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2006

## Kentucky Annual Economic Report 2006

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# Kentucky Annual Economic Report

## 2006



Center for Business and Economic Research  
Gatton College of Business and Economics  
University of Kentucky



# Kentucky Annual Economic Report



*2006*

**Center for Business and Economic Research**

**Department of Economics**

**Gatton College of Business and Economics**

**University of Kentucky**

**Dr. Kenneth R. Troske, *Director***  
Center for Business and  
Economic Research

**Dr. John E. Garen, *Chair***  
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Gatton College of  
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**Roy A. Sigafus, *Managing Editor***



## From the Director . . .



The Center for Business and Economic Research (CBER) is pleased to publish the 34<sup>th</sup> Kentucky Annual Economic Report. This report is one of the important ways that the Center fulfills its mandated mission to examine various aspects of the Kentucky economy. The 2006 report contains five articles. These articles cover a wide variety of topics from the expected growth of the state and national economics to the economic impact of smoking bans. And while there is no single unifying theme these articles all examine issues that impact the citizens of the Commonwealth of Kentucky.

In putting together this issue we have drawn on the expertise of the faculty, staff and students at the University Of Kentucky, as well as from state government. Contributors include four faculty members, two economics graduate students, one graduate student from the Martin School of Public Policy and one economist from the Legislative Research Commission. As has been the tradition for this report we have assembled some of the best economists in the state to write about important regional and national issues.

Our lead article is by Dr. John Garen, Professor of Economics, recently appointed Chair of the Economics Department of the University of Kentucky and Dr. Robert Reed, Assistant Professor of Economics at the University of Kentucky. This article focuses on the events in the National and Commonwealth economics over the past year, particularly the effect of the hurricanes that struck the gulf coast, and predicts the growth in the two economies in the coming year.

The next article, by Dr. Barry Boardmen from the Legislative Research Commission, looks at the sources of revenue for local governments in Kentucky and compares them to the sources of revenue for local governments in other states. One thing he finds is that local governments in Kentucky receive a much larger share of their revenue from taxes on earnings and user fees and a much smaller share of revenue from property taxes. This is important because economic theory suggests that taxing property involves fewer distortions than taxing earnings and may suggest that local governments in Kentucky are using less efficient means for raising revenue than local governments in other states.

The next two articles focus on recent changes in specific parts of the Kentucky economy. My article with Attila Cseh, a graduate student at the University of Kentucky, and Dr. James Zilick, the Gatton Chair in Microeconomics and director of the UK Center for Poverty Research, examines changes in the poverty rate in Kentucky since 1990. We show that the poverty rate in Kentucky fell quite dramatically relative to the national poverty rate in the mid 1990s. Since 2000 poverty in

Kentucky has increased much faster than poverty in the nation and seems to be returning to its historical higher level. The paper by Brad Trenkemp, a graduate student at the University of Kentucky, compares recent changes in the unemployment rate in Kentucky and the national unemployment rate. Since late in 2004 the unemployment rate in Kentucky has risen while the unemployment rate for the entire US has fallen. Brad's analysis shows that, given the large amount of uncertainty that surrounds state-level measures of unemployment, it is possible that these different trends are due to errors in measuring unemployment in Kentucky and not due to actual differences in unemployment.

The final article by Ryan Phelps, a graduate student at the University of Kentucky, examines the employment affects of smoking bans using data from municipalities across the nation that have instituted a smoking ban in bars and restaurants in recent years. Ryan finds that these bans appear to have very little affect on employment in restaurants but they do have a significant negative affect on employment in bars.

In the past year we have worked on a number of important projects in the Center for Business and Economic Research. Perhaps one of the more interesting is a project we are doing for the Appalachian Region Commission evaluating their efforts to increase the college-going rates of high school seniors in the Appalachian region. We will continue to work on this project in the coming year and hopefully will have an article in a future Annual Report discussing our findings. Other projects this year include several studies for the Kentucky Department of Parks, the Kentucky Department of Fish & Wildlife, the Kentucky Department for Workforce Development and the Kentucky Arts Council. We look forward to continuing to work on these and other projects in the coming year.

Personally this represents a significant Annual Report since it is the first one I have been involved in as the new Director of the Center for Business and Economic Research. As many of you know the previous director of CBER, Dr. Mark Berger, passed away suddenly in April of 2003. Since then CBER has been run on an interim basis first by Dr. Eric Thompson, and then by Dr. John Garen and Dr. William Hoyt. My primary goal as the new Director is to ensure that CBER continues to produce the same high quality, objective research that was produced by my friend Mark as well as by Eric, John and Bill. I am hopeful that with the help of the staff of CBER and my new colleagues in the Department of Economics I will be successful.

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## Department of Economics, University of Kentucky

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The Center for Business and Economic Research (CBER) is the applied economic research branch of the Carol Martin Gatton 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, CBER 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.

CBER's research includes a variety of interests. Recent projects have been conducted on manpower, labor, and human resources; transportation economics; health economics; regulatory reform; public finance; and economic growth and development. CBER also publishes the *Carol Martin Gatton College of Business and Economics Working Papers*, which report the results of current research by college faculty.

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Barry Boardman is an economist with the Legislative Research Commission (LRC). Dr. Boardman received his Ph.D. from the University of Kentucky in 2001. Before joining the LRC, Barry worked with United Parcel Service as an economist working on development of a pilot cost model. Barry's current research is focused on applied economic analysis of various public policy issues concerning education, government finances, and legalized gambling. He has considerable experience in econometric methods and modeling. Dr. Boardman has a publication forthcoming in the *Journal of Socio-Economics* on gambling and personal bankruptcy.

**Attila Cseh**



Attila Cseh is a Graduate Fellow at the University of Kentucky Center for Poverty Research and a Ph.D. student at the Department of Economics. He holds an M.A. in Economics from Central Missouri State University. His research interests lie in the fields of health economics and labor economics. Currently he is working on his dissertation titled: "MentalHealth and the Labor Market".

