and where it will likely be in 1996, I first review the 1994 economy. The booming 1994 economy, along with the Fed's 1994 preemptive strike against inflation, set the stage for understanding the economy in 1995.

1994 Economy: Summary and the Fed's Preemptive Strike Against Inflation

The U. S. economy in 1994 went gangbusters. Real gross domestic product (GDP), the value of all final goods and services produced in the U. S. adjusted for inflation, grew at an annual rate of 4.1 percent, which represents the highest growth rate of real GDP since 1984. As Figure 1 shows, real GDP grew at an annual rate of 3.3 percent in the first quarter, increased to 4.1 percent and 4.0 percent in the second and third quarters, and jumped to a whopping 5.1 percent in the fourth quarter.

The unemployment rate, as Figure 2 shows, declined throughout the year, starting at 6.7 percent in January and declining to 5.4 percent in December. Non-farm payroll employment increased by an average of 294,000 per month, representing the highest percentage increase in payroll employment since 1988. Manufacturing jobs increased by an average of 30,000 per month.

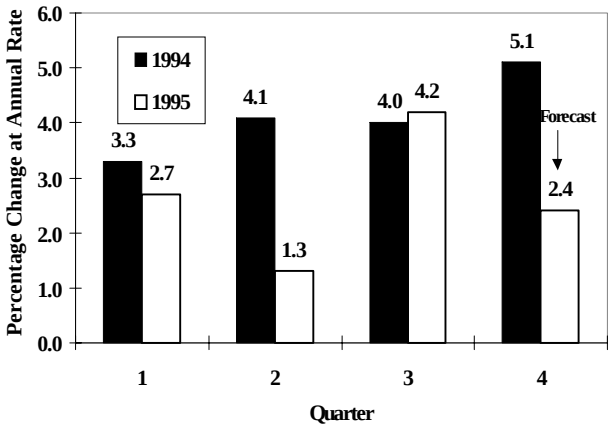

FIGURE 1: Real Gross Domestic Product Rate

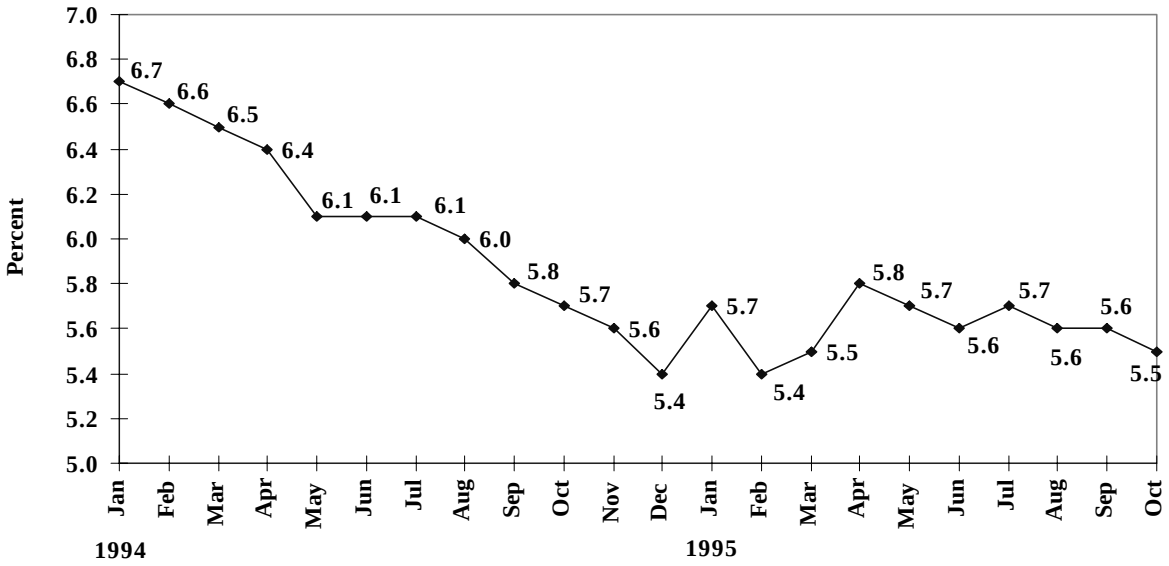

FIGURE 2:United States Unemployment Rate

Inflation, as measured by the Consumer Price Index (CPI), dropped to only 2.6 percent, the lowest annual rate since 1986. Short-term and long-term interest rates increased throughout the year as the Federal Reserve tightened monetary policy and the booming economy raised the expectation of future inflation.

With the economy booming and at full employment, the Federal Reserve correctly became concerned about an increase in inflation. A booming economy is wonderful if it is sustainable, but a booming economy at full employment cannot be sustained and will eventually drive up inflation as the economy overheats.

To slow the economy to a sustainable growth rate and prevent higher inflation, the Fed's policy-making arm, the Federal Open Market Committee (FOMC), raised interest rates eight times from February 1994 through February 1995. Specifically, the Fed raised the federal funds rate (the rate banks charge other banks for overnight loans) from three to six percent in a series of actions designed to prevent inflationary pressures from becoming embedded in the economy.

Slowing down a booming economy never makes the Fed popular. In 1994 the Fed took additional criticism because the much-feared inflation it was supposedly fighting did not appear in the 1994 monthly inflation numbers. Yet the Fed continued its tightening of monetary policy—raising interest rates—anyway. With inflation generally static, why did the Fed keep fighting it?

The answer revolves around the fact that monetary policy—changes in the money supply and interest rates—does not impact the economy quickly, but with a considerable lag. Tightening monetary policy has little impact on inflation for six to nine months, and does not have its full effect on reducing inflation for about 1½ to 2 years. Such extended lags force the Fed to prevent an increase in inflation by launching a preemptive attack on inflation. The inflation the Fed fought in 1994 was not the inflation for early-to-mid 1994. It was too late for the Fed to impact those inflation rates. In 1994, the Fed was fighting inflation for late 1994, 1995, and even 1996.

If the Fed waits for inflation to show up before it acts, it will be too late. As Fed Vice-Chairman Alan Blinder is fond of saying, the Bunker Hill strategy—wait until you see the whites of their eyes and then fire—does not work for monetary policy. If you wait to see the whites of their eyes, you're dead. If the whites of their eyes are showing inflation, you're about one year too late to prevent it.

1995 Economy: "Soft Landing"

The economy landed softly in 1995 with moderate growth and low inflation. The Fed successfully contained inflation and slowed the overheating economy without causing a recession. The soft landing appeared in jeopardy at the beginning of the second quarter when many economic indicators pointed down. Some observers feared a recession, wondering if the Federal Reserve had over-tightened monetary policy.

As Figure 1 shows, real GDP slowed during the first quarter to an annual rate of 2.7 percent, slowed further during the second quarter to 1.3 percent, but picked up during the third quarter to a surprisingly strong 4.2 percent. For the first three quarters, real

GDP grew at an annual rate of 2.7 percent. If the economy hits the consensus forecast for the fourth quarter of 2.4 percent growth (discussed below), then real GDP will grow just over 2.6 percent.

Inflation through October, as measured by the Consumer Price Index, equaled an annual rate of 2.9 percent. Inflation accelerated in the first five months of 1995, running at an annual rate of 3.6 percent, but subsequently slowed down to a rate a little above the 2.6 percent rate of 1994.

The unemployment rate, as Figure 2 shows, hovered around 5.6 percent, averaging 5.7 percent during the second quarter weakness and dropping to 5.5 percent in October. Non-farm payroll employment increased at an average of 137,700 per month through October.

Industrial production—output of factories, mines, and utilities—leveled off in 1995. As Figure 3 shows, the monthly index of industrial production rose considerably in 1994, at a 6.1 percent rate. In 1995, though, industrial production through October remained in the 121 to 122 range. In fact, the October industrial production index barely exceeded its January value. With this slowing pace, payroll employment in manufacturing through October decreased by an average of 16,500 jobs per month.

Business inventories through April rose relative to sales. In the second quarter and even into the third quarter, businesses slowed production to expend excess inventories. With the start of the fourth quarter, inventories appeared to be back at appropriate levels.

The U. S. dollar went on a roller coaster ride in 1995, especially against the Japanese yen. The dollar started the year just above 100 yen per dollar. In February, however, the dollar plunged, hitting in late April a post-World War II low of 79.85 against the yen. The dollar remained low until August, then climbed to stand again at 100 yen per dollar. Against a broader index of nineteen currencies, the dollar's plunge was not as severe, but neither has it fully regained all of its lost value against the broader currency index.

The dollar's decline throughout most of 1995 stimulated U. S. exports, since the cost of the exports to other countries dropped. This boost was particularly helpful given the weakness in the economies of our major trading partners—Canada, Europe, Japan, and Mexico. As other economies slow down, they also curtail purchases of U. S. exports. Mexico, with its peso devaluation, suffered a severe recession, seeing its real GDP decline about seven percent.

Unlike 1994, the Federal Reserve was not as active in 1995. In the inflation fight, it raised interest rates for the last time on February 1, pushing up the federal funds rate by half a percentage point to six percent. With the economy slowing and the inflation outlook benign, in July the Fed cut the federal funds rate by a quarter percentage point to 5.75 percent.

If Congress and the President have passed a budget accord by the end of 1995, the Fed will almost certainly cut rates again in December by at least a quarter percentage point. The bond and stock markets have already factored into current bond and stock prices a significant deficit reduction package and a Fed rate cut, which have pushed up bond and stock prices and pushed down long-term interest

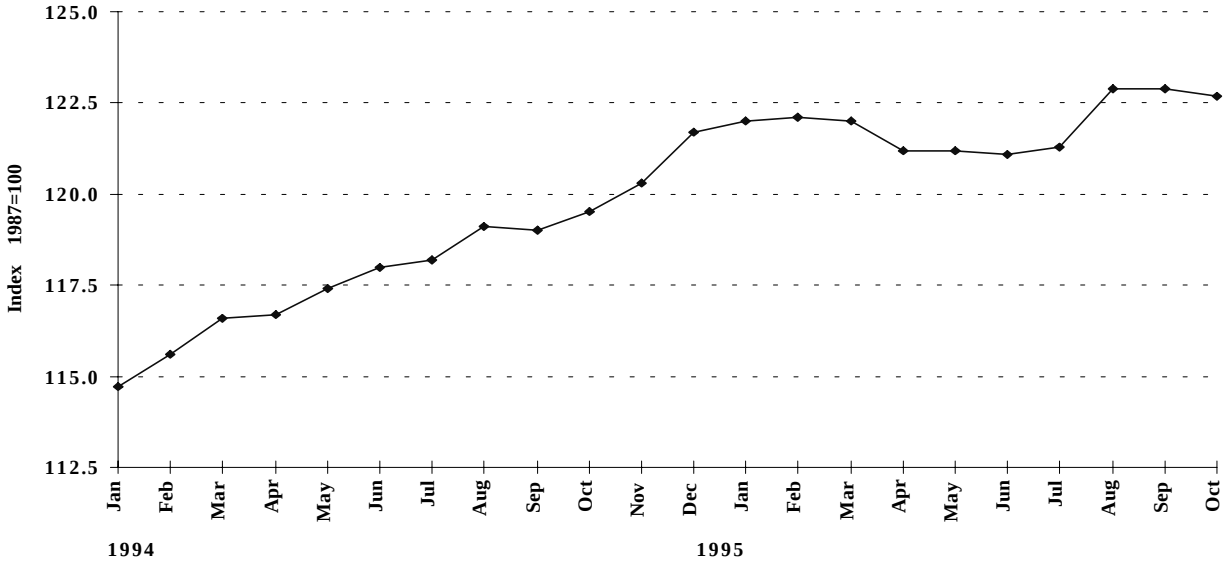

FIGURE 3: United States Industrial Production

rates. The budget accord, which would eliminate the federal budget deficit by 2002, will be somewhat of a short-term drag on the economy. Reductions in federal spending would likewise reduce the economy's aggregate spending. To neutralize this drag, and to encourage deficit reduction, the Fed has indicated that it will cut interest rates if inflation remains benign.

Interest rates, especially long-term rates, dropped substantially in 1995. In 1994 these rates rose throughout the year, but favorable inflation, the prospect of significant deficit reduction, and Fed rate cuts generated significant decline in 1995. Rates leveled off, even rose somewhat, in the middle of the year, but declined again in late August. By mid-November, the long bond—the 30-year Treasury bond—hit its lowest level since January 1994 when it yielded 6.22 percent.

At this time, the fourth quarter of 1995 is causing some nervousness. The consensus forecast centers around 2.4 percent growth in real GDP, but most analysts would be content with anything above 2.0 percent. In October, the first month of the fourth quarter, retail sales fell 0.2 percent and industrial production fell 0.3 percent. With relatively high consumer debt loads and weakened consumer spending, early indications are that a somewhat below average Christmas selling season will have resulted.

1996 Forecast: Look for More of the Same

In 1996, slow to moderate growth with low inflation should occur. The forecast for real GDP centers around 2.5 percent growth. The Blue Chip Economic Indicators Poll of fifty private-sector economists had a consensus forecast for real GDP growth in 1996 of 2.5 percent, with the highest ten forecasts averaging 3.1 percent and lowest ten averaging 1.9 percent. The Federal Reserve, in its 1995 semiannual report issued to Congress in July, forecast real GDP growth of 2.25 percent to 2.75 percent in 1996.

The inflation forecast centers right around three percent. The National Association of Business Economists' forecast a 1996 inflation rate of 3.1 percent, and the Fed in its semiannual report forecast an inflation rate of 2.875 percent to 3.25 percent. Further, the Fed forecast an unemployment rate in 1996 of 5.75 percent to 6.125 percent.

With a benign inflation outlook, a sluggish economy in the fourth quarter of 1995, and the prospects of a federal budget accord, look for the Federal Reserve to lower interest rates at least twice, having begun in December 1995. Even though interest rates are currently low, the so-called real interest rates—interest rates adjusted for inflation—are above their historical average, making current monetary policy modestly tight.

Block Grants:
Building Blocks for Welfare Reform in Kentucky?

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Introduction

In perhaps one of the most significant public policy shifts in decades, Congress is proposing to "end welfare as we know it" by eliminating guarantees of federal assistance to the poor. Although numerous federal welfare programs are subject to reform, Aid to Families with Dependent Children (AFDC) is perhaps the best-known cash assistance benefit program. AFDC was established through the Social Security Act of 1935 to provide limited support for children whose parents could not provide for them due to death, absence, or disability. In the 1930s, this program was conceived to assist children of widowed mothers. By 1962, the program had expanded to provide benefits to the parent and the child. Since that time, a number of societal and economic factors—the growing number of women in the workplace, the rise in divorce and out-of-wedlock births, and the increase of federal spending and welfare rolls—have raised questions about the intent and continued mission of the program.[1]

In theory, block grants give states greater flexibility . . . but that discretion is often lost to increased federal regulation.

While AFDC expenditures account for less than one percent of the federal budget, this anti-poverty program is one of the most controversial. Much of the dispute involves the design of AFDC as an entitlement, a feature which some policy makers consider a primary disincentive to work. In an entitlement program such as AFDC, all individuals who meet eligibility criteria are "entitled" to receive benefits, regardless of their ability or capacity for employment. The program also creates a high implicit marginal tax rate so that welfare often pays more than work. Noting the rise in single-parent households and out-of-wedlock births, policy makers are concerned that welfare in its current form has contributed to the breakdown of the American family. They fear that work disincentives of the program combined with the disintegrating family has fostered "a culture of dependency."

Added to the social concerns is a congressional drive to reduce the federal deficit by downsizing government. Policy makers reflect the current public mood when they state as Texas Senator Phil Gramm did that "people have to get out of the wagon and start helping to pull it." In tandem with the call for deficit reduction is the growing desire of states to renegotiate their relationship with the federal government as they seek increased autonomy in the use of federal funds for programs like AFDC. The debate has led to the development of welfare reform proposals in the U.S. House of Representatives and Senate. The key feature of both reform packages would combine funds for several federal anti-poverty programs, including AFDC, into block grants to states, with the purpose of providing greater flexibility in the use of the funds. Both welfare reform proposals also address budget reduction by cutting the amount states would receive through the block grants in an effort projected to save the federal government between $70-100 million over seven years. In this paper, we discuss the likely impact of the block grant proposals on Kentucky's AFDC program and their effect on the state's efforts to reform its welfare program.

We thank David Witt and Virginia Wilson of the Legislative Research Commission, and staff, including Ann Hager, at the Cabinet for Human Resources for their assistance.

TABLE 1
Key Features of Current AFDC Policy in Kentucky and Federal Welfare Reform

Current AFDC Policy in Kentucky	HR 4 (House Bill) Personal Responsibility Act	Senate Substitute to HR 4
Unmarried minors and their children are currently eligible for AFDC.	Prohibits cash assistance to a child born out of wedlock to a mother under 19.	State has the option to prohibit aid to children born out of wedlock to mothers under 18.
Additional children may be added to the AFDC grant. (The grant does not increase for an additional number after 7.)	Denies additional aid to mothers who have more children on welfare.	Does not prohibit aid to additional children.
Requires all AFDC recipients to participate in the Job Opportunities and Basic Skills (JOBS) Program if they reside in an active JOBS county and do not meet exemption criteria, such as being a caretaker of a child under age 3 or disabled household member, or an ill or incapacitated recipient.	Requires adults receiving cash assistance to work or participate in state-designed program.	Same work requirement. States may exempt families with children under age 1.
Must be a U.S. citizen or eligible alien.	Eliminates aid to non-citizens, with few exceptions.	

Sources: HR 4, the Personal Responsibility Act, passed March 24, 1995; Senate substitute to HR 4, the Family Self-Sufficiency Act, passed September 19, 1995. Kentucky policy provisions provided by the Kentucky Cabinet for Human Resources.