**Dr. John Garen**



Dr. John Garen is a Gatton Endowed Professor of Economics and Chair, Department of Economics in the Gatton College of Business and Economics at the University of Kentucky. Dr. Garen received his Ph.D. from Ohio State University in 1982. He has been a member of the University of Kentucky faculty since 1985, with a one year absence while serving as a visiting professor at the University of Chicago. During 2004-2005, he was Co-Director of the Gatton College's Center for Business and Economic Research (CBER). Dr. Garen has conducted research on a variety of human resources issues and on many applied microeconomics topics. These include studies of wage determination, schooling and higher education, labor demand and employment, job safety, unionization, executive compensation, incentive pay, franchising, self-employment, initial public offerings, and managerial stock ownership. His work has been published in many leading journals in economics including *Journal of Political Economy*, *Research in Labor Economics*, *Review of Economics and Statistics*, *Journal of Human Resources*, *Journal of Corporate Finance*, and *Econometrica*.

**Ryan Phelps**



Ryan Phelps is a teaching assistant at the University of Kentucky. He received his B.S. in business management from Pensacola Christian College in December, 1999. He is currently in the dissertation stage of the University of Kentucky's Economics Ph.D. program. His primary research interests include Health Economics, Environmental Economics and Industrial Organization.

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**Dr. Robert R. Reed**



Dr. Robert R. Reed is an Assistant Professor of Economics at the University of Kentucky. Dr. Reed received his Ph.D. in economics at The Pennsylvania State University in 1998. Prior to his appointment at the University of Kentucky, Dr. Reed was a faculty member at Iowa State University. His research interests lie mainly in macroeconomic theory with a particular emphasis on financial systems and economic growth. He has also contributed to recent debates regarding the macroeconomic impact of population aging across countries. Dr. Reed has published in important economics journals such as the *International Economic Review*, the *Journal of Money, Credit, and Banking*, and *Economic Inquiry*. He has also served as a Visiting Scholar at the Center for European Integration Studies at the University of Bonn in Germany.

**Brad Trenkamp**



Brad Trenkamp is a graduate research assistant at the Center for Business and Economic Research. He is currently pursuing his Masters Degree in Public Policy at the Martin School of Public Policy and Administration at the University of Kentucky. Brad received his BA in Applied Economics from Eastern Kentucky University in 2004. He plans to pursue a career as a policy analyst upon graduation in the spring of 2006.

**Dr. Kenneth R. Troske**



**Dr. Kenneth R. Troske** is Director of the Center for Business and Economic Research and William B. Sturgill Professor of Economics at the University of Kentucky as well as a Research Fellow with the Institute for the Study of Labor (IZA) in Bonn, Germany. Prior to coming to Kentucky Dr. Troske was an Assistant and an Associate Professor of Economics at the University of Missouri. He received his Ph.D. in economics in 1992 from the University of Chicago. His primary research areas are labor and human resource economics. Dr. Troske has authored a number of widely-known papers utilizing employer-employee matched data on topics such as productivity, technology, and discrimination. His most recent work has focused on evaluating various aspects of the Workforce Development System in the U.S. including the role of temporary help firms in facilitating the transition from welfare-to-work. His papers have appeared in many leading journals in economics including the *Quarterly Journal of Economics*, *Journal of Labor Economics*, *Journal of Human Resources*, *Review of Economics and Statistics*, and the *American Economic Review*.

**Dr. James P. Ziliak**



Dr. Ziliak is Professor of Economics and holder of the Carol Martin Gatton Endowed Chair in Microeconomics in the Department of Economics at the University of Kentucky. He is also Director of the University of Kentucky's UK Center for Poverty Research, and is a research affiliate with the National Poverty Center at the University of Michigan, the Joint Center for Poverty Research at the University of Chicago, and the Institute for Research on Poverty at the University of Wisconsin. He received his Ph.D. in Economics from Indiana University and was previously Associate Professor of Economics at the University of Oregon. He has also held visiting faculty positions at the University of Michigan (1997-1998) and the University of Wisconsin (2000-2001). Dr. Ziliak's research expertise is in the areas of labor economics, poverty policy, and tax policy. He has been published in several of the leading journals in the Economics profession including *The American Economic Review*, *The Journal of Political Economy*, *The Review of Economics and Statistics*, and *The Economic Journal*.

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# Recent Economic Developments in the United States and Kentucky: Implications for 2006

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## I. Introduction

The 21<sup>st</sup> century has presented its share of challenges for the U.S. economy. While economic activity steadily picked up during the ‘new’ economy of the 1990s, the expansion slowed down in 2000 and the U.S. entered a recession in March 2001. Although the slowdown was relatively mild and short-lived compared to the average business cycle, other disturbances have also occurred.<sup>1</sup> After the terrorist attacks of September 11<sup>th</sup> in 2001 created heightened concerns about national security, a surge of accounting scandals surfaced. As a result, the value of the stock market fell about 30% from June 2001 to June 2002. In 2003, the economy encountered additional uncertainty stemming from the war with Iraq. During the following year of 2004, oil prices surged.

The most recent shocks to the U.S. economy have been weather-related. Hurricanes Katrina and Rita created a substantial amount of damage. For example, estimates suggest that federal government expenditures may increase about 30 billion dollars in 2006 in wake of the aftermath.<sup>2</sup> Despite these adverse events, the U.S. economy will continue to follow the expansion that began in late 2001. Although the pace will be slower than in recent years, the economy appears to be reverting back to

its trend rate of growth. Consequently, this suggests that the hurricanes are not likely to have a strong effect on economic performance – private sector forecasts show that the impact is probably transitory.