TABLE 2
Additional Federal AFDC Reform Proposals

HR 4 (House Bill) Personal Responsibility Act	Senate Substitute to HR 4
Requires recipients to work after 2 years.	Requires recipients to work after 2 years.
Prohibits assistance to families who have received block grant funds for five years.	Prohibits assistance to families who have received block grant funds for 5 years.
Intended to save $102 billion over 7 years. Cost is capped at $15.4 billion annually for 5 years. Freezes each state's share of funding at the higher of FY 94 federal obligations or the average FY 1992-94 obligations, reduced by 2.4 %.	Intended to save $70 billion over 7 years. Cost of block grant is set at $16.8 billion annually. Freezes each state's share of funding at FY 94 federal payments for AFDC, IV.A Child Care and JOBS Program.
Creates a federal $1 billion "rainy day" loan fund to states if their total unemployment rate for a three-month period exceeds 6.5 %. Loans must be repaid with interest.	Creates an emergency needs loan fund and a contingency grant fund.
States may lose up to 5 % of their block grant allocation for the next fiscal year for failure to meet the work participation rates.	States may lose up to 5 % of their block grant allocation for the next fiscal year for intentionally misspending any funds.
No requirements for state spending level.	States must maintain set spending levels (80 percent of current outlays on cash benefits for up to 5 years)
	Makes an additional $3 billion available over five years in federal matching funds for child care to states that maintain their FY 94 state level of welfare-related child care spending.

Sources: HR 4, the Personal Responsibility Act, passed March 24, 1995; Senate substitute to HR 4, the Family Self-Sufficiency Act, passed September 19, 1995. Kentucky policy provisions provided by the Kentucky Cabinet for Human Resources.

Congressional Welfare Reform Proposals

President Bill Clinton campaigned in 1992 to change "welfare as we know it." Following his election, however, federal health care reform efforts sidelined his welfare campaign. Two years later Republican candidates in the mid-term 1994 elections reinvigorated the welfare debate in a "Contract with America." Among the "Contract" clauses was a provision that the candidates, once elected, would pass a welfare reform bill within the first 100 days of their terms which would combine several anti-poverty programs into single block grants to states, eliminating open-ended federal entitlements. Currently, objective criteria are used to determine individuals' eligibility for government aid, with all who meet the standard receiving benefits. Block grants, however, would end the entitlement guarantee and offer states greater flexibility in determining who receives benefits and the amount of the benefit payment.

House Republican leaders were successful in passing a welfare reform bill, HR 4, or the Personal

Responsibility Act. The bill would block AFDC, the Emergency Assistance Program, and the Job Opportunities and Basic Skills (JOBS) program into a single grant known as Temporary Assistance for Needy Families.[2] The bill requires that non-working welfare recipients work within two years and ends their cash assistance after five years. HR 4 also includes several provisions aimed at discouraging other suspected outcomes of welfare. One such feature is the "family cap," which would eliminate cash assistance to additional children born to individuals already receiving benefits. HR 4 also would eliminate cash assistance to children born out of wedlock to minors.

The Senate version of HR 4 takes a much more conservative approach to eliminating benefits, allowing states more discretion in deciding whether or not to provide aid to teen mothers or mothers who have additional children on AFDC. Work requirements and time limits are the same as those proposed in the House bill. The Senate version makes an additional $3 billion available over five years in federal matching funds for child care. Worth noting in the Senate version also are provisions to assist states in the event of economic downturns. While the House bill provides a $1 billion "rainy day" fund, the Senate bill offers a contingency fund and an emergency needs loan fund. The Senate bill also requires states to maintain set spending levels of 80 percent of current outlays on cash benefits for up to five years. Tables 1 and 2 show the major points of the House and Senate plans along with Kentucky's current policy.

Kentucky's AFDC Population Profile

Today, Kentucky's average AFDC recipient is a white female with two children under age six. There is a 50 percent chance that her children were born out of wedlock and a 25 percent chance that one of her children was born while she was receiving AFDC benefits. There is a 46 percent chance that she did not finish high school.

In Kentucky, 79,840 AFDC cases were recorded in 1994. Those cases included 136,690 children and 71,343 adults. It follows that the average number of recipients per case was 2.6 and the average number of children per case was 1.7. The average age of children currently receiving AFDC is 7.9 years. Of these children, 32 percent are between 0 and 2 years of age, 19 percent are between 3 and 5, and 48 percent are 6 years or older. About 91 percent of basic AFDC-recipient household heads in Kentucky are females, slightly short of the national average of 92 percent. Six percent of the mothers on AFDC are teenagers, and 53 percent of AFDC-recipient children were born out of wedlock. Approximately 54 percent of AFDC recipients have a high school diploma, the equivalent, or higher, and ten percent have some post-secondary education. On average, 78

TABLE 3
1994 and 1995 Demographic Information
on AFDC Recipients in Kentucky and the United States

Variable	Kentucky			United States
	1994	1995 Basic AFDC Recipients	1995 Unemployed Parent Recipients	1994
Number of recipients	208,033	-	-	14,255,591
Children	136,690			9,589,898
Adults	71,343			4,635,693
% cases with female-headed household		90.7 %	51.5 %	92.4 %
% cases with teenage mother	6 %	-	-	NA
% cases with children born after opening case	24.5 %	-	-	26.2 %
Average number of recipients per case	2.6	-	-	3.8
Average number of children per case	1.71	-	-	1.90
Average age of child	-	7.9	6.8	7.4
Education of adult recipients, High school diploma or higher	-	54.3 %	44.2 %	NA
Education of adult recipients, Post secondary	-	10.2 %	6.9 %	NA
% of cases, recipients white	-	77.8 %	96.7%	38.3 %
% of cases, recipients non-white	-	22.2 %	3.3 %	61.7 %
% receiving food stamps	92.9 %	-	-	88.5 %
Average number of years on AFDC	3.9	-	-	3.0

Sources: CHR PA-264 Report Series "Public Assistance in Kentucky," July 1995; "Overview of the AFDC Program, Fiscal Year 1994," U. S. Department of Health and Human Services; "Time Trends," U. S. Department of Health and Human Services; additional unpublished information provided by the Kentucky Cabinet for Human Resources.

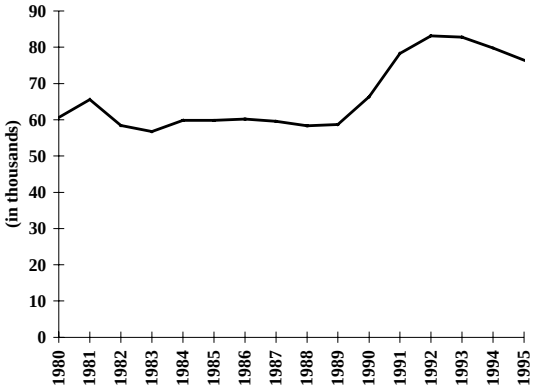

FIGURE 1: Average Monthly Number of Kentucky AFDC Cases

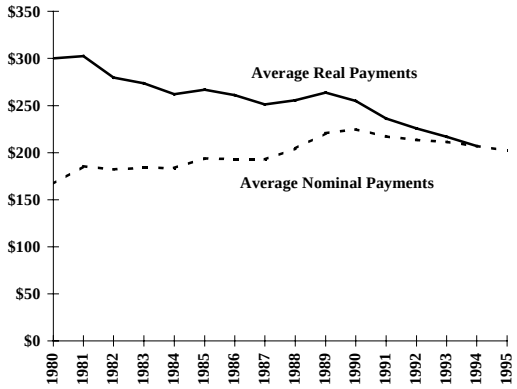

FIGURE 2: Nominal and Real Average Monthly Kentucky AFDC Maintenance Payments

percent of AFDC recipients in Kentucky are white compared to 38 percent nationally. Ninety-three percent of Kentucky's AFDC population receives food stamps. See Table 3 for additional demographics.[3]

AFDC Trends in Kentucky

Figures 1 through 3 show trends from 1980 to 1995 for the number of AFDC cases, average monthly AFDC payments, and the "need standard" for a family of three, respectively. An AFDC case refers to a family unit receiving an AFDC benefit payment. Figure 1 reveals little change in the number of cases from 1980 to 1988, averaging around 60,000 each year. After 1988, however, there is a steady increase in AFDC cases, peaking at 83,133 in 1992 and then gradually decreasing to 76,436 cases in 1995. Figure 2 shows average monthly maintenance payments to basic AFDC recipients during those

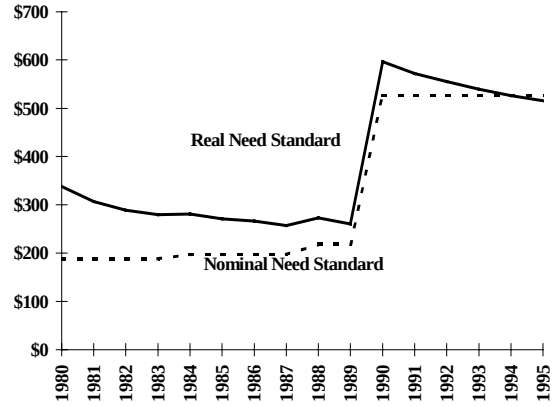

FIGURE 3: Nominal and Real Need Standard for a Family of Three

years. Both nominal benefit amounts and real benefit amounts, reported in 1994 dollars, are shown. Nominal and real dollar trends reflect an overall decline in benefit payments since 1980.

Figure 3 shows the real and nominal need standard for a family of three. The need standard is a monetary measure used to determine an individual's eligibility for AFDC and is based on the need for food, clothing, shelter, and utilities. It is the amount that a state recognizes as essential for a family to meet basic and some special needs. Countable family income is compared to the need standard to determine if a family is eligible for AFDC.[4] While states currently have autonomy in determining the need standard, the federal government does stipulate that applicants whose income exceeds 185 percent of the need standard are ineligible for AFDC. The real need standard, measured in 1994 dollar values, shows very little change from 1980 to 1988.

After 1988, however, there is a significant increase in the real and nominal need standard. In July 1989 Kentucky implemented a higher need standard, which made more people eligible for AFDC, and partially explains the increase in enrollment between 1989 and 1992. While the nominal need standard has remained constant at $526 since 1989, the real need standard has shown a slight decline from 1989 to 1995 due to inflation.

Also in 1989, Kentucky implemented a "ratable reduction" which lowers the marginal implicit tax rate. This means that as AFDC recipients work, they can retain more of their earnings. The reduction in the implicit marginal tax rate allowed more recipients to remain on the welfare rolls with earnings which also contributed to increasing enrollments from 1989 to 1992. Prior to the "ratable reduction," an AFDC recipient's benefit payment fell by one dollar for

every dollar earned in the workplace and other related benefits such as Medicaid, child care assistance, and food stamps, declined. By reducing the implicit marginal tax rate, recipients lose benefits gradually, allowing for an easier transition to work.

The Impact of Federal Welfare Reform on Kentucky

When compared to other states, Kentucky receives a relatively high proportion of federal funding for its welfare programs. The current federal funding formula for AFDC allocations to states is based on per capita income, which is comparatively low for Kentucky. Currently, 70 percent of Kentucky's AFDC maintenance payments are funded by the federal government, a figure that is significantly higher than the national average of 55 percent.[5]

Under HR 4, Kentucky would receive $176 million in a block grant in fiscal year 1996 (FY96) for its AFDC, JOBS, and Emergency Assistance programs, or $8.9 million less than the $184.9 million expended in those programs in the state in FY95. In the Senate welfare reform proposal, Kentucky would receive $188 million in a block grant for FY96, combining AFDC, JOBS and child care grants, for $10.7 million more than the $177.3 million the state expended in those programs in FY95. The increased funding under the Senate plan is due largely to a proposed increase in child care funds, which Senate leaders regard as necessary given the stringent work requirements. However, under the Senate's child care block grant, Kentucky would receive $18.2 million through a combination of the Social Services Block Grant (SSBG) and the Child Care Development Block Grant. This amounts to $4.5 million less than the $22.7 million the state spent on those programs in FY95.[6]

The loss of the entitlement nature of AFDC and other welfare programs will make it more difficult for the state to weather economic downturns. Entitlement programs are based on common standards of need to determine recipients' eligibility for benefits. All who meet the criteria are eligible to receive funds, causing state and federal expenditures for entitlements to expand during a recession and with population growth, and decline in times of prosperity. Although the federal proposals do address states' increased needs during times of recession and population growth through emergency assistance loans and grants, the level of assistance is not comparable to additional funds available through entitlements and, for the most part, those funds are loans which must be repaid.

Block grants, on the other hand, provide a fixed sum of funds to states. Current block grant proposals base funding to states on federal spending from 1994 rather than the number of eligible recipients, as is currently the case. Since 1994 was not a recession year, the funding the state would receive in the event of a future recession might be inadequate. In theory, block grants give states greater flexibility in determining how their programs are structured, but that discretion is often lost to increased federal regulation. Other block grants (such as the Community Development Block Grant) now in use by the federal government have increased federal regulation—the last resort of a government seeking oversight of its funds. And while block grants do provide states flexibility in determining their eligible populations, states no longer have the ability to influence future allocations simply through an increase in the number of eligible recipients. In fact, current proposals would cap federal welfare spending for five years. While nominal grants might be constant over this time period, the real value of the grant declines if inflation occurs.

With block grants as their centerpiece, the proposed welfare reforms are designed for unprecedented flexibility for states. But they also include many stipulations which may be regarded as attempts by the federal government to regulate or set criteria, including family caps, administrative spending caps, maintenance of effort requirements, work requirements, participation rates and time limits. In many cases, if these requirements are not met, current proposals call for reductions in the block grants to states. This provision has prompted officials in many states to consider this penalty a less costly option when compared to the real costs of employing an AFDC recipient. Some policy makers claim that the two-year deadline for transferring recipients from welfare to work will cost states more in the end as they attempt to create jobs which do not currently exist.

Previous Attempts at Welfare Reform

Although the congressional proposals have attracted much attention, welfare reform is not new. Numerous attempts have been made to reform welfare at the state and federal level. To help move more welfare recipients into work, Congress passed "The Family Support Act" (Public Law 100-485) in 1988 to curb work disincentives associated with AFDC and

TABLE 4
AFDC/JOBS Related Programs in Kentucky

Of all AFDC recipients 89.1 % participate in the Basic Program and 10.9% participate in the Unemployed Parents Program			
27.5 % of Basic AFDC recipients participate in the JOBS Program			
100 % of Unemployed Parent AFDC recipients participate in the JOBS Program			
Average Monthly Benefit payment for a family in the unemployed parent program is $253.87			
% of JOBS participants receiving JOBS-supportive child care subsidies	42.6 %	Average monthly child care payment for JOBS participants	$254.87
% of JOBS participants receiving JOBS-supportive service transportation	34.3 %	Average Monthly Transportation Payment for JOBS participants	$52.16

Source: Kentucky Cabinet for Human Resources, October 1995.

ease the transition from welfare to work by allowing recipients to maintain medical and/or child care benefits when they enter the workforce.

This act also created the Jobs Opportunity and Basic Skills JOBS program, which provides education, job skills training, job readiness training, and job development and placement. Child care and transportation are also offered as supportive services through the JOBS program.

The Family Support Act increased the number of items that can be counted as "disregards" when determining an applicant's eligibility. A disregard is an expense that a family might incur, such as child care or work-related expenses. A family can deduct a disregard from the countable income figure that determines eligibility for AFDC.

Ensuring that states take the initiative in moving individuals off welfare, the Family Support Act requires that 20 percent of all eligible AFDC recipients participate in a state's JOBS program by 1995. The law also requires that 50 percent of families eligible for the AFDC-Unemployed Parent (AFDC-UP) program participate in JOBS by 1995. Most AFDC cases fall into two categories: Basic AFDC for single parent families and AFDC-UP for two-parent families whose primary wage earner is unemployed. Table 4 shows that 89 percent of Kentucky's AFDC cases rely on Basic AFDC assistance while 11 percent are funded through the AFDC-UP program.

Kentucky has already surpassed JOBS participation requirements established under the Family Support Act. As noted in Table 4, 100 percent of Kentucky's AFDC-UP recipients participate in the JOBS program—50 percentage points higher than the federal requirement. Of Kentucky's Basic AFDC recipients, 28 percent participate in JOBS—eight percentage points higher than the federal requirement. Ninety-two of Kentucky's 120 counties participate in the JOBS program. For Kentucky's JOBS participants, 43 percent receive some sort of child care subsidy and 34 percent receive work-related transportation assistance. In 1994, JOBS participants were involved in related programs at the following rates: six percent in literacy, 20 percent in adult basic education, 16 percent in GED programs, 3 percent in high school, 22 percent in college, 13 percent in job skills training, 3 percent in job readiness, and 16 percent in Community Work Experience Program (CWEP).[7]

States have also reformed welfare in the 1980s and 1990s using federal waivers, which allow states to pursue their own welfare reforms within certain bounds. To receive a federal waiver, states must propose a demonstration project that includes an experiment and control group.[8] The primary components of the projects in states with approved waivers include time restrictions for receipt of AFDC benefits; provision of transitional benefits, such as child care, transportation and medical coverage, as individuals move from welfare to work; and "fill-the-gap" programs which limit reductions in benefits for every dollar earned. In New Jersey, for example, the legislature initiated a "family cap" by imposing a ban on additional aid to women who have children while receiving AFDC. Wisconsin, recognized for its sweeping reforms through the "Work Not Welfare" project, is instituting time limits and will abolish its AFDC program by 1999. Since demonstration programs such as these are relatively new, there is little conclusive evidence on their effectiveness.

While Kentucky has not applied for a welfare waiver, the state has made numerous innovations in its welfare program within the limits of current federal law. In 1989, Kentucky raised its need standard and created the "ratable reduction" to lessen work disincentives. Raising the need standard makes more individuals eligible for AFDC and allows them to earn more income before benefits are reduced. The "ratable reduction" allows an AFDC recipient to work without losing benefits in proportion to an increase in their earned income. This lowers the implicit marginal tax rates associated with returning to work so that employment will truly pay more than welfare.[9] Kentucky's implicit marginal tax rate for AFDC recipients is approximately 55 percent. "Ratable reduction" also ensures that Medicaid benefits are not immediately forfeited upon

employment. Since Kentucky's average benefit payment is lower than the need standard, the state also allows recipients to earn enough money to "fill the gap" between their AFDC payment and the need standard before benefit reductions occur. This program, often called "Fill the Gap," had only been implemented in ten states as of 1994.[10]

The majority of Kentucky's remaining welfare reforms deal with the provision of child care to working parents. Parents most often cite the lack of affordable child care as a reason for not working. Kentucky has created three different programs to address this concern: 1) Direct Child Care Payments, 2) Bridge-the-Gap, and 3) Transitional Child Care (TCC).

The Direct Child Care Payment program began November 1, 1995. Prior to this time, many AFDC recipients paid for child care from their earnings, and recipients' income used for child care was ignored when determining the AFDC benefit payment. But many AFDC parents still found it difficult to cover their child care costs. Through the new program, the child care payment is made directly from the government to the child care provider.

For recipients just entering the workforce, Bridge-the-Gap provides payment for child care expenses incurred in the month when the AFDC recipient begins employment. This program provides payment for the child care expenses up to the local market rate and child care enrollment fees up to $99. Once a recipient is taken off the AFDC roll, Transitional Child Care funds are available for up to 12 months.

Policy Options for Kentucky

Since 1992, the number of AFDC recipients in Kentucky has declined by approximately eight percent and the average monthly payment has declined by five percent. Figures 1 through 3 indicate the declining rolls and decreased payments although the state increased the need standard, making more people eligible to receive AFDC benefits. The Kentucky Cabinet for Human Resources credits the state's success with JOBS and the "ratable reduction" programs, as well as changes in child care financing, for the declining rolls and payments. Cabinet officials also claim that through training and education, AFDC recipients are more employable while child care supplements and a restructuring of incentives lessen work disincentives.

Other changes, however, have occurred over the same time period that might account for the decline in AFDC participation. There has been an overall improvement in Kentucky's economy, for example, and unemployment has declined since 1991.[11] Poverty rates in Kentucky, however, have increased from 17.3 percent in 1990 to 20.4 percent in 1993, which is considerably higher than the national poverty rate for 1993 of 15.1 percent.[12] Also, the population of Kentucky increased from 1992 to 1993. Given these factors, reasons for the decline in participation rates are still unclear.

While the state has enjoyed relative success with its welfare reform experiments, both in reducing the welfare roll and the size of the benefit payment, federal reform proposals and funding cuts will require the state to make additional changes. Regardless of the final reform package, states will have less money to operate their cash assistance programs and will have to meet work participation requirements or face further penalties through reductions. Block grants would give states more flexibility to operate their programs, but the proposed work participation standards as well as population restrictions may actually provide states with less flexibility as they attempt to meet federal requirements.

Both the House and Senate reform proposals would install time limitations on recipients' AFDC participation. Due to proposed federal budget cuts, Kentucky may choose to restrict further recipients' length of stay on AFDC. Block grants, however, do afford the state the option of eliminating time limitations if state officials are willing to underwrite the cost.

Currently in Kentucky, the average length of stay on AFDC is 3.9 years, compared to the national average of 3 years. These averages, however, should be interpreted carefully. Table 5 shows a national frequency distribution for the number of years that recipients remain on AFDC. Nationally, 16 percent of AFDC recipients receive benefits for less than a year. About 30 percent of the AFDC population receives benefits for two years or less, 30 percent are on the rolls from four to seven years, and 30 percent receive benefits for eight years or more.[13] Although 30 percent of AFDC recipients nationally receive benefits for less than two years, the average length of stay is skewed upward by the recipients that remain on AFDC for longer periods of time.

Table 5 shows estimates of the distribution of AFDC payments among recipients based on time spent on AFDC. This time is not the length of spell, but total lifetime duration on AFDC. According to this experiment, recipients on welfare for two years or less receive only six percent of total payments, while the 24 percent of the AFDC population receiving

TABLE 5
Time on AFDC and Distribution of Payments

	Number of Years									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Distribution of Lengths of Stay	16	14	9	11	5	8	6	4	3	24
Distribution of Payments	1	5	5	8	5	9	7	5	5	50
Experiment 1: Length of stay=8 Yrs	2	6	6	9	5	11	9	52		
Reduction in Payments	17									
Experiment 2: Length of stay=6 yrs	2	7	7	11	6	66				
Reduction in Payments	29									
Experiment 3: Length of stay=4 yrs	3	10	1	77						
Reduction in Payments	50		0							
Experiment 4: Length of stay=2 yrs	5	95								
Reduction in Payments	73									

Note: All numbers are percentages.
Source: Frequency distribution for percent of the AFDC population for a given amount of time, Bane and Ellwood (1983).

benefits for ten or more years receive 50 percent of total benefit payments. Table 5 also demonstrates that costs can be cut drastically by limiting the length of stay on AFDC. Restricting AFDC participation to eight years decreases total outlays by 17 percent; to six years, 29 percent; to four years, 50 percent; and to two years, 73 percent. It is important to note that this experiment shows cost savings as duration on AFDC is limited, but it does not hold other factors constant nor does it indicate the potential impact on poverty rates or the behavior of AFDC recipients.[14]

Over the past few years, Kentucky has used available training and education programs as tools to shorten the length of time welfare recipients receive assistance by improving their skills and making them more employable. In the first year of congressional reform proposals, ten (HR 4) or 25 percent (Senate version) of welfare recipients would have to work at least 20 hours per week, increasing to 50 percent the number of AFDC recipients working at least 35 hours per week by 2002.

Some policy makers claim this short transit from welfare to work will reduce opportunities for training and education, even though training and education may be better bridges to long-term employment. If states seek to meet the requirements and provide education and training, they may have to underwrite these programs. States with low educational attainment levels, like Kentucky, also face special challenges as the requirement for working welfare recipients increases annually. In 1990, 64.6 percent of Kentucky's population had a high school degree or higher, ranking the state 49th among states in the United States; 13.6 percent held a bachelor's degree or higher, ranking the state 48th nationally.[15]

States with regions of persistent poverty and high unemployment also face greater barriers in reducing welfare rolls. Although the unemployment rate in Kentucky has remained about five percent for several years, the rates have steadied at more than ten percent in many eastern Kentucky counties. Officials will have to consider these special challenges as they formulate Kentucky's response to federal reforms. With limited resources and stringent work requirements, states may choose to focus the bulk of their resources on individuals most likely to benefit from training and education programs.

Congressional reform proposals also include provisions that could restrict those eligible to receive aid under the new block grants for Temporary Assistance for Needy Families. HR 4 would prohibit cash aid to unmarried teen parents and their children, although states may provide vouchers for the purchase of commodities such as diapers and clothing for children. The House bill also prohibits aid to children born to parents who are currently receiving aid. (The Senate version of the bill offers no federal prohibition to aid in these circumstances but allows states to enact such stipulations.) These provisions were developed to reduce the welfare rolls and limit incentives for teen pregnancy and having additional children on welfare. If the final reform package is more closely aligned to the Senate version, Kentucky officials will have to decide whether to enact "family caps" or prohibitions on aid to special populations, such as teen mothers. Currently, six percent of AFDC recipients in Kentucky are teen mothers, and 25 percent of families have an additional child while receiving AFDC.

The federal proposals also place no stipulations on states' need standards, another tool that can be used to limit the eligible population and reduce expenditures. Although Kentucky increased the need standard in 1989 to $526 for a family of three, it is still much lower than the national average of $688 for a three-person family. A significant cut in the need

TABLE 6
AFDC Trends In Maintenance and Administrative Costs from 1980 to 1995

Total Maintenance Assistance Payment Per Case	NA	$172.10	$191.67	$172.56	159.25
Total State and Local Administrative Expenses (Per Case as a percent of Payment)	NA	$21.68 (11.2 %)	$33.17 (14.8 %)	$34.42 (16.6 %)	43.01 (18.9 %)

Sources: "Overview of the AFDC Program, Fiscal Year 1994," U. S. Department of Health and Human Services; "Time Trends," U. S. Department of Health and Human Services; additional unpublished information provided by the Kentucky Cabinet for Human Resources.

standard would result in a significant reduction in the AFDC roll, but the savings may accompany an increase in the state's poverty rate, which is already higher than the national rate.

Further options available to Kentucky include assessing the AFDC program's efficiency through administrative expenses, shown in Table 6, and the size of benefit payments. Kentucky's average monthly benefit payment of $202.26 per case for 1995 is already considerably lower than the national average of $376.47 in 1994, and Kentucky's payment has fallen from $224.84 in 1990. Of the $202.26 figure for 1995, $43, or 18.9 percent, is used to cover state and local administrative expenses. The percentage of total administrative expenses has risen from 14.8 percent in 1990. In 1994, the national rate for state administrative expenses was 14 percent of the monthly benefit payment.[16]

Conclusions

In FY95, 2.6 percent of Kentucky's budget was allocated for AFDC. Although this is a small portion of the entire state budget, welfare reform proposals indicate that the state will have even less money in the future to serve needy children and families. While the state may realize some savings by trimming administrative expenses or the benefit payment, the current program is already considerably lean. As demonstrated in the House and Senate reform proposals and the experiment of time and payment distribution, the greatest savings will be realized in limiting the length of time recipients can remain on welfare. Cutting time lowers spending. But, the 66 percent of AFDC recipients who are children are the least able to provide for themselves. And, increasing the number of people in poverty will not lower costs over time.

Kentucky and other states must strike a balance between reducing work disincentives in the current program and limiting the opportunity that needy children and families fall between the cracks. Investing in training and education has afforded the state some success in reducing the welfare roll over a short period of time. Continued state investment in capable and trainable individuals may offer a long term, though more costly, solution.

Furthermore, if welfare reforms are to endure, the new Temporary Assistance to Needy Families block grant should be distributed primarily as *temporary* assistance. Many families who undergo unexpected health care expenses, divorce or separation, or protracted unemployment often find themselves on welfare with no place to go. Temporary assistance may help them "bridge the gap" of their personal emergency to re-emerge in self-sufficiency. Recognizing these individuals and their special needs may require more intensive case management from social workers, but an initial investment may offset the cost of long-term dependency. The need for temporary assistance, however, should not blind policy makers to the inevitable population who, through disease, disability, or age, are unable to provide for themselves regardless of training opportunities.

Fewer dollars require policy makers and the public to focus sharply on the direction of funding streams. Among all options available to state policy makers, the proposed federal welfare reforms do offer the state an opportunity to assess the path it has taken and decide if block grants may be used as a foundation for bold and systemic reform.

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Notes

[1] From 1970 to 1993, state and federal expenditures on AFDC benefit payments experienced a cumulative increase of 44 percent (deflated using implicit price index for gross domestic product); U. S. House of Representatives, Committee on Ways and Means, *Overview of Entitlement Programs: 1994 Green Book* (Washington, D. C.: Government Printing Office, 1994).

[2] The Job Opportunity and Basic Skills (JOBS) program provides education, job skills training, job readiness training, and job development and placement. The Emergency Assistance Program provides temporary relief for families experiencing financial crises.

[3] Percentages for female-headed households, education levels, race, and age of child represent the most recent figures provided by the Kentucky Cabinet for Human Resources from 1995.

[4] Countable income refers to the family's earnings and assets that are counted as income when determining if the family is eligible for AFDC. Income and assets that are not counted as part of income are often referred to as "disregards." They typically represent earnings that have covered work- and medical-related expenses.

[5] "Overview of the AFDC Program, Fiscal Year 1994" and "Time Trends," U. S. Department of Health and Human Services.

[6] These statistics were provided by the Kentucky Cabinet for Human Resources, which obtained them through the American Public Welfare Association.

[7] Data provided by the Kentucky Cabinet for Human Resources.

[8] See Diana Gordon, "The Welfare Monster," in *State Legislatures*, June 1994, and Judith Gueron (1990) for more information on welfare experiments in other states.

[9] For more on work disincentives of various welfare programs see Moffitt (1992).

[10] See U. S. House of Representatives, Committee on Ways and Means, *Overview of Entitlement Programs: 1994 Green Book* (Washington, D. C.: Government Printing Office, 1994).

[11] Based on the following Kentucky unemployment percentages provided by the Kentucky Department for Employment Services: 1980, 8.0; 1985, 9.5; 1986, 9.3; 1987, 8.8; 1988, 7.9; 1989, 6.2; 1990, 5.8; 1991, 7.4; 1992, 6.9; 1993, 6.2; 1994, 5.4.

[12] Kentucky poverty rates from the Current Population Survey.

[13] National statistics on length of stay on AFDC taken from Bane and Ellwood (1983).

[14] To date, five states have received waivers to limit the time a recipient can stay on welfare: Colorado, Florida, Iowa, Vermont, and Wisconsin. For more information of specific state experiments see Diana Gordon, "The Welfare Monster," in *State Legislatures*, June 1994.

[15] *Statistical Abstract of the United States, 1994*, U. S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census, p. 15.

[16] Kentucky Cabinet for Human Resources and "Time Trends," U. S. Department of Health and Human Services.

Local Economic Conditions and KERA

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Introduction

Private and public decision makers in Kentucky generally agree that increases in educational attainment—referred to by economists as growth in *human* as opposed to physical or institutional capital—are critical to achieve economic well-being. Furthermore, many observers believe that formal education is becoming more important as the United States economy enters the "information age."[1] Kentucky traditionally has lagged behind other states in educational attainment, but in 1990 the Commonwealth initiated profound and far-reaching systemic reform in K-12 education under the Kentucky Educational Reform Act (KERA). KERA has been described as placing Kentucky "ahead of the pack and likely to remain so" relative to educational reform efforts in other states. Indeed, decision makers in other states are looking to Kentucky as a leader in educational reform, since no other state has implemented as comprehensive a reform effort.[2]

. . . higher KIRIS baseline scores (in 1991-92) in a county were associated with higher personal income levels in 1993.

Yet, within Kentucky, both the impacts and costs of KERA remain controversial. One controversy is that KERA neglects educational "basics" in its attempt to prepare students for the economy of the future. Another centers on "accountability," and whether or not teachers should or can be held accountable for what students learn. The area of student "assessment" is also highly controversial. Recently, educational experts from outside the state have described the new assessment system (Kentucky Instructional Results Information System) as having serious flaws.[3]

Despite these controversies, it is clear that significant overall advances have been made to date under KERA in increasing resources available for education. The KERA reforms have been implemented across school districts with vastly divergent social, demographic, and economic conditions. To illustrate, the share of children qualifying for free or reduced-price school lunch benefits in 1989-90 ranged from over 90 percent in Owsley county to less than four percent in Anchorage, Beechwood and Fort Thomas independent school districts.[4] These district- and county-level economic conditions affect student achievement and the implementation of KERA. If KERA succeeds, local economic conditions may improve in the long term. However, if students become better educated under KERA, they may also have greater opportunities to leave the local community for higher-paying jobs elsewhere in Kentucky or other states.

Linkages Between Poverty and Per Pupil Revenues

One of the most dramatic effects of KERA has been to eliminate the relationship that historically existed in Kentucky between personal income, poverty rates, or property wealth and per pupil revenues available for education. Prior to the reform, districts with a high proportion of students living in poverty (measured by the proportion of the students qualifying

for free or reduced-price lunches) received significantly fewer dollars than districts with only a small proportion of impoverished students. Our statistical analysis reveals that prior to KERA in 1989-90, a ten percentage point increase in the poverty rate resulted in a reduction of $62.80 in revenues per pupil.

With the new Support Excellence in Education in Kentucky (SEEK) school funding formula, implemented as part of the KERA reforms, per pupil revenues are now higher in districts that have larger shares of students living in poverty (Figure 1).[5] Per

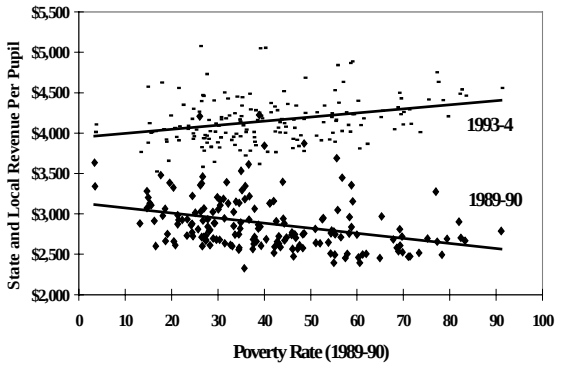

FIGURE 1: Relationship Between Revenues Per Pupil and Poverty Rates, Ky. School Districts (excludes Anchorage independent district)

pupil revenues in 1993-94 were *greater* by $50.50 per pupil for each ten percent increase in the 1989-90 poverty rate. This means that students in schools with a high percentage of impoverished students on average receive more dollars per pupil from state and local sources than students in low poverty districts.

KERA has had two other significant impacts on school revenues. First, per pupil revenues from state and local sources increased in all districts across the state. And second, the inequality with which per pupil revenues are distributed (as measured by the coefficient of variation) has declined, largely because school districts with higher poverty rates tended to receive larger increases in funding from the state than districts with lower poverty rates (Figure 1).

Linkages Between Poverty and Education (Test Scores)

Despite the new KERA dollars received from state and local sources, standardized test scores are still lowest in high-poverty districts. Figure 2 depicts scaled[6] school district test scores for four selected

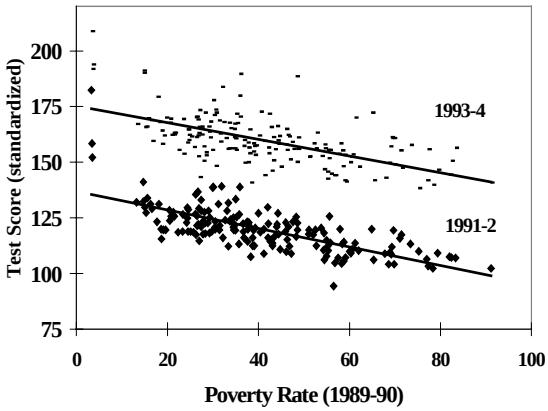

FIGURE 2: Relationship Between (scaled) Test Scores and Poverty Rates, Selected Years

years. With the exception of the two Kentucky Instructional Results Information System (KIRIS) scores, the different tests are not comparable, and we do not necessarily conclude from Figure 2 that scores have improved over time.