Moreover, economic activity in Kentucky in 2006 is likely to expand in a way similar to the rest of the United States. Although labor market behavior has been somewhat more volatile recently, the overall pattern is one of similarity to the U.S. economy. As with the nation as a whole, the Kentucky economy did not suffer from significant shocks due to the Gulf Coast hurricanes and therefore they will not have an effect on growth in Kentucky.

## II. Recent Observations for the U.S. Economy

### A. Real GDP has continued to rise since the recovery of 2001.

In late 2001, the United States entered an economic recovery. The economy continued to expand in 2003. The average growth rate of real GDP was equal to 2.7% in 2003. In 2004, the economy grew at an even faster pace of 4.2%. The data in Table 1 combine the numbers with recent observations for 2005:

**Table 1: Recent Real GDP Growth**

2001	0.8%	2005.1	3.8%
2002	1.6%	2005.2	3.3%
2003	2.7%	2005.3	3.8%
2004	4.2%		

As shown in the table, real GDP continued to rise in 2005. However, the economy grew at a slower rate than in 2004.

*B. Labor market conditions have also improved.*

Unfortunately, the recovery in 2001 seemed to occur without any gains in labor market activity. Although real GDP growth began to rebound, the

**Figure 1: US Unemployment Rate (Jan 2003 - Oct 2005)**

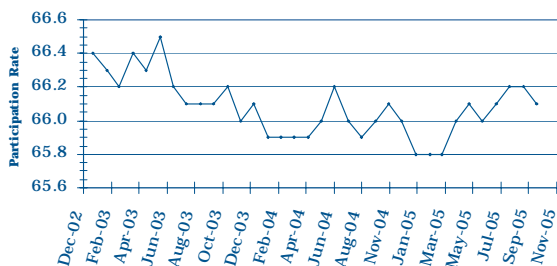


unemployment rate continued to rise more than a year after the recovery began. As a result, the 2001 recovery has been viewed as a “jobless” recovery.<sup>3</sup>

However, the labor market appears to have strengthened since the middle of 2003. Figure 1 provides evidence on the unemployment rate.

In June 2003, the unemployment rate peaked at 6.3%. However, in 2004, the rate steadily declined. Based upon observations for 2005, unemployment has stabilized at 5.0%. Moreover, the labor market

**Figure 2: Labor Market Participation (Jan 2003 - Oct 2005)**



appears to be robust although participation rates have fluctuated somewhat, the average rate during the latter half of 2005 resembles values from the second half of 2003. In contrast, the unemployment rate was a percentage point lower. (See Figure 1)

Naturally, one might be concerned that the labor market may be becoming too ‘tight.’ Real hourly labor compensation in the non-farm business sector grew at an average rate of 1.6% in 2003. In 2004, wage growth increased to 1.8%. Although there is evidence of further tightness based upon the first quarter of 2005, wages have actually fallen during the second and third quarters.

*C. But, inflation has picked up.*

While the performance of the economy has improved in the past several years, the Federal Reserve has become increasingly concerned about rising prices.

**Figure 3: Consumer Price Index, 12 Month Percent Change (Jan 03 - Sep 05)**

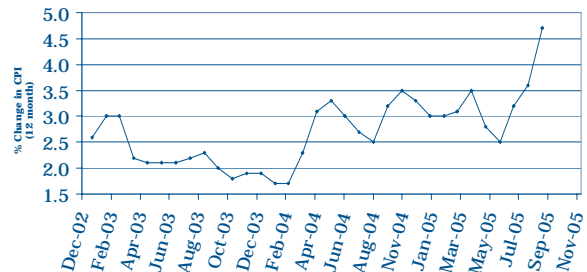


Figure 3 reveals information on inflation in the economy. While the inflation rate averaged 2.3% in 2003, price pressures continued to rise in 2004. In that year, inflation increased at the rate of 2.7%. The trend continued in 2005. During the first half of the year, the inflation rate was 3.0%. However, the outlook for the second half of 2005 is a bit more gloomy as price increases have jumped up.

Obviously, surging energy costs are partly responsible. In 2002, the average price of oil was about \$26 a barrel. While prices stabilized in 2003, prices bounced from \$34 at the beginning of 2004 to a high near \$66 in September 2005. However, the most recent spike appears to be a transitory phenomenon due to Hurricanes Katrina and Rita. In November, prices fell to \$61 a barrel.

Consequently, growth in prices has been less strong upon excluding food and energy. The “core-

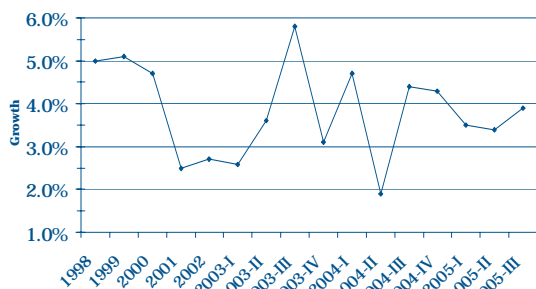
inflation” rate in 2003 was 1.4% and rose to 1.8% in 2004. This number stood at 2.2% during the first half of 2005 and fell to 2.0% in the third and fourth quarters.

### III. Sources of U.S. Economic Growth

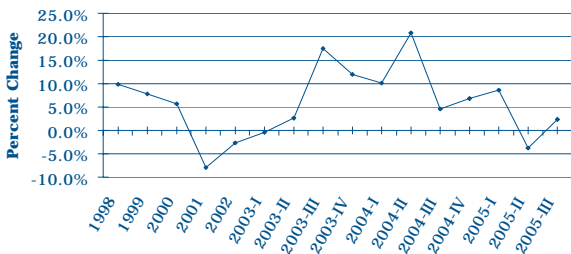
*A. Although private investment sparked growth during the recovery, the pace of spending slowed down in 2005.*

The United States entered a recession in March 2001 and the recovery began in November 2001. In contrast to the average business cycle in the United States, the recession was relatively mild. There are two potential explanations. First, the decline in productivity growth was modest.<sup>4</sup> Second, private consumer expenditures actually *increased* during the recession. Although this pattern continued throughout 2004, personal consumption growth fell in 2005.

**Figure 4: Growth in Personal Consumption Expenditures**



**Figure 5: Percent Change in Gross Private Domestic Investment**



In comparison, gross private domestic investment was one of the primary forces responsible for the recession in 2001. Businesses pursued substantial investment expenditures during the latter half of the 1990s, but investment fell sharply in 2001. Understandably, the surge during

the expansion left little room for further growth. However, gross private investment picked up considerably in mid 2003. This followed the gains in the stock market as the value of equity returned to its 2001 level. During the latter half of 2003, investment grew at an average rate of nearly 15% and the Dow Jones Industrial Average climbed from around 8,000 points at the beginning of the year to nearly 10,500 at the end of the year. Since then, the stock market has been largely stagnant. In addition, investment growth has started to slow down. Although investment was almost 12% higher in 2004, it has averaged a little less than 2.5% so far this year.

*B. Productivity growth contributed to economic growth, but has also been lower in 2005.*

Although productivity growth fell during the recession of 2001, it has increased since then and has fueled the recovery underway. This is shown in Table 2.

**Table 2**

Year	Quarter	Nonfarm Business Sector	Year	Quarter	Nonfarm Business Sector	Year	Quarter	Nonfarm Business Sector
		Productivity			Productivity			Productivity
2003	1	3.1%	2004	1	2.1%	2005	1	3.2%
	2	6.6%		2	4.5%		2	2.1%
2003	3	9.6%	2004	3	1.3%	2005	3	4.1%
	4	0.8%		4	2.5%			

From the observations listed, productivity grew at an average annual rate of 3.8% in 2003. Growth has continued since then, but the pace has slowed down. The increase in productivity during 2004 was 3.4%. In 2005, the trend has continued. So far, the average rate has been around 3.1%.

### IV. The Direction of Monetary Policy and Interest Rates

*A. Due to increasing price pressures, the Federal Reserve has raised the Federal Funds Rate at a ‘measured’ pace since July 2004.*

In January 2000, the Federal Reserve gradually began lowering the federal funds rate in order to promote economic activity. This continued throughout the recession of 2001 until January 2003. After consistently lowering its target, the Federal Reserve maintained the historically low rate of 1%

for the next 18 months. During 2003, concerns about inflation began to emerge. However, the unemployment rate continued to rise throughout the first half of the year. The Federal Open Market Committee (FOMC) expressed this dilemma in its statement concluding its meeting on March 18, 2003:

“In light of the unusually large uncertainties clouding the geopolitical situation in the short-run and their apparent effects on economic decision making, the Committee does not believe that it can usefully characterize the current balance of risks with respect to the prospects for its long run goals of price stability and sustainable growth. Rather, the Committee decided to refrain from making that determination until some of those uncertainties abate.”

Consequently, the FOMC kept the federal funds rate at 1% until there were clear signs of improvement in labor market conditions.

By the middle of 2004, the unemployment rate was down to 5.4% from its peak of 6.3% in June the previous year. Inflationary concerns continued to develop as the CPI-inflation rate had edged up to over 3% in May. Thus, in July 2004, the Federal Reserve raised the Federal Funds rate to 1.25%. Moreover, the FOMC expressed that it was likely to keep increasing rates:

“...the Committee believes that policy accommodation can be removed at a pace that is likely to be measured.”

Since then, the Fed’s policy stance has basically been the same:

“...the Committee believes that policy accommodation can be removed at a pace that is likely to be measured. Nonetheless, the Committee will respond to changes in economic prospects as needed to fulfill its obligation to maintain price stability.”

(FOMC Press Release: November 1, 2005)

*B. Despite monetary tightening, long-term interest rates have basically remained the same in 2005.*

As a result of the higher federal funds rate, short-term interest rates have increased. In July 2004, the 3-month Treasury bill yield stood at 1.33%. During 2005, short-term interest rates continued to rise. However, long-term interest rates in September

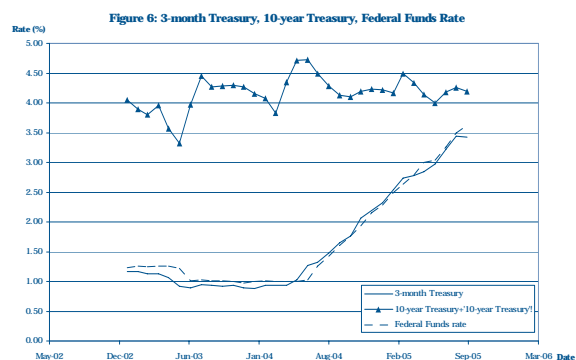
were essentially the same as at the beginning of the year. Chairman Greenspan has noted that the discrepancy between short and long-term interest rates is a “conundrum.”<sup>5</sup> Recent nominee Ben Bernanke suggests the low long-term rates reflect a “savings glut” resulting from changes in population demographics across the world. Due to increasing aging, individuals in older economies are facing limited opportunities for investment. In pursuit of higher returns, funds have increasingly been funneled to the United States from other countries.<sup>6</sup>As a result of the low cost of attracting savings, long-term interest rates in the United States may remain in low in spite of domestic monetary tightening.

## V. Macroeconomic Consequences of Hurricanes Rita and Katrina

### A. The hurricanes have been costly, but federal government expenditures will not be substantially affected.

Unfortunately, the United States has experienced adverse shocks in each year of the new millennium. In contrast to previous years, the negative shock came from weather damage in 2005. In August and September, Hurricanes Katrina and Rita hit the southern United States.