Table 1 illustrates how test score averages and standard deviations for the different tests have changed. The coefficient of variation, or *c.v.*, is the ratio of the standard deviation (a measure of variation in test scores across districts) to the mean (the average score for all districts) for each test score. The *c.v.* has increased over time, suggesting a relatively larger spread (or greater inequality) in results obtained from the various tests. However, whether KERA was the cause of this increase is not clear. If this increased variability is a consequence of KERA, then some schools were able to take advantage of KERA funding to quickly increase test scores, while others were not. In this case, how do these schools differ?

The increase in the *c.v.* in Table 1 should be interpreted with caution because the averages for the different tests vary over time and, as indicated, only the two KIRIS scores are comparable with each other. An increase in variability is evident in the results for the KIRIS scores over the two years. The average test score increased from 36.3 to 44.8 (by 23.4 percent)

TABLE 1
SCHOOL TEST SCORES OVER TIME

Test	Year	Average	Standard Deviation	c.v.
KEST	1985-86	60.8	4.3	7.0 %
CTBS	1988-89	51.4	4.1	8.0 %
KIRIS	1991-92	36.3	3.8	10.4 %
KIRIS	1993-94	44.8	5.0	11.2 %

KEST=Kentucky Test of Essential Skills; CTBS=Comprehensive Test of Basic Skills; KIRIS=Kentucky Instructional Results Information System; *c.v.*=coefficient of variation (see text above).

between 1991-92 and 1993-94. This increase would reduce the *c.v.* because the *c.v.* is being divided by a larger number (mean). However, the standard deviation increased by an even larger percentage (31.6 percent) so that the net effect was to increase the *c.v.* Figure 2 illustrates the greater variation in KIRIS scores in 1993-94 relative to 1991-92. This increased variation is observed for districts at all poverty levels, and especially at high poverty levels.

Preliminary estimates suggest that increases in math scores in grade 8 between 1991-92 and 1992-93 were significantly greater in districts in which a high proportion of adults had completed college, and they were significantly lower in districts with a high proportion of families living in poverty. This was true after controlling for 1) initial math scores in 1991-92; 2) instructional spending per pupil in 1991-92; 3) growth in instructional spending per pupil between 1991-92 and 1992-93; 4) location of the district in urban or rural counties; and 5) whether or not the district was an independent school district.

Math scores increased more in independent districts than in county school districts, and the difference between the two kinds of districts was statistically significant. Also, math score increases were smaller in urban districts than in rural districts. Future research will reveal if these statistical relationships have persisted in math and other tests administered since 1992-93.

Economists and educators have advanced a number of explanations for a negative relationship between poverty and educational achievement. First, parents in families living in poverty, lacking education themselves, may be unable to provide assistance on homework when asked by their child(ren). Second, students living in poverty have fewer resources at home (such as desk space in a quiet study environment with good lighting, an encyclopedia, or a computer) to assist in homework. Third, students over the age of 16 may also be needed to contribute to household income in poverty-stricken homes, leaving less time to do homework. Finally, students living in areas with high poverty and unemployment rates may see their net returns to education as low or even negative. As a result, these students may spend less time and effort on education.

Therefore, an important policy question in the administration of KERA is should socioeconomic and demographic conditions in counties be considered when schools are rewarded or penalized for changes in achievement score? Schools in high-poverty districts may find it more difficult to increase their test scores due to community-level socioeconomic factors detrimental to learning and beyond the control of school administrators and teachers.

School Managerial Efficiency

School administrators face a number of decisions involving resource allocation during the school year. These include choosing how to spend school dollars obtained from local, state, and federal sources. One important decision is how many personnel (principals, teachers, librarians, guidance counselors, attendance personnel, bus drivers, and custodians) to employ, given the expected student enrollment. Tax dollars have many uses besides education spending, and taxpayers expect school administrators to allocate these dollars wisely.

Research studies directed toward providing guidance to school administrators and school board members about these decisions do not always provide the same recommendations. Experts disagree, for example, on the impact on student achievement of reducing pupil/teacher ratios. Experts also disagree on the value of additional years of teaching experience and the value of a graduate degree for classroom teachers. Yet, Kentucky districts largely base teachers' salaries on these two factors, rather than more subjective (and possibly costly) measures of a teacher's ability to teach students. Of course, to the extent that school districts in Kentucky are successful in increasing student achievement levels, KERA rewards districts with additional funding, and some of these funds go into larger salary increases for teachers.

School administrators need to be more than financial managers; they also must provide educational leadership and motivation for teachers and other employees. Different superintendents and their immediate subordinates bring varying combinations of ability and experience to their jobs, which will affect school performance. In addition, superintendents may for various reasons be constrained in the short run in terms of their ability to respond to KERA's mandates (such as implementing effective site-based management processes), and factors such as parent interest and volunteerism may also affect the management of their schools. Together, this mixture of factors and uncertainty about how to optimally combine school "inputs," such as teachers' salaries and classroom sizes, will make it difficult, if not impossible, for superintendents to get their pupils to attain the test scores they could achieve in an ideal situation. Such an ideal situation would arise if superintendents had perfect knowledge about optimal combinations of personnel (numbers of teachers, assistant principals,

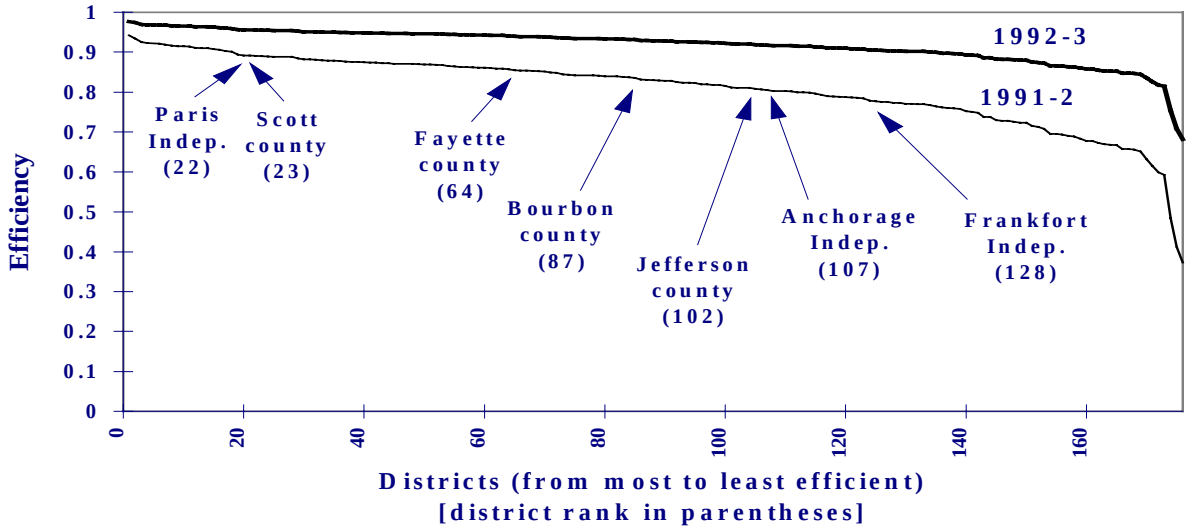

FIGURE 3: School District Managerial Inefficiency Estimates, Grade 8 Mathematics Test Scores

librarians, guidance counselors, etc.) and other resources that are needed to achieve the highest possible test scores.

We call the discrepancy between tests scores achieved under ideal circumstances and those achieved in reality as *managerial inefficiency*. We rank each Kentucky school district by the difference between the actual score and the score that should be ideally attainable, given the dollars available to the district and controlling for the economic conditions prevailing in the county. The larger the difference between the actual score and the ideal score in the district, the more managerially inefficient the district. This measure of inefficiency results after controlling for factors such as existing pupil-teacher ratios in each district; teacher salaries; per pupil spending on administration; whether the school district is rural or urban, independent or county; the county poverty rate; and the educational attainment of adults in the community.

Results for 176 Kentucky school districts ranked according to this measure in 1991-92 and 1992-93 are presented in Figure 3. The inefficiency measure lies between 0 and 1 (or 0 and 100 percent), with 1 indicating efficiency under ideal (but unrealistic) conditions. The horizontal axis shows the rank of each district sorted from highest to lowest by the inefficiency measure (details are contained in Table 2). Scores in Paris independent district in 1991-92 were close to efficient—about 15 percent lower than possible under ideal conditions, while those in Frankfort county were about 23 percent lower. Hence, these two districts were operating at 85 percent and 77 percent of their maximum possible efficiency, respectively.[7] Even among districts located in the same county, considerable differences can exist in the ranking. According to Figure 3, districts improved the efficiency with which resources are managed over the two-year period (at least in terms of math scores). Furthermore, our results reveal that the top-spending district (Anchorage Independent) was not the most managerially efficient. A district may have a high average student achievement score and yet be quite inefficient, or *vice versa*.

In the analysis presented in Figure 3, only grades in one subject and at one grade level were considered. Further, a number of factors (such as whether parents help their children with homework, whether children have appropriate places in the home at which to do their homework, whether parents volunteer in the school, and even how many hours children spend on the school bus) beyond the control of administrators likely affected the efficiency ranking. Despite these caveats, this kind of analysis is useful in identifying school districts with problems. In addition, districts that are comparatively efficient could be studied in greater depth to determine which specific administrative practices and policies make them efficient. This knowledge might be helpful in assisting inefficient districts.

TABLE 2
Rankings of School District According to Managerial Efficiency, Grade 8 Math Scores

Highest efficiency				*Lowest Efficiency*
Quintile 1 [97.7-95.0]	**Quintile 2** [95.0-93.8]	**Quintile 3** [93.7-91.8]	**Quintile 4** [91.8-89.3]	**Quintile 5** [89.2-68.1]
ASHLAND	ADAIR CO	BELL CO	ALLEN CO	BARBOURVILLE
BATH CO	BALLARD CO	BOONE CO	ANCHORAGE	BARREN CO
BELLEVUE	BEREA	BOURBON CO	ANDERSON CO	BEECHWOOD
BRECKINRIDGE	BOYD CO	BREATHITT CO	AUGUSTA	CAMPBELLSVIL
CALLOWAY CO	BRACKEN CO	BULLITT CO	BARDSTOWN	CARTER CO
CRITTENDEN CO	BURGIN	CAMPBELL CO	BOWLING GREEN	CLINTON CO
CUMBERLAND CO	BUTLER CO	CARROLL CO	BOYLE CO	CLOVERPORT
EMINENCE	CARLISLE CO	DAWSON SPGS	CALDWELL CO	CORBIN
FLEMING CO	DANVILLE	ELIZABETHTOWN	CASEY CO	COVINGTON
GREENUP CO	DAVIESS CO	ESTILL CO	CAVERNA	EDMONSON CO
HARLAN	DAYTON	FRANKLIN CO	CHRISTIAN CO	ERLANGER-ELS
HENRY CO	FAYETTE CO	HANCOCK CO	CLARK CO	FAIRVIEW
HICKMAN CO	FLOYD CO	HARDIN CO	CLAY CO	FULTON CO
JOHNSON CO	FT THOMAS	HARRISON CO	E BERNSTADT	GALLATIN CO
KNOTT CO	FULTON	HARRODSBURG	ELLIOTT CO	JACKSON
LEE CO	GRANT CO	JEFFERSON CO	FRANKFORT	JACKSON CO
LEWIS CO	GRAVES CO	LAUREL CO	GARRARD CO	JENKINS
MEADE CO	HENDERSON CO	LESLIE CO	GLASGOW	KNOX CO
MONTGOMERY CO	HOPKINS CO	LETCHER CO	GRAYSON CO	LAWRENCE CO
MONTICELLO	JESSAMINE CO	LINCOLN CO	GREEN CO	LIVINGSTON CO
MORGAN CO	KENTON CO	LUDLOW	HARLAN CO	MADISON CO
OWENSBORO	LARUE CO	MAGOFFIN CO	HART CO	MARSHALL CO
PADUCAH	LYON CO	MARTIN CO	HAZARD	MERCER CO
PAINTSVILLE	MARION CO	MASON CO	LOGAN CO	METCALFE CO
PARIS	MCCREARY CO	MAYFIELD	MCCRACKEN CO	MIDDLESBORO
PIKEVILLE	MCLEAN CO	MUHLENBERG CO	MENIFEE CO	NEWPORT
RACELAND	NELSON CO	MURRAY	MONROE CO	NICHOLAS CO
ROWAN CO	OLDHAM CO	OHIO CO	POWELL CO	OWEN CO
SCIENCE HILL	PENDLETON CO	RUSSELL	PULASKI CO	OWSLEY CO
SCOTT CO	RUSSELL CO	SHELBY CO	ROCKCASTLE CO	PERRY CO
SPENCER CO	SIMPSON CO	SOMERSET	RUSSELLVILLE	PIKE CO
WAYNE CO	TAYLOR CO	SOUTHGATE	SILVER GROVE	PINEVILLE
WEST POINT	TRIMBLE CO	TRIGG CO	TODD CO	PROVIDENCE
WHITLEY CO	WASHINGTON CO	WALTON VERONA	UNION CO	ROBERTSON CO
WOLFE CO	WOODFORD CO	WARREN CO	WEBSTER CO	WILLIAMSTOWN
		WILLIAMSBURG		

100=maximum possible efficiency; numbers in parentheses represent the efficiency range in 1992-93; CO=county school district.

Source*:* Authors' calculations (based on Figure 3).

Effects of Scores on Income

How does education affect local income and income growth over time? While it may be too early to quantify the impacts of KERA on personal income growth in Kentucky, Figure 4 suggests that higher KIRIS baseline scores (in 1991-92) in a county were associated with higher personal income levels in 1993.[8] This is largely a statistical association rather than a cause-and-effect relationship, and caution is warranted, at least in the short term, in suggesting that KERA will necessarily increase personal income levels.

There are three possible explanations for the relationship observed between scores and income in

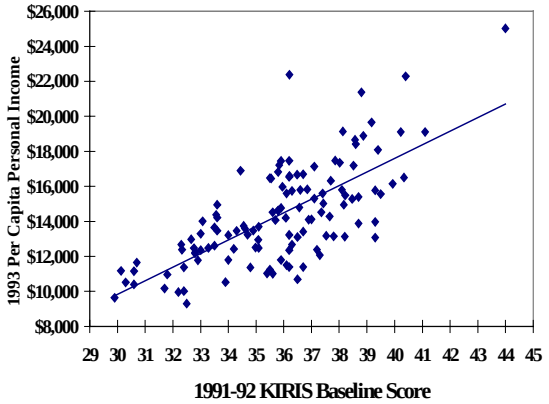

FIGURE 4: Relationship Between Income and School Test Scores, Selected Years (Aggregated to the County Level)

Figure 4. First, higher KIRIS scores are indicative of graduates who are better prepared to enter the workforce and move more rapidly into higher-paying jobs. Second, higher scores in certain subjects, such as mathematics, have been shown in recent research to be associated with higher subsequent earnings. And third, higher scores may help attract industries into a county that require a more highly-educated labor force and that offer relatively higher paying jobs. In addition, of course, factors other than educational achievement also determine income growth in a county.

The relationship depicted in Figure 4 is the kind of long-term effect both taxpayers and legislators expect from KERA. Higher personal income levels yield higher tax revenues to the state, perhaps making possible further improvements in Kentucky schools. Previous research has shown that net social benefits to investment in education are positive in the long term. Furthermore, studies have revealed that these net benefits tend to be larger in countries or economies which start from lower educational achievement levels, as in Kentucky.[9]

Although we believe that KERA has the potential to raise personal income in Kentucky counties over time, an important question remains: If KERA reform succeeds, will better-educated students be more likely to leave impoverished areas, leaving these places in as poor a condition as would have existed without KERA?

Conclusions

Kentuckians generally support the concept of and need for educational reform, but controversies persist on specific details. Examples include rewarding schools for higher test scores and restraining revenue growth in high property-wealth districts.[10] If issues such as these are resolved, public enthusiasm for KERA and its funding may increase.

KERA is being implemented across districts with widely diverging socioeconomic characteristics. As a result, it is not surprising that the linkages between KERA reforms, test scores, and income gains are not yet as strong as policy makers and the public might expect. Creating a system of common schools that provide equal opportunity for all students as required by the Kentucky constitution is a difficult task even in the most favorable legislative, economic, and financial situations.

Still, to the extent that higher incomes are associated with greater educational attainment, and higher educational attainment leads to still higher personal income levels over the long term, the potential benefits of KERA for all Kentuckians are very large. The principal challenge is to break the local cycle whereby low personal income levels lead to low educational achievement, which in turn perpetuates low incomes.

Notes

1 See, for example, the discussion in S. J. Goetz, "Economic, Industrial Changes Driving Demand for Workforce Training," in *Foresight*, Kentucky Long Term Policy Research Center, Spring 1995: 1-4.

2 Keynote speaker remarks by Dr. Rexford Brown, Education Commission of the States, at the conference on *Education in Kentucky: Current Results, Future Visions*, sponsored by the University of Kentucky/University of Louisville Joint Center for the Study of Educational Policy, Lexington, Ky., February 1995: 8 (summarized by Rosetta F. Sandidge).

3 A recent illustration of the controversy surrounding KERA is provided on the commentary page of the *Lexington Herald Leader*, Sunday, November 19, 1995 (p. E2), under the title "KERA: The debate never ends."

4 Kentucky Department of Education, *Profile of Kentucky Schools*, Fiscal Year 1989-90, Office of Management Services, Frankfort, Ky.

5 With a *t*-statistic of only 1.52, however, this relationship is not statistically significant at the ten percent level.

6 The data for Figure 2 were scaled to enhance readability..

7 This efficiency measure is *relative* in that it only compares a district relative to others in the same sample. The measure cannot be linked to an absolute, generally valid measure of efficiency. Also, the estimation procedure used to derive the rankings does not allow districts to become more efficient relative to each over time, or to "leap-frog" other districts. Further details are presented in S. J. Goetz and H. Luo, "Public School Frontier Production Function Estimation with Time-Varying Inefficiency," *Kentuky Journal of Business and Economics*, 13, (1994): 66-77.

8 To construct Figure 4, all scores were aggregated from the district to the county level. Research carried out at the level of countries suggests that income growth rates increase as student achievement scores rise (see D.W. Lee and T.H. Lee, "Human Capital and Economic Growth: Test Based on the International Evaluation of Educational Achievement," *Economics Letters*, 47, (1995): 219-25.)

9 G. Psacharopoulos, "Returns to Investment in Education: A Global Update," *World Development*, 22 (no. 9), (1994): 1325-43.

10 See S. J. Goetz and D. L. Debertin, "School Finance Reform," in *Annual Summary of KERA Research*, University of Kentucky/University of Louisville Joint Center for the Study of Educational Policy, Lexington, Ky., (Fall 1995); and S. J. Goetz, "Finance," in *Education in Kentucky: Current Results, Future Visions*, University of Kentucky/University of Louisville Joint Center for the Study of Educational Policy, Lexington, Ky., (Feb. 1995): 42-8.

Chasing Smokestacks:
An Analysis of Economic Development Incentives

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Introduction

Is it possible for states and metropolitan areas to attract firms and "buy" economic growth, by offering them incentives to locate in their regions? An examination of such enticements suggests that many state and local authorities embrace this view. For example, consider these recent inducements: a $183.9 million incentives package offered to the New York Mercantile Exchange to stay in New York City, a $720 million bid to lure a professional football team to St. Louis, a $144 million tax abatement deal offered to General Motors to establish the Saturn plant in Tennessee, or closer to home, a $125 million incentives offer to attract Toyota to Kentucky.[1] Some observers of these aggressive bidding tactics have coined the flippant, though not inappropriate term, "chasing smokestacks," to describe this behavior.

In Kentucky, spending on incentive programs has swelled from a total outlay of $1.85 per person in 1985 to over $25 per person in 1993, illustrating the increasing importance that the Commonwealth places on incentive spending as sound economic development policy.[2] As the scale and scope of incentive programs increase, two immediate questions surface:

In Kentucky, spending on incentive programs has swelled from a total outlay of $1.85 per person in 1985 to over $25 per person in 1993 . . .

- First, what is the efficacy of these programs? Are they successful mechanisms in initiating the complicated process of economic growth? Do they create new jobs and reduce unemployment, or are they merely costly transfers to businesses whose behavior would remain largely unchanged in the absence of these programs?
- Second, what are their distributional impacts? Do development incentives work by benefiting new firms at the expense of established firms? Is employment raised in targeted industries, but decreased in others? Are the costs imposed on taxpayers justified by the potential returns to them, or do the benefits of receiving incentives accrue to other groups?

In this paper we explore the answers to these difficult questions. We begin by reviewing the common arguments that are usually offered for and against economic development incentives. We discuss some methodological complexities in evaluating incentive programs and provide an overview of the incentive-oriented development policies that are currently pursued in Kentucky. We conclude with an evaluation of the Industrial Revenue Bonds (IRB) program which was initiated by the Kentucky Cabinet for Economic Development. This is the largest and oldest incentive program that is currently administered in the Commonwealth.

We thank Dan Jacovich at the Legislative Research Commission (LRC) for providing us with incentives data. Susan Black helped us retrieve data from the *Regional Economic Information System* (REIS) database.

Development Incentives and Growth

At the simplest level of analysis, and one universally popular with politicians, spending on economic development translates into more, better paying jobs. The resulting increase in employment and wages in turn affect other sectors of the economy. Property values and consumer spending increase, providing greater profits to land owners and local businesses. Tax revenues rise with the growth in economic activity; if these increases are greater than the initial outlays of incentives, then those incentives are viewed as justified. Adherents of the incentive-initiated approach to development would argue that Lexington's ranking of number six nationally in terms of job growth between January-July 1995[3] indicates the success of the incentives provided to the Toyota plant in nearby Georgetown and other firms in the Bluegrass area. Also, many would argue, because other automotive-related firms followed Toyota to the region, the incentives provided to Toyota had an additional, indirect influence on job growth.[4] While this analysis may seem correct, its reliance on simple intuition projects a misleading image of extensive, economy-wide growth that can be easily initiated by attracting specific firms to particular areas.

Critics consider the incentive-based approach inherently deceptive. They contend that incentives offered in the form of tax abatements are too small to affect the locational decisions of firms. Furthermore, they argue that conventional estimates of the effects of tax abatements ignore the costs of providing those tax breaks; taxes on other groups will have to be raised to maintain a desired level of public spending. In turn, higher taxes on these other groups may eliminate jobs in those areas. Therefore, a complete audit of the benefits of providing such incentives would count not only the increase in new jobs formed, or existing jobs retained, but also jobs lost in other sectors of the economy that bear the costs of the abatements.

The effects of incentive-based development spending on job creation may also be non-existent. The theoretical case for this argument lies in the fact that with flexible labor markets, a stimulus in one market caused by an increased demand for labor by an incentive-receiving firm, will cause only a *temporary* decrease in the local unemployment rate, and a *temporary* upward pressure on wages. If labor markets are indeed flexible, then the increased local demand for labor will be matched by a corresponding increase in its supply. This increased labor supply will occur because of in-migration from other areas. Over time therefore, the local unemployment rate will rise and the level of wages will fall to their earlier levels. Only land would increase in value because its quantity is fixed. Land used for agriculture would be bid away towards residential, commercial, or industrial uses. Because most large tracts of land are owned by persons with high incomes, the incentives in this case would be "regressive," in which the benefits of those incentives are greater for higher income groups than for lower income groups.[5]

The above analysis has concentrated on the short-term effects of incentives on the local economy. In recent years, economists have introduced the concept of *hysteresis* to explain permanent changes in the structure of the economy resulting from temporary fluctuations.[6] A hysteretic effect of incentives would work as follows: Suppose as a result of incentives provided to the Toyota plant in Georgetown, the automaker chooses to expand, thereby increasing its demand for labor. In the short run, several unemployed people in the Bluegrass region will find jobs. Even if labor markets are flexible, there will be a lag before workers in surrounding areas (for example, Cincinnati), can move to the Bluegrass to apply for jobs at the Toyota plant. Because of this "stickiness" in the ability of labor markets to adjust immediately, some workers in the Bluegrass would have found jobs at the expanding Toyota plant. These previously unemployed workers will receive training and acquire skills as a result of their new employment. In the long run, the level of unemployment in the Georgetown area may return to its original level; however, wages may not fall to their pre-Toyota levels because of the increased productivity of the workforce. A temporary shock to the economy has resulted in a permanent change in the level of wages.

Given the controversy in the theoretical arguments surrounding the case for economic development incentives, an empirical study of their effects on labor markets, employment, and wages would be of significance in evaluating the effectiveness of continuing spending on such policies.

Development Incentives in Kentucky: An Overview

The Kentucky Cabinet for Economic Development supports a variety of incentive programs to attract firms to the Commonwealth. These range from the Kentucky Industrial Development Authority (KIDA) program, which offers credits against state income taxes for annual debt service costs, to the Industrial Revenue Bonds (IRB) program, which allows the state and local governments to issue bonds to finance manufacturing, transportation, communication, and health care projects.[7] Kentucky's economic development policies are similar to those pursued in other states. Typically, a mix of financial incentives (IRBs, property tax abatements, direct state loans, and subsidized land) are offered as enticements. In recent years, many states, including Kentucky, have begun to pursue "New Wave" development policies which target small businesses through applied-research centers, entrepreneurial training programs, and small business development centers.[8] Such policies do not provide direct money to firms; instead, they rely on the provision of basic service infrastructure to encourage businesses.

We are particularly interested in evaluating the effects that incentives exert on county growth rates, specifically on the growth rate of earnings. We concentrate on an evaluation of the IRB program because it has been in effect since 1980 and is the largest incentive program in operation.[9]

Data

We obtained firm-specific measures of type and amount of incentive money received from the Kentucky Legislative Research Commission (LRC). Data on employment levels, wages, and earnings for Kentucky and the United States were obtained from the *Regional Economic Information System* (REIS), which is maintained by the United States Bureau of Economic Analysis. REIS data is derived from *County Business Patterns* and includes county-level data for the entire United States on income, earnings, wages, employment, and expenditures on Aid to Families with Dependent Children (AFDC), Social Security Insurance (SSI), Unemployment Insurance (UI), and other transfer payments. It is an extremely rich source of data that covers the 1968-93 time period. We used the CPI-U as the price index in our research. This was obtained from the Citibank data base.

Evaluation

An evaluation of an incentive program can examine the program's effects on both earnings and employment. We were reluctant, however, to evaluate the extent to which the IRB program has contributed to job growth. Recent research on gross job creation and job destruction has shown that even in years when total manufacturing employment shrank by as much as ten percent, the gross job creation rate was as high as seven percent.[10] To put these numbers into perspective, consider that in 1993, Kentucky had approximately 302,000 manufacturing jobs. Even if 21,000 jobs (seven percent) were created in any given year, as many as 50,000 manufacturing jobs might have been lost in the same year as part of the normal functioning of the economy, leaving a net decrease of 30,000 jobs. (For example, jobs may be lost due to firms going out of business, relocating, or laying off employees, all of which offset a perceived growth in jobs.) These findings suggest that it is partly wrong to count jobs created as a result of a new firm's arrival as "new jobs." A more cautious analysis would include the number of jobs lost during the same time period to calculate *net* job growth.

Another impediment to a "job-oriented" evaluation of development incentives lies in the extremely small effects that they have on gross job creation. One estimate of the number of new jobs created by the Toyota plant predicts an economy-wide addition of 16,000 jobs.[11] In an economy of two million jobs, however, this figure only represents a 0.8 percent increase in employment—a figure well within the bounds of statistical error. Many incentive projects that received grants had an estimated employment of 40 jobs. When combined with our earlier warning about counting net, and not gross, job creation, the problem of minuscule effects on aggregate employment (such as the 16,000 jobs created by Toyota representing only a 0.8 increase in total employment) renders even the most sophisticated statistical techniques ineffectual.

Our assessment of the IRB program's effect on earnings growth will proceed at two levels. First, we offer indirect evidence that incentive programs may be viewed as successful. While evidence of this nature does not constitute a robust appraisal of the program, it illustrates the complicated nature of evaluation studies and helps to motivate the formal analysis. And second, we will use regression analysis

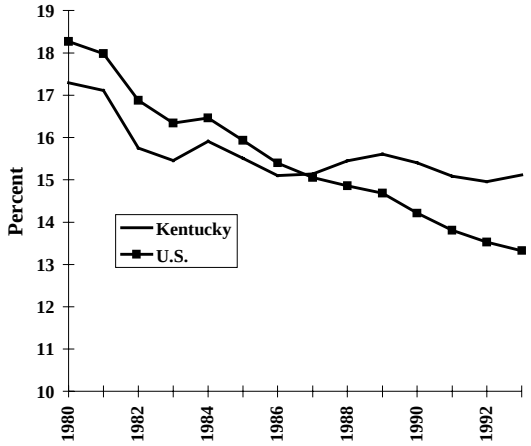

FIGURE 1: Percentage of Kentucky and U. S. Employment from Manufacturing

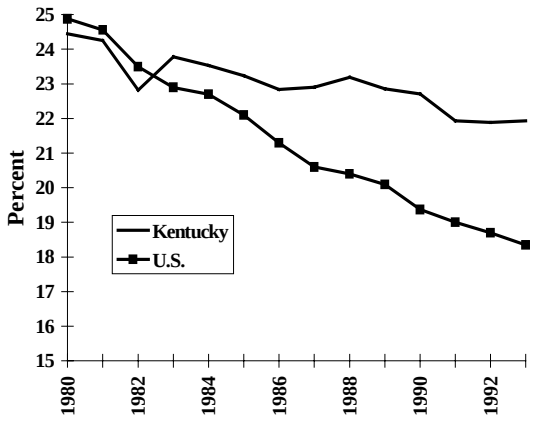

FIGURE 2: Percentage of Kentucky and U. S. Earnings from Manufacturing

to achieve a more thorough and accurate depiction of the effectiveness of incentives.

What evidence might we view as consistent with the hypothesis that development incentives have indeed spurred economic growth in Kentucky? We begin by noting that the growth rate of real earnings in Kentucky since 1980 has been consistently greater than the corresponding growth in U.S. earnings. Can this be viewed as evidence for the success of incentives? Unfortunately, no. The "convergence" conjecture from economic theory predicts that poorer economies will tend to grow at a higher per capita rate than richer economies, and eventually "catch up," or converge with the richer economies.[12] Therefore, even in the absence of incentive spending, we should observe Kentucky's growth in earnings to be higher than that of the United States.

Alternatively, we could study the share of manufacturing jobs in Kentucky's economy and compare this to the national figures. Manufacturing jobs are usually considered by many to be the "good jobs," in that they typically employ skilled workers at high wages and with good benefits. As such, incentives are typically oriented towards recruiting manufacturing firms. We also study the percentage of total earnings that came from manufacturing for Kentucky and the nation. These trends are depicted in Figures 1 and 2, respectively. As Figure 1 illustrates, the share of manufacturing jobs in Kentucky's economy has remained virtually constant since the early 1980s. In contrast, however, in the United States the share of manufacturing jobs has been declining since 1987. An examination of the share of earnings derived from manufacturing (Figure 2) tells a similar story: Kentucky has a greater share of total earnings from the manufacturing sector. Can we explain these stylized facts by citing the coincidental increases in incentive spending?

An examination of Figure 3 might help answer this question. We plot earnings per worker in manufacturing for Kentucky and the U. S. (in 1993 dollars). The earnings for workers in Kentucky's manufacturing jobs have steadily declined since 1984. We see a clear divergence between the average U. S. and average Kentucky worker's earnings in manufacturing. With the United States' increasing participation in the global economy, a large portion of its manufacturing jobs have moved abroad, in corroboration with the theory of comparative advantage.[13] As a result, while the share of manufacturing employment has declined in the United States, those jobs that remain are in highly specialized areas and offer high earnings per worker. Kentucky's low earnings per worker in manufacturing but simultaneous increase in manufacturing share suggests that a disproportionate number of low-paying manufacturing jobs exist in the state. Given the relatively low level of education in Kentucky, the increase in low-wage manufacturing jobs may have improved the welfare of Kentuckians, but the story is less clear cut than a quick glance at Figures 1 and 2 might suggest.

The above analysis helps to illustrate the extent to which a study of economic incentives (or any other complex economic phenomenon) requires the researcher to control for changes in a variety of explanatory variables; economic growth and incentive spending were not correlated once changes in the quality of jobs were taken into account. A more robust test of the efficacy of incentives involves the use of "regression" analysis. Regression analysis is a statistical technique that allows a researcher to

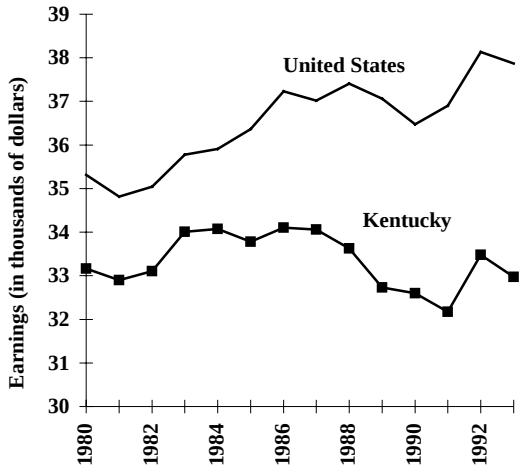

FIGURE 3: Average Annual Earnings per Manufacturing Worker in Kentucky and the U. S.

observe the extent to which an outcome variable (earnings growth) is affected by an explanatory variable (type of incentive, size of incentive, year of award), while holding the effect of other explanatory variables constant. In the remainder of this paper, we focus on the results of regression analysis designed to evaluate the effects of the IRB program.

Expenditures on the IRB program are presented in Table 1 (1994 dollars). We present expenditures on the IRB program in per capita terms to put the size of this program into perspective. The blip in 1987 represents the bond issue for the Toyota plant.

As a first step in determining whether IRB incentives affect the growth rate of earnings, we need to determine whether they are given to counties with traditionally high growth rates. If this is true, then we might incorrectly conclude that the incentives were the causal agents of economic growth. To explore this issue further, consider the following: If incentive-receiving firms that come to Kentucky choose to locate in high-growth areas, then we would observe a positive relationship between the location of incentives and growth. This relationship, however, would be false—the incentives are *not* causing the growth; firms are simply choosing to migrate to high-growth areas. If we could establish that incentives do not go to areas with a history of high growth, but are distributed evenly across counties, then we may proceed with our analysis.

To resolve this question, we estimated a logistic regression model whose dependent variable measured the incidence of an IRB incentive in a particular county. As explanatory variables we included three-period lagged values of real earnings and year dummies. The intuition behind such a model is

TABLE 1
IRB Expenditures Per Capita in Kentucky (1980-93)

Year	IRB Expenditure per Capita
1980	48.37
1981	0.00
1982	1.27
1983	126.48
1984	37.65
1985	5.43
1986	15.28
1987	1002.95
1988	102.50
1989	15.42
1990	31.58
1991	47.11
1992	29.07
1993	24.11

simple: Can we explain the probability of a county receiving an incentive by using the county's growth rate for the past three years as explanatory variables? If our above hypothesis—that a positive relationship exists between the location of incentives and economic growth—is false, then we should expect no relationship between these variables. After estimating our model, we strongly rejected the hypothesis that IRB incentives were going to high growth areas; it was not possible to predict the "location" of an incentive based on the relevant region's previous growth. Significantly, this suggests that policy makers were not simply handing out IRB incentives to firms locating in areas that would have expanded quickly in the absence of incentives.