Obviously, it is difficult to establish a monetary value accurately reflecting the loss of life and emotional damage from the hurricanes. As a first step, one can begin by examining the increased fiscal burden imposed upon the government. In wake of the aftermath, federal government expenditures are expected to increase around \$25 billion over the next few years. While this is a large sum of money, the



United States is a large economy — U.S. GDP totaled nearly \$12 trillion in 2004. From this amount, federal government expenditures (including transfer payments) were almost \$2.4 trillion. Expenditures on national defense accounted for about 25% of federal government spending. Thus, if government spending would otherwise remain the same, the \$25 billion amount only represents a 1% increase. Moreover, the pace of defense-related expenditures has slowed down since 2003. Consequently, total federal government expenditures are not likely to be significantly higher in 2006.

*B. The macroeconomic impact of the hurricanes is likely to be small and short. Economic growth will be slower in 2006, but the slower pace was predicted before August 2005.*

It is possible to develop insights regarding the macroeconomic effects of the hurricane damage by looking at changes in private sector forecasts for the economy.<sup>7</sup> In order to examine the change in the forecasts, please refer to Table 3 below. In particular, the table lists forecasts for the economy at different dates. For example, in April 2005, GDP growth in

the fourth quarter of 2005 was predicted to be equal to 3.3. It was also expected to remain at the slightly lower rate throughout 2006.

The inflation rate was predicted to be 2.3% at the end of 2005 and to edge slightly higher in 2006. Short-term interest rates were expected to increase to 4.2 % by the end of 2006.

In July 2005, the numbers were revised down a bit. These observations are described in the table below the forecasts from April 2005. As shown in the table,

growth was expected to remain at 3.3% for the end of 2005, but to fall slightly in 2006. Although short-term interest rates were expected to rise, the forecasts were lower than initially calculated. Estimates of the inflation rate in the first half of 2006 remained the same, but the numbers for the third and fourth quarters were adjusted down.

The forecasts in October show that the macroeconomic impact of the hurricanes will largely be observed in the form of higher inflation and lower growth in the last quarter of 2005. GDP growth was revised down to 2.9% from 3.3%, but is anticipated to be higher in the first half of 2006. Although the growth rate was initially forecast to be 3.2%, the latest predictions reveal the economy is likely to expand at the rate of 3.4% instead. Despite the spike in inflation to 3.5% in the final quarter of this year, the effects will not last long. The inflation rate will likely return to 2.3% in 2006. Predictions for short-term interest rates, however, are higher than the forecasts in July.

**Table 3. Blue Chip Forecasts**

	April 2005				
	2005	2006			
	IV	I	II	III	IV
Real GDP Growth	3.3	3.3	3.3	3.3	3.3
CPI Inflation	2.3	2.4	2.5	2.4	2.4
3 Month T-bill	3.7	3.9	4.0	4.1	4.2

	July 2005				
	2005	2006			
	IV	I	II	III	IV
Real GDP Growth	3.3	3.2	3.2	3.2	3.3
CPI Inflation	2.4	2.4	2.5	2.3	2.3
3 Month T-bill	3.7	3.9	4.0	4.0	4.1

	October 2005				
	2005	2006			
	IV	I	II	III	IV
Real GDP Growth	2.9	3.4	3.4	3.2	3.2
CPI Inflation	3.5	2.4	2.3	2.3	2.3
3 Month T-bill	3.9	4.1	4.2	4.3	4.3

## VI. The Kentucky Economy

Not surprisingly, the Kentucky economy tends to move closely with the national economy. The Kentucky economy began its recovery from the recession of 2001 at about the same time as the U.S. economy and it has continued to expand through 2005. Several aspects of the performance of the state economy are examined below.

### A. Gross State Product

The state equivalent of Gross Domestic Product (GDP) is Gross State Product (GSP). The latter is the value of goods and services produced by a state instead of the nation. GSP data is collected and reported on an annual basis and is only available

**Table 4**  
**Kentucky Real GDP Growth**

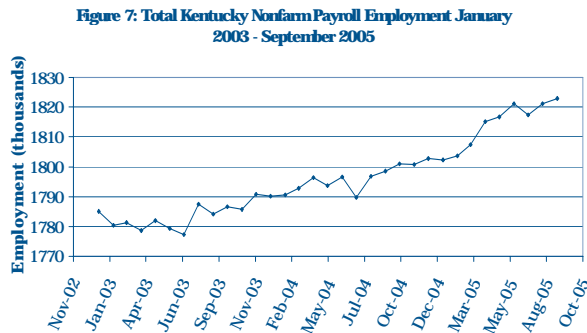
Year	U.S. Real GDP Growth,	Kentucky Real GDP Growth,
2001	0.8%	0.7%
2002	1.6%	2.4%
2003	2.7%	3.6%
2004	4.2%	3.7%

through 2004. Nevertheless, we can compare the Kentucky and U.S. economies on an annual basis through 2004.

Table 4 shows the percentage growth in GDP for the U.S. (taken from Table 1) and the percentage growth in GSP for Kentucky. As can be seen from the table, both the U.S. and Kentucky economies grew sluggishly in 2001. Kentucky actually grew faster in 2002 and 2003, but somewhat slower in 2004, though, average GSP growth in Kentucky has exceeded average U.S. growth since 2001.

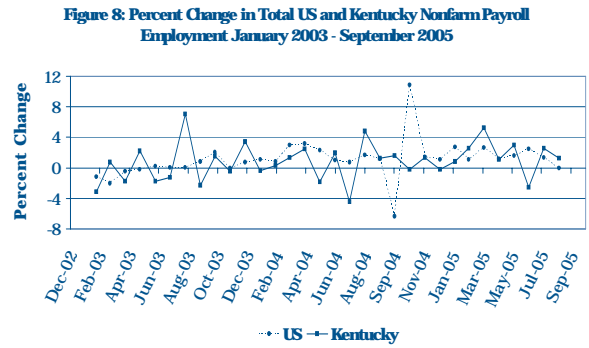
**B. Employment**

Figure 7 shows monthly payroll employment in Kentucky from 2003 through late 2005. During this time, payroll employment grew from around 1.78 million to 1.82 million. Employment growth was minimal in early 2003, but has increased fairly



rapidly since then, with the exception of a few months. This is broadly consistent with the strong growth in GSP.

Figure 8 plots the percentage changes in monthly employment growth in Kentucky and that in the U.S. for the 2003 to late-2005 time period. The percentage changes are expressed on an annualized basis, though the data are monthly. Both the Kentucky and the U.S. economies generally have shown positive employment growth. Kentucky's growth has been more erratic than the U.S., with the exception of late-2004. On an annualized basis,



Kentucky averaged 0.82% monthly employment growth while the U.S. averaged 1.10% during this time period. Overall, Kentucky's job growth has been strong over the past two years.

Manufacturing employment continues to fall nationally, but not nearly as sharply for Kentucky. Nationally, manufacturing employment was 14.85 million in January of 2003 and stood at 14.24 million in October 2005 for a 4.1% decline. For Kentucky, manufacturing employment during the same time period fell from 268.8 thousand to 265.6 thousand; a much smaller 1.2% decline.

**C. Unemployment**

Kentucky's monthly unemployment rate has generally trended downward, though it displayed some unusual behavior in late 2004 and early 2005. Figure 9 shows the Kentucky and the U.S. unemployment rates for the 2003 to late-2005 time period. Though Kentucky's unemployment rate was slightly above that of the U.S. at the beginning of 2003, it generally tracked the national unemployment rate quite closely until mid-2004. At that time, Kentucky unemployment took a sharp turn downward to drop below the U.S. rate, followed by a sharp turn upward in late-2004 to rise above the national rate, then another downward turn recently.

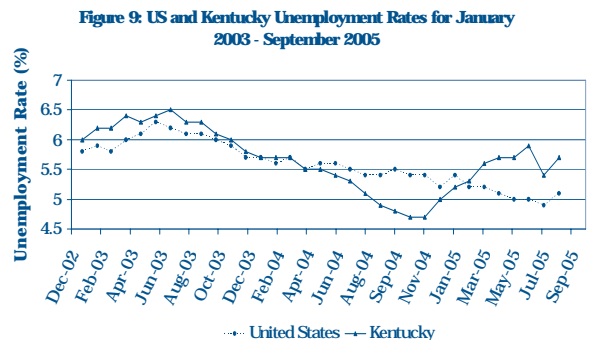
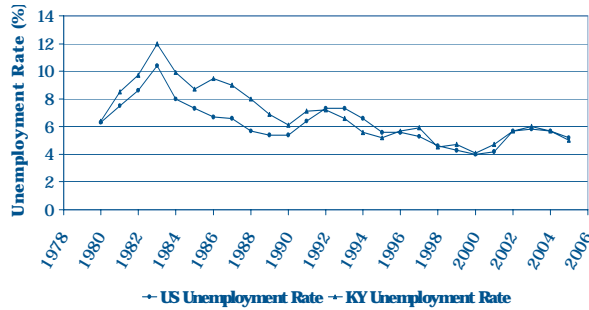


Figure 10: US and Kentucky Unemployment Rates (1980 - 2005)



The unusual pattern of Kentucky's recent unemployment rate is addressed more thoroughly in another chapter in this report. It is useful, though, to obtain a broader perspective on unemployment in Kentucky. To do so, Figure 10 plots the annual unemployment rates for the U.S. and Kentucky from 1980 to 2004. The figure shows a number of noteworthy things. One is that Kentucky's unemployment rate was substantially above that of the U.S. until 1992. After 1992, the two annual rates are nearly identical. From 1980 to 1992, the average annual unemployment rate for nation was 7.0% and for Kentucky it was 8.5%. From 1993 to 2004, the averages for the U.S. and Kentucky were the same at 5.5%. This convergence corresponds to long-term trends that have transformed the Kentucky economy such that it is quite similar to the U.S. economy.<sup>8</sup>

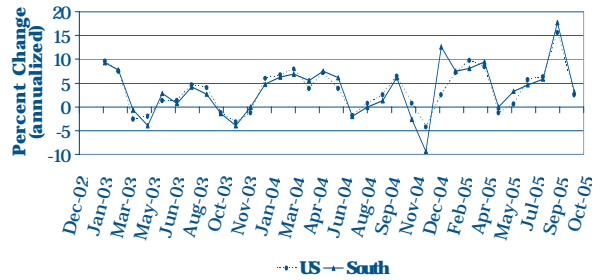
The general conclusion is that patterns of employment and unemployment in Kentucky have become much like those in the rest of the nation. Thus, despite month-to-month variability in recent numbers, it is expected that Kentucky's unemployment rate will follow the national rate pretty closely.

*D. Hurricanes, Energy Prices, and the Kentucky Economy*

The previous section on the national economy indicated that rising energy prices and Hurricanes Katrina and Rita did not have a large scale impact on economic growth and employment for the entire economy. Of course, certain areas suffered a heavy impact; in particular some of the Gulf Coast states. Here, we investigate if the effects were substantial for the Kentucky economy. In particular, we examine the local effects on prices and employment.

Regarding prices, unfortunately there is no national statistical agency that provides price indices on a state level. The region is as "local" as the data

Figure 11: Annualized Percent Change in CPI (NSA) for All Items for the US and Southern Region (Jan 03-Oct 05)



get. Thus, we look at the inflation rate for the Southern region of the U.S. and compare it to that for the U.S. as a whole. Figure 11 plots the annualized percentage change in the Consumer Price Index (CPI) for the U.S. and that for the Southern region (on a non-seasonally adjusted basis). They track one another quite closely. There is a slightly higher upward spike in the Southern region CPI around the time frame of the Gulf hurricanes and two larger spikes in 2004, but the overall pattern is one of similarity. The Southern region as a whole has experienced nearly same amount of inflation as the U.S., both before and after the Gulf hurricanes.