For the second part of our analysis, we were interested in discovering whether a county's growth rate of earnings depended on the presence of an IRB initiative. The appropriate controls were the levels of Kentucky Rural Economic Development Authority (KREDA), Kentucky Economic Development Finance Authority (KEDFA), and IRB incentives that a county had received in the past year and the year before. We also included the growth rate of Kentucky's earnings. This variable was included to capture secular increases in earnings growth that accrued to all counties in Kentucky (we did not want to falsely attribute earnings growth that was Kentucky-wide to the incentives received by a particular county). An alternative specification also included the growth rate of U. S. earnings in the same period (instead of Kentucky earnings growth rates) to control for the fraction of a county's growth that might be explained by movements in the Unites States' growth. Finally, we estimated yet another equation that included "dummy variables" to control for any year-specific effects.

We estimated the above equations and found that the presence of IRB incentives were significant in

explaining growth rates in each specification.[14] Moreover, the increase in the growth rate appears to have had a permanent effect on the earnings in the county. We found no evidence that the growth rate subsequently declined to allow the level of earnings to adjust back to the former level. It appears that the IRB incentives had a permanent impact on the earnings of the county.

The finding that IRB incentives do increase earnings in the long run does not imply, however, that such expenditures are an efficient use of tax dollars. For instance, it is possible that not offering any development incentives while reducing taxes for all Kentucky businesses by the amount of the incentive expenditures saved would have a much larger impact on development. Unfortunately, existing data does not allow us to make such a judgment.

Conclusions

Is it correct to conclude that incentives for economic development work? Several caveats must be stated before reaching such a conclusion. While our results are consistent with the hypothesis that incentives do work, they are also consistent with a competing hypothesis: If, in the absence of incentives, firms receiving the incentives would have located in the same regions, and pursued the same production-expansion paths, then we would observe the same empirical results of their effect on growth. In other words, if incentives do not affect a firm's location decision, firms will locate to a particular region regardless of the incentive package offered. The arrival of a large firm will probably have large positive effects on local employment and wages. Therefore, even in the absence of incentives, we would observe the same patterns of long-term hysteretic growth.[15] Our analysis is further complicated by the fact that presumably only successful (before they locate in the state) firms receive incentives. As such, incentives do not cause economic growth but instead are only correlated with it.

To distinguish between these competing hypotheses and conclude that incentives are solely responsible for economic growth, we will need to know how these counties would have grown in the absence of economic incentives. For example, would Toyota have located in Scott County with no inducements? Unfortunately, the non-experimental nature of economics prevents us from conducting this test. As in most econometric studies, we cannot observe the necessary counterfactual and compare it to the observed data. We will direct much of our future research efforts toward determining what might substitute for our missing counterfactual.

Readers should also realize that we have not conducted a benefit-cost analysis of pursuing an economic policy that favors incentive spending. Presumably, there are other options for development policy—investing in schools, transportation, or health care. When a government chooses to offer a tax abatement or a subsidized loan to lure businesses, it is forgoing alternative investments. The returns on these other investments may be more or less than those generated by incentive spending. Therefore, while we do find persistent effects of incentives on growth, the cautious nature of our science precludes us from endorsing incentives policy as an optimal development strategy.

Notes

1 *The Economist*, "Corporate Welfare: Come and Get It!" 23 Sept. 1995: 21-2.

2 These numbers (in 1994 dollars) are the sum of moneys sanctioned under all incentives schemes, and divided by Kentucky's population in 1983 and 1993. In 1983, the population of Kentucky was 3.69 million and in 1993 it was 3.79 million (*Regional Economic Information System*).

3 *The Economist*, "Where The Jobs Are," 14 Oct. 1995: 32.

4 Ibid.

5 A "regressive" outcome is one where the (net) percentage benefits that accrue to higher income groups exceed those that are realized by lower income groups.

6 Hysteresis was introduced into neoclassical economics by Paul A. Samuelson. The term is derived from the notion of magnetic hysteresis in physics, where certain ferromagnetic substances exhibit permanent changes in their magnetic properties because of temporary changes in magnetizing forces.

7 According to the Department of Financial Incentives of the Kentucky Cabinet for Economic Development, Industrial Revenue Bonds (IRBs) are issued by state and local governments and can be used to finance manufacturing projects and their warehousing areas, major transportation and communication facilities, most health care facilities, and mineral extraction and processing projects. Bond funds may be used to finance the total project costs, including engineering, site preparation, land, buildings, machinery and equipment, and bond-issuance costs. Property financed by IRBs is exempt from all state and local property taxes, except for a nominal state leasehold tax of $0.015 per $100 of leasehold value (total value of bonds retired to date). Some local governments may negotiate for payments in lieu of property taxes not collected on IRB-financed projects. Kentucky law also allows the borrower to retain ownership of the property financed with bonds. Property in this case is subject to full state and local property taxes. (Kentucky Department of Financial Incentives, Communiqué [July 1993]).

8 For a discussion of both traditional and "New Wave" development policies see Timothy J. Bartik, *Who Benefits from State and Local Economic Development Policies?* (Kalamazoo, Mich.: W.E. Upjohn Institute for Employment Research, 1991).

9 Several incentives programs in Kentucky were initiated very recently, and we are therefore unable to evaluate them. Included in this list are the Kentucky Industrial Development

Authority (KIDA) and the Kentucky Jobs Development Authority (KJDA) programs, which began in 1993, and the Kentucky Rural Economic Development Authority (KREDA) program, which began in 1992. The Commonwealth Small Business Development Corporation (CSBDC) and Kentucky Economic Development Finance Authority (KEDFA) programs have existed since 1980, but the small size of these programs precluded an evaluation study.

[10] Steven J. Davis and John Haltiwanger, "Gross Job Creation, Gross Job Destruction, and Employment Reallocation," *Quarterly Journal of Economics* 107 (1992): 819-63.

[11] Charles F. Haywood, *The Economic Significance of Toyota Motor Manufacturing, U.S.A., Inc. in Kentucky* (Center for Business and Economic Research, University of Kentucky, 1992).

[12] Robert J Barro and Sala-i-Martin Xavier, *Economic Growth* (New York: McGraw-Hill, 1995).

[13] Comparative advantage is the principle which states that individuals and countries will specialize in producing those goods in which they are *relatively*, not absolutely, more efficient.

[14] All regressions were estimated in *Intercooled Stata v4.0*. Unless specified otherwise, they were Ordinary Least Squares (OLS) specifications and included the 1985-1993 time period.

[15] An alert reader might point out that we included the size of the incentive in our regression, an explanatory variable that was positive and significant in all our regressions. Why then, as the size of the incentive grows, *ceterus paribus* (holding other things equal), will the magnitude of growth not increase as well? We respond by illustrating the fact that larger firms receive larger incentives. The positive correlation between these two variables is not sufficient to establish a causal link between incentives and economic growth.

County-Level Differences in Per Capita Transfer Income

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Introduction

Recently, the *Wall Street Journal* ranked states as "winners" or "losers" in Social Security, based on the difference between taxes paid into and benefits received from Social Security.[1] The two biggest "winners," Florida and Pennsylvania, were no surprises, since those two states have the highest proportions (18.6 percent and 15.8 percent, respectively) of their populations age 65 years and over.[2] Kentucky was rated the third biggest winner, receiving $1.9 billion more in benefits than was paid in taxes by residents of the Commonwealth. Since the proportion of Kentucky's population age 65 and over is right at the national average (12.7 percent), something other than age must be behind the observed result.

Of the 21 counties with highest per capita AFDC payments, 20 are located in either eastern or southeastern Kentucky.

Social Security is an example of transfer income, which is income reallocated between individuals, counties, and states. For other transfer programs, Kentucky is also near the top among states when ranked according to the percentage of population receiving assistance under either the Aid to Families with Dependent Children (AFDC) or the Supplemental Security Income (SSI) programs. In 1992, 9.8 percent of state residents received either AFDC or SSI, placing Kentucky fifth behind only the District of Columbia, Mississippi, California, and Louisiana.[3] When ranked by the percentage of households participating in the Food Stamp Program, Kentucky ties for eighth.[4] In 1993 transfer payments comprised 19.8 percent of total personal income in Kentucky.

Just as transfer payments vary across states, within Kentucky there are large differences across counties in transfer payments. If proposed federal reforms, such as changing funding for programs from entitlements to block grants and transferring administrative responsibility to the states, are implemented, dramatic changes in the nature and distribution of transfer payments in Kentucky may occur. These proposals may not only make Kentucky a "winner" or "loser" relative to other states. Individual counties as well may "win" or "lose" because there is so much variation across Kentucky counties in the proportion of personal income that comes from such programs as SSI, AFDC, Food Stamps, and Medicaid. If states assume more responsibility in administering these programs, decision makers in Kentucky will have significantly more power in determining who wins and loses, at both the individual and county level, from transfer policies than ever before. If Kentucky decides to experiment with benefit levels or eligibility requirements, then some areas of the state will gain relative to others.

Major changes in transfer programs will affect how transfer payment resources are reallocated at these levels. Our goal here is to examine how transfer payments are distributed across counties in Kentucky. We find considerable variation across counties, much of which is not attributable to differences in the characteristics of the populations of the counties. If payments were based on some common measure such as the poverty rate, then certain counties would face sizable reductions in payments.

Why Examine Differences in Transfers across Counties?

We examine federal programs directed towards individual households where specific eligibility and benefit guidelines determine who will receive benefits and how much they receive. Since the county in which the household resides plays no part in determining aid, it is natural to ask why we are interested in the distribution of transfers across geographic regions such as counties.

One reason centers around federal proposals to use block grants to fund transfer programs. If this occurs, Kentucky may have the opportunity to allocate its funds not simply on the characteristics of the recipients but also on characteristics of the county of residence. With block grants, funding is not an entitlement and may not reflect current economic conditions. For example, if a state's economy slumps and more households qualify for food stamps, federal funds for food stamps will not likewise increase. Additionally, block grants remove conditions and requirements imposed by the federal government that determine eligibility for and the amount of transfer payments, placing those decisions with the state.

Eligibility for and the benefits received from SSI, AFDC, Medicaid, and Food Stamps are the same for households living in different counties. Yet this is not a feature of all federal or state spending, or even all programs addressing poverty and unemployment. Programs such as SSI, AFDC, Medicaid, and Food Stamps are often characterized as *people*-based programs. In other words, aid received by households is based strictly on the characteristics of that household and is independent of the location of the household.[5]

Other programs, however, are *place*-based. While participation in such programs may depend on the characteristics of the household, only households (or businesses) in a particular area may be included. Households with identical characteristics, such as income and employment status, in different locations may not be eligible. Perhaps the best known of these are various employment and training programs contained in "enterprise" or "empowerment" zones. Under these programs an area that suffers from low income and high unemployment is designated as an enterprise zone. Both individuals and businesses become eligible for training and tax exemptions not available to individuals and businesses in other areas.

Location determines benefits as well for other programs such as public housing, rent control, and public education. With public education, high-income households in low-income, low-spending school districts may receive an implicit net positive transfer. Likewise, low-income households in high-income, high-spending districts may receive an implicit net negative transfer. Even state expenditures such as spending on higher education, roads, and tourism that are generally not classified as transfer programs may, in practice, have some aspects of place-based transfers if local economic conditions influence the allocation of these funds. Perhaps the best-known place-based aid in Kentucky is that associated with the Appalachian Regional Commission.

Given more flexibility in administering transfer programs, Kentucky may choose to redesign transfers to consider more explicitly the demographic and economic characteristics of the county when setting benefit levels and eligibility. If that occurs, the distribution of transfer payments at both the individual and county levels may change significantly.

The natural question becomes: What explains the variation in transfers across counties? In particular, is this variation explained entirely by differences in the characteristics of the county's population—the poverty rate, age, income, and makeup of families? Or, could some of the variation arise from differences in monitoring and interpreting eligibility and benefit standards? The cost to Kentucky taxpayers of lax standards and monitoring of programs such as food stamps that are entirely financed by the federal government is negligible. Any increase in benefits to Kentuckians is largely paid by residents of other states. With federal financing there is little incentive for careful monitoring at the local level. Under a block grant scheme, however, any increase in benefits in one county will be borne by residents of other counties in the state. Block grants will increase pressure within the state to enforce standards evenly and eliminate any transfer payment differences across counties unrelated to population characteristics.

The final reason for considering differences in transfer payments across counties is the indirect impact these payments have on individuals and businesses in the county. As is shown below, in some Kentucky counties transfers are a major share of county income and thus may have significant impacts on the level of retail and other business activity. Changes in the distribution of payments resulting from uniform and simplified standards could lead to significant changes in business activity and incomes around the state.

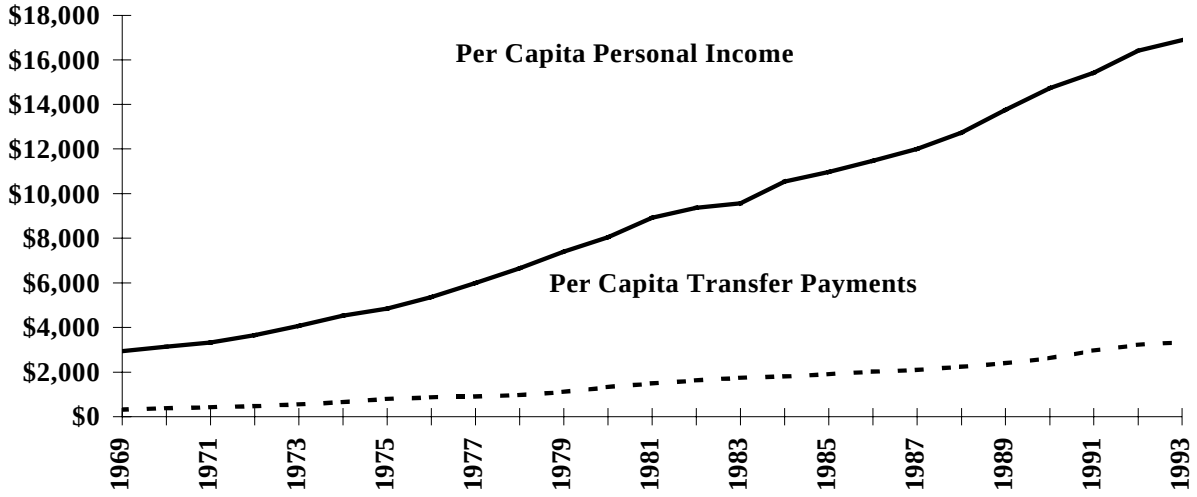

FIGURE 1: Per Capita Personal Income and Transfer Payments, 1969-1993

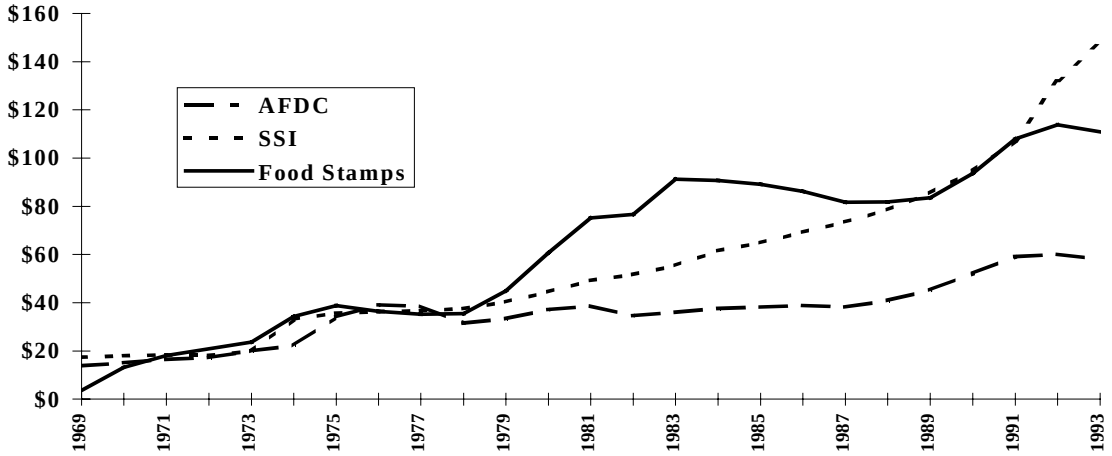

FIGURE 2: Selected Components of Per Capita Transfer Payments, 1969-1993

Differences across Counties in Transfer Payments

Total transfer payments consist of 1) government payments to individuals (e.g., Social Security), 2) medical payments (e.g., Medicare), 3) income maintenance benefits payments (e.g., SSI, AFDC, Food Stamps), 4) payments to non-profit institutions, and 5) business payments to individuals. In nominal dollars, per capita transfer payments in Kentucky increased from $478 in 1972 to $3,456 in 1993, a 623 percent increase. Over the same period, per capita personal income increased from $3,095 to $14,385, a 365 percent increase. Figure 1 depicts the growth in per capita personal income and transfer payments from 1969 to 1993. Figure 2 contains selected components of total transfer payments, SSI, Food Stamps, and AFDC payments.