Figure 12: Total Nonfarm Payroll Employment for Kentucky and Louisiana (Jan 03 - Oct 05)

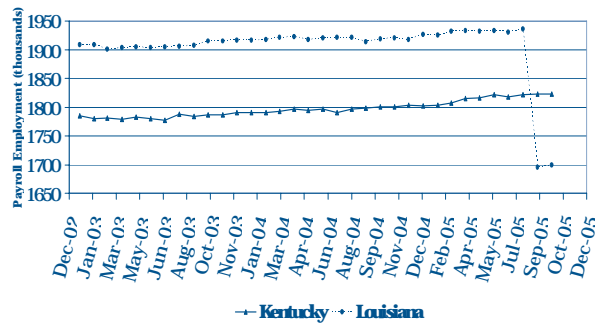


Figure 12 plots Kentucky employment and employment in Louisiana over the January 2003 to late 2005 time period. Not surprisingly, Louisiana suffered very large employment losses during September 2005. Employment fell from over 1.9 million to around 1.7 million; a 12.4% reduction. Though the Louisiana economy was hit hard by Hurricane Katrina, there is no evidence of a substantial impact on the Kentucky economy. The pattern of employment growth in Kentucky remained about the same around the time of the Gulf hurricanes.



## VII. Conclusions

In conclusion, the U.S. economy is maintaining the expansionary path that began in late 2001. Real income is growing, but the pace of growth has slowed this year. Labor market conditions have steadily been improving, but have not yet become too tight. Although inflation has picked up, prices excluding food and energy have experienced modest gains. The forecast for 2006 reflects the behavior in 2005 and 2004. The U.S. economy will continue to grow, but at a slower rate. In order to alleviate price pressures, the Federal Reserve will continue to raise the federal funds rate at a “measured” pace. The Gulf Coast hurricanes of 2005 will not have a substantial impact on overall activity in the United States.

The Kentucky economy has followed national trends pretty closely over the past decade. Though the recent trends of employment and unemployment in Kentucky have been somewhat more erratic than those of the U.S. economy, the overall patterns have been of similarity to the nation. An exception to this is manufacturing: though manufacturing employment has dropped nationally and in the state, the drop is much larger for the nation. These patterns are expected to continue through 2006. The Kentucky economy will grow along with the U.S. economy, implying moderately growing employment and declining unemployment rates. Also, as with U.S. economy, the hurricanes of 2005 will not substantially reduce economic activity in Kentucky.

## VIII. References

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## Endnotes

- 1 Kliesen (2003) contrasts economic activity during the 2001 recession to previous business cycles.
- 2 Congressional Budget Office. See Holtz-Eakin (2005).
- 3 Schreft and Singh (2003) and Ferguson (2004) provide further insights into the jobless recovery of 1991 and 2001.
- 4 Kliesen calculates that productivity growth averages .9% during recessions in the United States. In contrast, productivity increased more than 2% in 2001.
- 5 This statement was made by Greenspan (2005) in testimony before Congress.
- 6 See Bernanke (2005) and the discussion in Davies and Reed (2005).
- 7 Blue Chip economic forecasts represent an average of 50 private sector estimates. Measures of the forecasts were obtained from issues of *Economic Update* (2005).
- 8 See Berger, et. al. (1999).

# The Composition of Kentucky's Local Government Revenue

*Barry Boardman*

*This article provides an overview of the composition of Kentucky's local government revenues using finance data collected by the U.S. Census Bureau on local governments—counties, cities, special districts, and school districts. The census data reveal that local governments in Kentucky have several unique features relative to the nation. The most noticeable difference is local governments in Kentucky rely far less on taxing property and far more on taxing income (wages and profit). Additionally, Kentucky local governments rely on user fees and other miscellaneous revenues to finance government services. These revenue sources, which increased significantly during the 1980s, now represent an important component of local revenue.*

This report provides an overview of the primary revenue components of Kentucky's local governments. The composition of Kentucky's local government revenues is examined using finance data collected by the U.S. Census Bureau on local governments—counties, cities, special districts, and school districts. The census data is used to portray the types of revenue sources used by local governments, how tax collections are distributed across the different local governments, and to provide a comparison of Kentucky's local government revenues with the nation. There is tremendous variation in available tax bases across Kentucky at each local taxing division, however, the census data does not allow for a review of individual, local government finances. The data, therefore, provides a way to present an overview of how the "average" local government generates revenue.

Local governments in Kentucky have several unique features relative to other local governments in the U.S. The most noticeable difference is that Kentucky's local governments rely on the property tax far less, on average, than U.S. local governments. This difference is even more pronounced when school districts, which are funded to a large extent by property taxes, are excluded from the comparison.

Conversely, Kentucky's local governments obtain a comparatively larger share of revenues from income (wages and profits) by levying an occupational tax. The comparative differences between these two tax sources, property and income,

have increased over time. A unique feature of Kentucky's government finances is the amount of revenue collected at the state-level relative to the local governments. Kentucky's state and local tax structure is considerably more centralized at the state-level than the vast majority of the states. An additional distinction is Kentucky's local governments use of local charges such as user fees as a revenue source. The reliance on user fees and other miscellaneous revenues increased during the 1980s and remains a significant source of local revenue.