Our interest is not in the level, but the *distribution*, of transfer payments. Figures 3 and 4 are maps that show per capita AFDC payments and SSI payments. Figure 3 depicts counties 50 percent or more below the mean per capita AFDC payment, counties between 0 and 50 percent below the mean, counties between 0 and 50 percent above the mean, and counties 50 percent or more above the mean. Oldham County is farthest below the mean per capita AFDC payment in the state—not surprising since it ranks first in per capita personal income. Woodford County's ranking near the bottom probably occurs for the same reason, as perhaps does Boone County's. A number of the low-ranking counties, including Lyon,

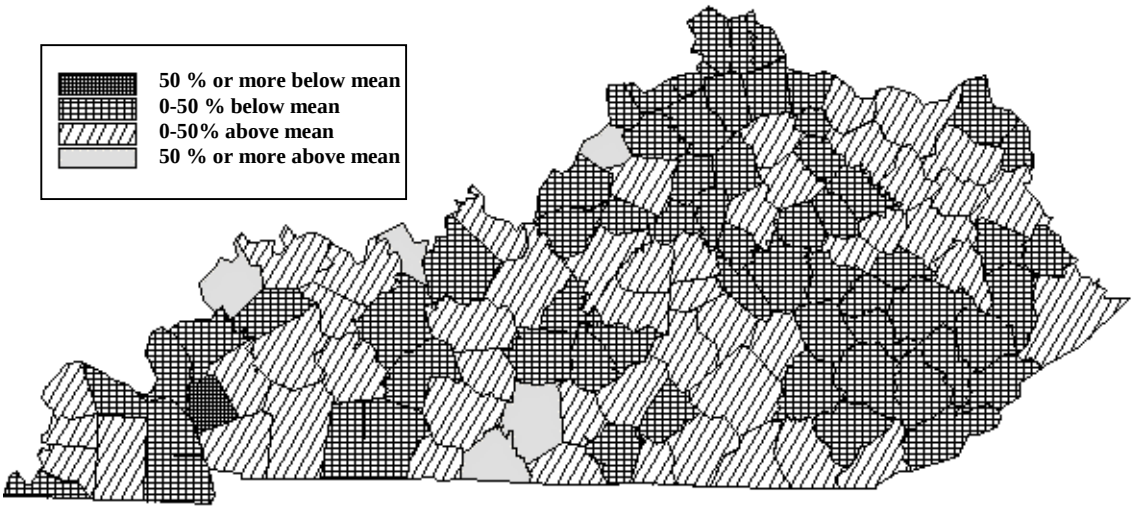

FIGURE 3: Distribution of Per Capita AFDC Payments

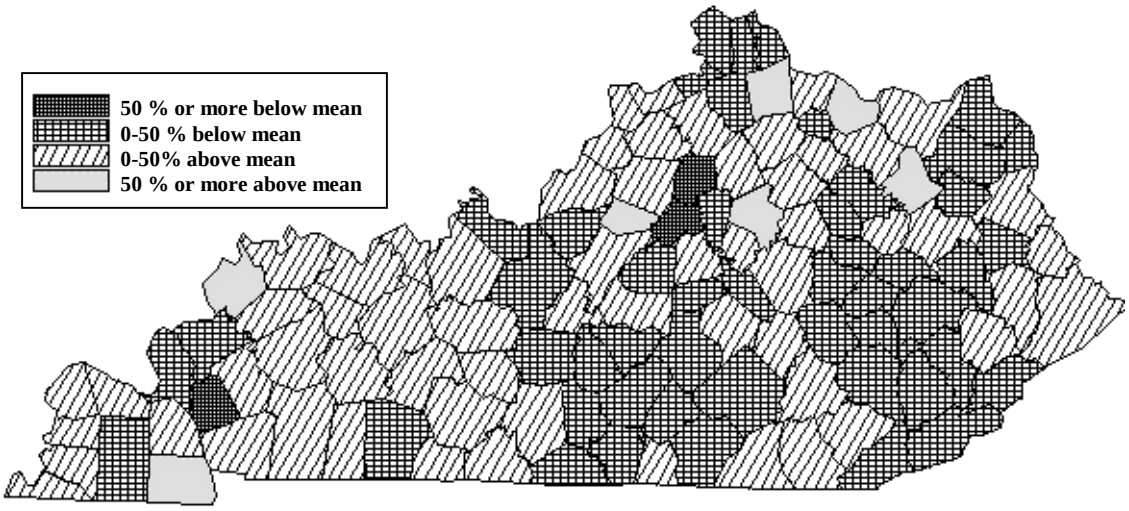

FIGURE 4: Distribution of Per Capita SSI Payments

Marshall, Trigg, Calloway, and Carlisle Counties, are located in the extreme western portion of the state.

Of the 21 counties with highest per capita AFDC payments, 20 are located in either eastern or southeastern Kentucky. Only Fulton County at the extreme western end of the state is also in that group. While many of these counties are at or near the bottom of the per capita personal income scale, that explanation does not apply to all eastern Kentucky counties, including Johnson, Floyd, Perry, Martin, and Breathitt Counties. Their levels of per capita personal income are fairly close to the state average.

Figure 4 depicts the same information for per capita SSI payments. Several of the same counties are at the bottom of the scale, namely, Oldham, Boone, Woodford, and Anderson Counties. Bullitt and Meade Counties, near Fort Knox, also rank low in per capita SSI payments. At the extreme other end are Breathitt, Owsley, Clay, and Wolfe Counties. These four geographically connected counties are all

more than 200 percent above the mean per capita SSI payment. Counties more than 100 percent above the mean include McCreary, Magoffin, Bell, Jackson, Wayne, Knox, and Elliott.

Why Do Transfer Payments Differ Across Counties?

There are a number of reasons why transfer payments differ across counties. Because most federal transfer payments are means-tested, differences in average income and the percentage of the county's population living in poverty should provide an indication of the number of households eligible for transfers in the county. Most transfer programs use other conditions such as family size, age, employment status, and whether the family is headed by a single parent, to determine the eligibility of and the amount of benefits received by a household. Differences among counties in the unemployment rate, the percentage of households headed by women, and the percentage of the population above 65 or below 18 should also influence differences in transfer payments. We are interested in examining whether place-based factors, such as whether a county is urban or rural or whether it is located in the Appalachian region, explain any of the differences in payments. For the transfer programs, though, we consider where a household lives not relevant in determining eligibility or payments.

To evaluate the combined influence of these economic and demographic variables on per capita transfer payments, we have used Ordinary Least Squares (OLS) regression analysis. Using this technique, we are able to separate the impacts of each of these economic and demographic factors on transfer payments. As expected, lower per capita personal income and higher poverty rates increase total per capita transfer payments. A higher unemployment rate also increases per capita transfers, as does a greater percent of the county's population who are 65 or older. While counties in the Appalachian region have significantly higher per capita transfer payments, there is no difference between payments in urban and rural counties.

We used the same approach to analyze per capita SSI, AFDC, and Food Stamp payments across counties. The income and age of residents, as well as the unemployment rate and the percent of female-headed households in a county, do not appear to have a significant impact on SSI payments. Counties with higher poverty rates and those located in the Appalachian region do have significantly higher SSI payments. Counties in the Appalachian region are estimated to have $31.81 higher per capita SSI payments than counties not located in Appalachia with the similar population characteristics such as income, age, and poverty rate. This higher payment equals 16 percent of the state SSI average of $195.20.

AFDC and Food Stamp payments in a county are influenced by the county's poverty rate, the percent of its households headed by women, its unemployment rate, and the number of its residents under the age of 18. Unlike SSI payments, Appalachian counties are not significantly different from other counties in the state when it comes to AFDC and Food Stamps.

Using this regression analysis, we can estimate the expected level of transfer payments for a county given its residents' income, poverty rate, percent female-headed households, unemployment rate, and age distribution. We can then compare this expected transfer payment to the actual per capita payment received in the county. We find a number of counties that have either far greater or far fewer transfers per capita than we would expect given the characteristics of the county. Table 1 lists the ten counties whose

TABLE 1
Differences between Actual and Expected Total Personal Transfer Payments, Per Capita

Ten Counties with Greatest Positive Difference between Actual and Expected Per Capita Payment			Ten Counties with Greatest Negative Difference between Actual and Expected Per Capita Payment		
County	**Rank**	**Difference between Actual and Expected Transfer Payments**	**County**	**Rank**	**Difference between Actual and Expected Transfer Payments**
FRANKLIN	1	$794	HANCOCK	120	$-887
LETCHER	2	702	BARREN	119	-611
BREATHITT	3	662	MASON	118	-562
FLOYD	4	576	ELLIOT	117	-533
BUTLER	5	532	SCOTT	116	-528
PERRY	6	518	ALLEN	115	-524
HARDIN	7	504	SIMPSON	114	-471
RUSSELL	8	492	SHELBY	113	-449
BELL	9	481	UNION	112	-448
GREENUP	10	470	BOYLE	111	-437

actual per capita transfers exceed the predicted transfers by the greatest amount, and also the ten counties whose per capita transfers are less than the expected transfers by the greatest amount.

Our analysis obviously does not capture everything causing differences across counties in per capita transfer payments. Differences between actual and expected payments could be due to characteristics of the county's population that we have not considered. For example, if a county has a much greater fraction of its population that is disabled, then this could account for some of the differences between the actual payments received in the county and the expected payments.

Another explanation may be differences in the monitoring and enforcement of eligibility standards among counties. Programs such as AFDC and Food Stamps have complicated eligibility requirements that, if fully enforced, require significant documentation of income, assets, and family composition. Others, such as SSI, require certification of "disability." If scrutiny and enforcement of eligibility varies significantly across counties—for instance, if certain counties are lax in monitoring the disabilities of SSI applicants or whether the father in a household applying for AFDC is indeed absent—we may expect these counties to have much higher transfer payments. Since these programs are almost entirely funded by the state or federal government, counties have little or no incentive to enforce the eligibility requirements. Further, for programs that are entirely federally funded, such as SSI and Food Stamps, the state government has little incentive to monitor.[6]

Actual and expected payments also may differ because of differences in information and access to local agencies that determine eligibility and administer benefits. Transfer programs have a myriad of eligibility standards, and households can only receive benefits if they both meet these standards and apply to receive benefits. Counties where information is easier to obtain might have higher payments for that reason. As Table 2 indicates, the center of state government, Franklin County, has the greatest difference between actual and expected total transfer payments per capita, with actual payments 27 percent higher than predicted given the characteristics of its population. Residents there have easier access to information, and their higher transfer payments indicate their use of it.

Finally, there is significant evidence that a sizable fraction of those households eligible for transfer programs do not apply for and receive benefits to which they are entitled. Studies of AFDC and Food Stamps have found that approximately 50 percent of those eligible do not receive them. This is sometimes referred to as the "stigma" effect, suggesting that eligible individuals often decline to participate because of negative public perceptions of welfare recipients. Studies of participants and non-participants find that an individual is more likely to participate in a program if relatives or friends also participate. There is some evidence of a "spillover" effect: more participation in an area leads to lower "stigma" and even greater participation. In Kentucky, some "spillover" occurs, as 17 of the 20 counties with the greatest positive difference between actual and predicted transfer payment exceed the statewide average per capita payment of $3,456.

The Distribution of Transfer Payments and Welfare Reform

How transfer payments are allocated to individuals may change radically in the near future.

TABLE 2
Difference between Actual Per Capita Transfer Payments and Per Capita Payments Based on County Poverty Rates

Ten Counties with Largest Positive Differences between Actual and Predicted Per Capita Payments			Ten Counties with Largest Negative Differences between Actual and Predicted Per Capita Payments		
County	**Rank**	**Difference between Actual and Poverty-Based Payment**	**County**	**Rank**	**Difference between Actual and Poverty-Based Payment**
FRANKLIN	1	$1,796	KNOX	111	$-2,792
KENTON	2	1,157	MENIFEE	112	-2,865
JEFFERSON	3	1,129	JACKSON	113	-2,908
CAMPBELL	4	1,038	WOLFE	114	-2,918
LIVINGSTON	5	1,025	KNOTT	115	-3,031
BOYD	6	962	MCCREARY	116	-3,183
WEBSTER	7	937	MAGOFFIN	117	-3,223
MARSHALL	8	933	ELLIOTT	118	-3,378
MCCRACKEN	9	913	MORGAN	119	-3,536
WOODFORD	10	896	OWSLEY	120	-3,950

As a consequence, the distribution of payments among counties may also change. If administration of traditional federal programs such as SSI and Food Stamps or federal-state programs such as AFDC and Medicaid become the responsibility of state governments, Kentucky will have the opportunity to redesign these programs. Funding may also change, moving away from the traditional approaches of being entirely federally funded (SSI and Food Stamps) or jointly funded (AFDC and Medicaid) to a system in which the state receives a block grant from the federal government. Under this approach, the federal government would not increase its grant to a state if the eligible population in the state increases or if the state wants to increase the generosity of payments.

How might a state reform its transfer policies if granted financial and administrative independence and responsibility? Given the confusing and varying eligibility requirements among programs, one avenue for reform is consolidation and simplification of programs and their eligibility requirements. To see how such an approach might affect different counties, we consider a hypothetical reform whereby the state allocates its funds to counties based on the county's poverty rate. This departs from the current system where payments are based in part on the marital status and age of the household and whether the household head is disabled or unemployed.

What impact would this change have on the distribution of payments among counties? As Table 2 indicates, for some counties the impact of this approach would be sizable. Franklin County residents again would stand to lose the most (i.e., its actual payments exceed poverty-based payments by the greatest amount.) Residents of Jefferson County would also face a sizable reduction in payments. The counties receiving the greatest increase in funds would be counties primarily located in Eastern Kentucky. Owsley County would be the biggest winner, receiving an additional $3950 per capita.

Conclusions

Transfer payments to individuals vary significantly among counties in Kentucky. Much of this variation is to be expected, given the variation in household income. Not all, however, appears attributable to differences in the characteristics of the populations of the counties. For example, Appalachian counties receive higher payments for SSI than comparable counties not in Appalachia.

Variation across counties may also arise from differences in information about eligibility for benefits and differences in enforcement of eligibility standards. With the federal government currently being the major financing agent for transfer programs, weak enforcement of standards in certain Kentucky counties will have little impact on residents in the rest of Kentucky. If funding of these programs comes via block grants to the state, however, the penalties for lax enforcement of eligibility and benefits will be borne entirely by Kentucky taxpayers.

Welfare reform may also bring the opportunity to revise standards and eligibility requirements for programs, with the real possibility of simplifying standards and consolidating programs. Substantial changes in the determination of transfer payments are likely to have significant impacts on the distribution of payments among counties, something policy makers may want to consider.

Notes

[1] Joshua R. Goldstein, "Hills and Valleys on the Social Security Interstate," *Wall Street Journal*, May 31, 1995.

[2] "No. 33: Resident Population by Age and State, 1993," *Statistical Abstract of the United States: 1994*, U.S. Department of Commerce.

[3] "No. 599: Public Aid Recipients as Percent of Population, by State: 1990 and 1992," *1994 Statistical Abstract*, U.S. Department of Commerce.

[4] "No. 601: Federal Food Stamp and National School Lunch Programs, by State: 1990 to 1993," *1994 Statistical Abstract*, U.S. Department of Commerce..

[5] These programs are not entirely "people-based" when considering location across states. The eligibility requirements and benefits of the programs will depend on the state in which the household resides.

[6] As SSI makes recipients categorically eligible for Medicaid, a program with state funding, the state has some financial incentive to monitor these programs.

The Earnings of Kentucky Workers, 1988-1994

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Introduction

Differences in what people earn has always been a topic of interest, both to policy makers and the public at large. Policy makers are concerned with issues such as the level of poverty, how to attract high wage jobs to a local area, and the average level of wages , which provides a measure of the overall well-being and standard of living of the population. Individuals, on the other hand, are concerned about how their own earnings compare to the earnings of other workers. In part, these comparisons motivate individuals to make further investments in themselves through additional schooling or training.

In the last few years, there has been a great deal of discussion about the apparent widening of the gap between high- and low-wage workers. This gap has also had an impact on poverty rates. Two of the reasons for this gap appear to be the increasing returns to education in the United States, and the adverse effect of foreign competition on workers with less education and skills.

In 1988, a person with a bachelor's degree earned 48.2 percent more than a person with only a high school education. By 1994, this difference had increased to 60.6 percent.

It is likely that these nationwide changes are occurring in Kentucky. Such an analysis of these changes over time, however, has not previously been conducted for the state. I first examine the structure of earnings in Kentucky using data from the 1994 March Current Population Survey (CPS). Using these data, I determine which groups of workers have higher and lower earnings. Also using the 1994 CPS, I compare the distribution of earnings in Kentucky with that for the entire United States. Are the patterns in the way workers are rewarded different in Kentucky than in the rest of the United States? If so, in what way do they differ? Finally, I compare the 1994 CPS data with the 1988 CPS data to determine changes in the structure of earnings over time. Which groups have gained and which groups have lost between 1988 and 1994?

Why do Earnings Differ?

In any given year, the annual earnings of workers differ for a number of reasons. Most obviously, some individuals may simply work more weeks during the year or more hours during each week. In addition, there are important differences across individuals and the types of jobs that they hold. Perhaps most important is that workers have different amounts of skills or training, or what economists call "human capital." Workers with larger investments in human capital will tend to have higher annual earnings. For example, we would expect that college graduates would earn more than high school graduates and that high school graduates would earn more than high school dropouts. Similarly, those with greater amounts of work experience would tend to earn more than those with little or no experience.

But, even for those with the same amount of human capital, there can be differences in earnings depending on the type of job. A worker in one job may have a large amount of equipment or computers that allow him or her to produce more output and thus to be more highly paid than a worker in another job. For example, workers in manufacturing tend to be paid more than workers in other industries because of the larger amount of capital equipment at their disposal.

Still other reasons exist for differences in earnings. One group may suffer discrimination in the labor market, for instance. The earnings of females may be below those of males, even holding constant the amount of human capital and the industry of employment. Some of this difference may actually reflect the exact type of job held, but some may also reflect job discrimination.

Earnings may differ across jobs in order to reflect differences in working conditions or other terms of employment. Economists call these differences "compensating differentials." Thus, workers in unsafe or unpleasant jobs tend to earn more, while those in jobs in pleasant locations or with greater amounts of fringe benefits may earn less in cash compensation.

Earnings of Kentucky workers, when compared to the earnings of workers nationally, will depend on worker characteristics or the returns to various characteristics. For example, if workers in Kentucky have lower amounts of human capital, they will tend to earn less. Similarly, if the returns to education or training differ in Kentucky and the rest of the country differ, workers in Kentucky will have different annual earnings than workers elsewhere.

Similarly, the annual earnings of workers will change over time as the characteristics of workers change or as the returns to various characteristics change. For example, if the returns to education increase over time, we would expect that the gap between those with a college degree and those with a high school diploma would widen over time. Average annual earnings would rise over time if the working population had more schooling or labor market experience.

Data and Methodology

The monthly Current Population Survey (CPS) contains official federal government statistics on employment and unemployment. The survey in March of each year is also known as the Annual Demographic File because it contains supplemental data on work experience, income, non-cash benefits, and migration. For each person aged 15 and over in the sample, it is possible to obtain information on their annual earnings, hours and weeks worked, industry, and demographics such as age, race, sex, marital status, educational attainment, and family structure. This March data for 1988 and 1994 is used to estimate the earnings models in this study.

The CPS is based on the civilian non-institutional population of the United States. The sample is located in 729 sample areas comprising 1,973 counties and independent cities with coverage of every state and the District of Columbia. In each month, the Census Bureau designates approximately 71,000 housing units for interviews. Of these, some 57,000 households are interviewed, representing approximately 114,500 persons aged 15 and over and 33,500 children aged 0-14. The sample also contains a sizable number of observations for Kentucky with which to analyze earnings. For example, in March 1994, 1,736 persons living in Kentucky were interviewed, of which 756 are used here in the analysis of earnings.[1]

The estimated earnings gaps reported in this paper are obtained using a regression analysis of annual earnings. Specifically, the natural logarithm (log) of annual earnings is related statistically to a number of variables measuring different attributes of the worker or the job of the worker.[2] The estimated effect of each variable is then interpreted as the additional effect on the log of annual earnings, holding constant all other variables in the analysis. For example, the estimated effect of having a bachelor's degree versus being a high school graduate only is the additional effect on annual earnings of four years of college, holding constant gender, experience, and all other variables in the model. In this way, we can isolate the effect of each factor on annual earnings, without the confounding influences of the other variables.

The variables included in the model to explain log annual earnings are gender (female-male), race (white, black, other), marital status (married spouse present), number of own children under age 18 in the household, veteran status, residence in a metropolitan area, years of potential experience (age minus years of schooling minus six), years of potential experience squared, log of weeks worked during the year, log of hours worked per week, and industry (agriculture; mining; construction; manufacturing; transportation, communications and public utilities; wholesale trade; retail trade; finance, insurance, and real estate; services; and public administration). Thus, the estimated effect of each variable in the regression model holds constant the other variables in the model.

Table 1 shows the sizes of the samples used in the analysis and the average earnings in Kentucky and the United States in 1988 and 1994. In both years, average annual earnings for the United States were approximately $2,000 higher than in Kentucky. Part of this difference reflects the fact that Kentucky

TABLE 1
Average Annual Earnings in Kentucky and the United States from the March Current Population Survey

	1988		1994	
	Sample Size	Mean Earnings	Sample Size	Mean Earnings
Kentucky	745	$15,170	756	$20,202
United States	72,487	$17,520	68,788	$22,178

Note: Sample includes all wage and salary workers aged 16 and over with some earnings during the year.

workers have different amounts of human capital and work different amounts of time than workers in the rest of the country. For example, workers in Kentucky on average have less schooling and do not work as much of the year as workers elsewhere. In the 1994 CPS sample, 12 percent of Kentucky workers had a bachelor's degree in Kentucky while nationwide the number was 16 percent. Average weeks worked during the year in 1994 were 44.0 in Kentucky and 44.5 overall in the United States. These differences in part explain the lower earnings of Kentucky workers. The rest of the U.S.-Kentucky difference is explained by variances in the returns to various worker characteristics and investments in human capital as is discussed below.

The sample for Kentucky included 745 workers in 1988 and 756 workers in 1994. The full United States sample included 72,487 workers in 1988 and 68,788 in 1994. All wage and salary workers age 16 and over with some earnings during the year were included in the analysis. In other words, the only individuals excluded from the original CPS sample were non-workers, children aged less than 16, and the self-employed.

Earnings Differences in Kentucky in 1994

The earnings of Kentucky workers differ for a number of reasons. Percentage differences for various groups of workers are shown in Figure 1 with key differences listed in the accompanying box. The

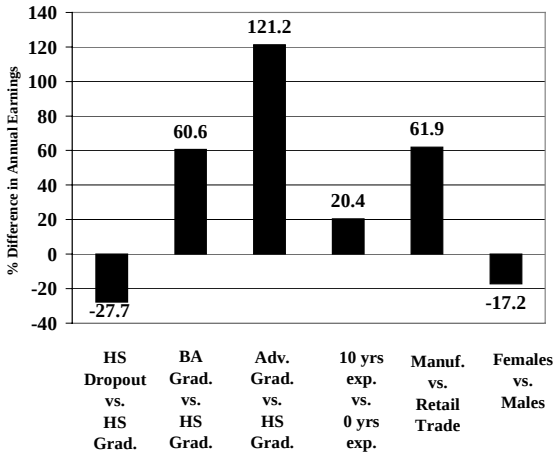

FIGURE 1: 1994 Percentage Annual Earnings Differences in Kentucky

EARNINGS DIFFERENCES IN KENTUCKY

In 1994 in Kentucky:

- Workers with a Bachelor's degree earned 60.6 percent more per year than workers with a high school diploma.
- Workers with ten years of experience earned 20.4 percent more per year than workers with no experience.
- Workers in manufacturing earned 61.9 percent more per year than workers in retail trade.
- Female workers earned 17.2 percent less per year than male workers.

data show that earnings are higher for workers with more education or experience, workers who are in manufacturing, or who are male.

Other differences were found but not shown in the box or in Figure 1. As expected, those who worked more weeks per year or more hours per week had higher earnings; married workers had higher earnings than single workers; blacks had lower earnings than whites; those who lived in a metropolitan area had higher earnings than those in non-metropolitan areas; and workers in mining, construction, and public administration had higher earnings than workers in services or retail trade. In general, these results are consistent with the idea that workers with more human capital earn more, workers in industries with more capital equipment also earn more, and female and black workers suffer some discrimination in the labor market. The next section examines the structure of earnings for Kentucky in comparison with that of the United States.

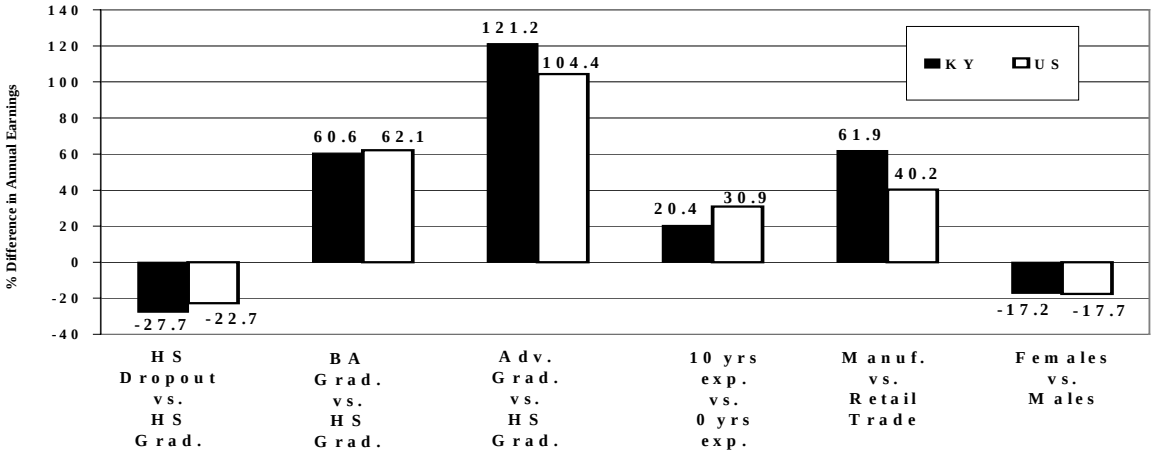

FIGURE 2: 1994 Percentage Annual Earnings Differences in Kentucky and the United States

A Comparison Between Kentucky and the United States in 1994

In Figure 2, 1994 earnings differences for the entire United States, estimated from the log earnings regression model, are shown alongside the estimated Kentucky earnings differences. The key results are summarized in the accompanying box. The results indicate that the returns to schooling are higher in Kentucky than in the rest of the United States. This conclusion comes from the fact that the gaps between the earnings of those with more education and those with less education are in general greater in Kentucky than in the rest of the United States. For example, in Kentucky, advanced degree holders earn 121.2 percent more than high school graduates, while for the entire country the difference is 104.4 percent. Similarly, high school graduates in Kentucky earn 27.7 percent more than high school dropouts while for the rest of the country the difference is 22.7 percent. One important reason for this difference is the fact that there are relatively fewer college graduates in Kentucky than in the rest of the country. These few college graduates therefore can command a higher premium in Kentucky.

At the same time, however, the gap between experienced workers and those with no experience is narrower in Kentucky than in the rest of the country. Workers with ten years of experience earn 30.9 percent more than workers with no experience in the United States but only 20.4 percent more in Kentucky. This could reflect differences in the quality of human capital at different levels of experience in Kentucky and the rest of the United States. For example, if the quality of schools is increasing more rapidly in Kentucky than in the rest of the country, those with no experience will more resemble those with ten years of experience in Kentucky than in the rest of the United States. This would result in a narrower earnings gap in Kentucky.

KENTUCKY VS. THE UNITED STATES

In 1994:

- The returns to schooling were greater in Kentucky than in the rest of the United States.
- The earnings gap between more and less experienced workers was less in Kentucky than in the rest of the United States.
- The earnings gap between workers in manufacturing and retail trade was larger in Kentucky than in the rest of the United States.
- The earnings gap between female and male workers was slightly smaller in Kentucky than in the rest of the United States.

The gap in earnings between workers in manufacturing and retail trade is greater in Kentucky than in the rest of the country (61.9 percent vs. 40.2 percent). This suggests that workers in manufacturing are relatively more productive than workers in retail trade, which perhaps reflects the greater dispersion of capital equipment in Kentucky. The difference in the capital equipment available to a typical manufacturing worker and a retail trade worker may be greater in Kentucky than in the rest of the United States. Therefore, the manufacturing worker in Kentucky earns more relative to workers in other industries (such as retail trade) than does the typical manufacturing worker elsewhere in the country.

Finally, the female-male gap in earnings is slightly narrower in Kentucky than in the rest of the

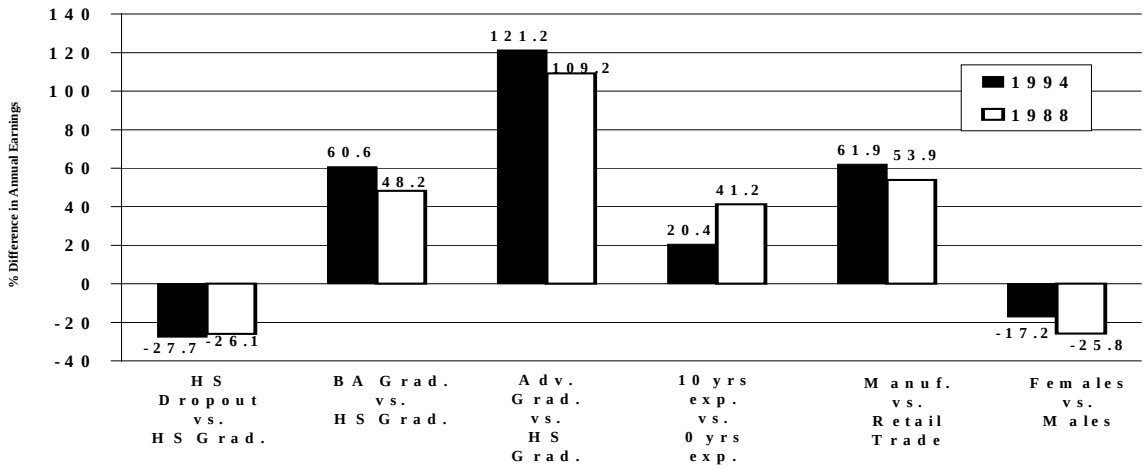

FIGURE 3: 1994 and 1988 Percentage Annual Earnings Differences in Kentucky

country (17.2 percent vs. 17.7 percent). This suggests the amount of discrimination against women in Kentucky is not appreciably different from other parts of the country. The result indicates that after holding constant education, experience, industry, and several other characteristics, the estimated earnings gap attributable to gender alone is similar in Kentucky to that observed elsewhere in the country.

Changes in Earnings Between 1988 and 1994

What changes in the structure of earnings have occurred over time? These changes in Kentucky between 1988 and 1994 are examined in this section. The key results are shown in Figure 3 and the accompanying box.

There have been striking changes in the structure of earnings over a relatively short period of time. For example, the returns to education appeared to increase rapidly between 1988 and 1994. In 1988, a person with a bachelor's degree earned 48.2 percent more than a person with only a high school education. By 1994, this difference had increased to 60.6 percent. There are several possible reasons for the increased return. Economy-wide, it is clear that demand has shifted toward skilled workers and away from unskilled workers. Some explain this shift by emphasizing the increasing use of technology in the workplace, such as computers. Presumably, more educated workers can better adapt to and use the new technology, and thus both the demand for their services and their earnings increase relative to less educated workers. Other explanations emphasize the declining demand for less educated workers. As international trade grows, less skilled jobs have moved to other countries with lower wages for workers. This decreases the demand for less skilled workers in the United States and reduces their wages relative to more skilled workers. Both of these factors are likely at work in Kentucky.

CHANGES OVER TIME IN KENTUCKY

Between 1988 and 1994 in Kentucky:

- The returns to schooling increased.
- The earnings gap between more and less experienced workers narrowed.
- The earnings gap between workers in manufacturing and retail trade widened slightly.
- The earnings gap between female and male workers narrowed dramatically.

The earnings difference between workers with ten years of experience and new workers fell between 1988 and 1994 from 41.2 percent to 20.4 percent. Perhaps the type or amount of human capital of younger workers is increasing over time, and thus the earnings gap between them and workers with ten years of experience is narrowing. This could occur if new workers are more able to accommodate the changing technology in the workplace. Perhaps more important, however, is the fact that the share of younger workers in the economy is falling over time. Consequently, their wages get bid up and their earnings increase relative to workers with more experience.[3] For example, McDonald's is now paying up to $6.50 per hour in some Lexington locations, an indication of the wages of young workers rising due to scarcity of their numbers in the work force.

Those persons in manufacturing jobs continued to see their earnings increase relative to those in retail trade from 1988 to 1994. Many of the new manufacturing jobs in Kentucky during this period were higher-paying jobs than a worker with a given set of skills and experience could have obtained previously**.** Thus, the premium associated with working in manufacturing relative to retail trade increased.

The earnings gap between females and males has been narrowing nationwide since the late 1970s and early 1980s. This trend continued in Kentucky from 1988 to 1994. The difference between female and male annual earnings, after holding constant a number of demographic factors and industry, was 25.8 percent in 1988 and 17.2 percent in 1994. In other words, the difference dropped by an average of more than a percentage point each year. Some explanations include a decline in workplace discrimination and an increasing attachment to the labor force by female workers. Over time, women have been gathering more experience and thus narrowing the gap in seniority and pay with men. At the same time, women are entering more highly-paid occupations that were previously held almost exclusively by men.

Conclusions

Over the last few years, differences in earnings across the working population have changed rapidly in Kentucky. The return to education and the premium paid to workers in manufacturing have both increased while the gender gap and differences by amount of experience have both narrowed. There are also interesting differences between Kentucky and the rest of the country. In Kentucky, the return to education is higher, the manufacturing premium is greater, and differences by level of experience are narrower, while the gender gap is almost identical to that observed in the rest of the country.

While average earnings in manufacturing appear to have fallen over the last few years in Kentucky,[4] results here suggest that after holding characteristics such as schooling and experience constant, the amount paid to Kentucky workers in manufacturing relative to other industries has risen. This suggests that workers with given amounts of schooling and training have benefited from the expansion of manufacturing because they can earn more than in other industries. As manufacturing has expanded, however, some of the new jobs have been taken by workers with less skill and training, pulling down the overall average. Even these workers, though, are better off than they would have been if they were not able to obtain manufacturing jobs.

Given these changes that have been observed over the last several years, what predictions can be made about the future trends in the earnings of Kentucky workers? Ongoing changes in technology will continue to reward those who are most able to adapt to and use the new technology. Thus, it is highly likely that the returns to schooling will increase. If young workers are better able to take advantage of new technology, then the gap between experienced and less experienced workers will continue to narrow. It is hazardous to predict what direction the premium for working in manufacturing will take; it may increase or decrease. Whatever the magnitude, however, it is still likely that workers in manufacturing will continue to earn a premium over workers in other industries. Finally, the advances of women in the workplace are likely to continue, and with them an ongoing reduction in the earnings gap between female and male workers.

Notes

[1] For more details about the Current Population Survey, see United States Bureau of the Census, "Current Population Survey, March 1992," Technical Documentation, 92-3, Washington, D. C., 1992.

[2] The natural log of annual earnings is used in the analysis because invariably economists have found that log earnings fit the data better than actual earnings in the estimation of regression equations. Also, models of human capital accumulation (e.g., Jacob Mincer, *Schooling, Experience, and Earnings*, New York: Columbia University Press, 1974) typically imply a natural logarithmic earnings equation.

[3] For example, in our CPS samples, the percentage of Kentucky workers with less than five years of experience fell from 19.4 percent in 1988 to 17.2 percent in 1994.

[4] See Dan Black and Amitabh Chandra, "Chasing Smokestacks: What Do Economic Incentives Do?" *1996 Kentucky Annual Economic Report*, Figure 3.