## Characteristics of Kentucky's Local Government and Taxing District Revenues

To highlight the various characteristics of each type of local government's revenues, the census data was collapsed into nine revenue categories (Appendix A provides information on what revenues are included in each category):

- Property Tax
- Income Tax
- Public Utility Tax
- Motor Vehicle and Operator Licensing Tax
- Other Select Sales and Excise Taxes
- Taxes Not Elsewhere Classified (NEC)
- Fees and Charges
- Other Revenue
- Intergovernmental State Transfers (IGR)

## *The Composition of Kentucky's Local Government Revenue*

Table 1 presents the distribution of the revenue generated from each of these nine categories by Kentucky's local governments. Total revenue is represented by the summation of the nine categories (direct federal transfers to local governments are excluded). Because intergovernmental transfers from the state represent a large share of total local revenue, especially for counties and school districts, much of the analysis that follows will concentrate on "own-source revenues" by excluding these state transfers. Thus, **local revenues-own sources** represents the sum of the first eight revenue categories. This approach will allow for a more precise examination of the revenues generated specifically by local government efforts.

It is apparent from Table 1 that the property tax, fees and charges, other revenue, and state transfers (IGR) represent the primary sources of local revenues. For cities, the occupational income tax is a significant source of revenue. Notable for both counties and cities, is how the property tax's contribution to total revenue has declined. For counties, cities, and special districts the non-tax revenues are an important source of revenue. Non-tax revenues include user fees, charges, and other revenues such as interest income. In 2002, over half (50.2 percent) of county revenues were generated from these sources. Likewise, they represented 40.3 percent of city revenues and 57.4 percent of the revenue of special districts. Another important

**Table 1: Composition of Kentucky's Local Government Revenue by Revenue Source**

Year	Name	Property Tax	Occ Income Tax	Public Utility Tax	Motor Veh & Oper Lic	Other Select Sales Taxes	Taxes NEC	Fees and Charges	Other Revenue	IGR
1972	COUNTIES	39.2%	10.1%	0.2%	0.1%	0.0%	4.1%	25.2%	3.4%	17.7%
1977	COUNTIES	29.8%	8.8%	0.0%	1.4%	0.5%	1.6%	19.0%	13.8%	25.2%
1982	COUNTIES	22.3%	9.1%	0.0%	1.3%	0.5%	0.9%	18.5%	12.2%	35.2%
1987	COUNTIES	17.0%	1.9%	0.1%	1.6%	0.5%	7.4%	18.8%	31.4%	21.2%
1992	COUNTIES	15.3%	3.8%	0.1%	1.2%	1.3%	6.9%	21.2%	28.6%	21.6%
1997	COUNTIES	13.3%	9.7%	0.5%	1.3%	0.9%	2.0%	25.2%	30.7%	16.4%
2002	COUNTIES	12.5%	9.4%	0.7%	1.0%	0.7%	1.6%	23.9%	30.1%	20.1%
1972	CITIES	21.1%	20.8%	0.4%	1.3%	1.0%	4.0%	26.3%	23.7%	1.4%
1977	CITIES	19.1%	26.8%	0.8%	1.0%	2.2%	1.8%	21.0%	21.2%	6.1%
1982	CITIES	19.6%	28.8%	1.6%	0.0%	3.2%	3.8%	23.3%	13.5%	6.3%
1987	CITIES	13.7%	21.9%	1.3%	0.0%	7.2%	2.4%	24.5%	21.7%	7.2%
1992	CITIES	13.1%	22.3%	1.6%	0.3%	0.7%	8.9%	27.7%	18.0%	7.4%
1997	CITIES	12.8%	23.2%	1.7%	0.2%	0.5%	9.1%	19.6%	25.1%	7.6%
2002	CITIES	12.2%	26.4%	1.5%	0.1%	0.3%	9.1%	23.2%	17.1%	9.9%
1972	SPECIAL DISTR.	21.4%	0.0%	0.0%	0.0%	0.0%	0.0%	46.6%	17.2%	14.8%
1977	SPECIAL DISTR.	26.5%	0.0%	0.0%	0.0%	0.0%	0.0%	43.2%	16.9%	13.4%
1982	SPECIAL DISTR.	14.8%	0.0%	0.0%	0.0%	0.0%	0.0%	58.5%	14.9%	11.8%
1987	SPECIAL DISTR.	12.6%	0.0%	0.0%	0.0%	0.0%	0.0%	62.8%	17.6%	7.1%
1992	SPECIAL DISTR.	15.1%	0.0%	0.0%	0.0%	0.0%	4.1%	55.7%	17.5%	7.7%
1997	SPECIAL DISTR.	27.0%	0.0%	0.0%	0.0%	0.0%	1.1%	49.4%	14.3%	8.2%
2002	SPECIAL DISTR.	31.3%	0.0%	0.0%	0.0%	0.0%	2.5%	41.5%	15.9%	8.8%
1972	SCHOOL DISTR.	26.5%	2.3%	1.1%	0.0%	0.0%	0.5%	8.1%	1.4%	60.1%
1977	SCHOOL DISTR.	25.8%	3.0%	1.7%	0.0%	0.0%	0.0%	7.6%	1.9%	60.0%
1982	SCHOOL DISTR.	13.3%	2.9%	2.7%	0.0%	0.0%	0.0%	3.7%	3.3%	74.2%
1987	SCHOOL DISTR.	13.9%	3.6%	2.5%	0.0%	0.0%	1.4%	2.8%	3.7%	72.1%
1992	SCHOOL DISTR.	16.0%	2.9%	3.1%	0.0%	0.0%	1.8%	1.9%	1.3%	73.0%
1997	SCHOOL DISTR.	19.4%	3.0%	3.1%	0.0%	0.0%	1.4%	2.4%	3.2%	67.5%
2002	SCHOOL DISTR.	22.9%	3.2%	3.4%	0.0%	0.0%	0.2%	2.3%	2.3%	65.8%
1972	ALL LOCAL GOVERNMENTS	26.8%	7.9%	0.8%	0.3%	0.3%	1.8%	15.2%	7.3%	39.7%
1977	ALL LOCAL GOVERNMENTS	25.0%	9.5%	1.2%	0.5%	0.6%	0.7%	13.2%	8.7%	40.7%
1982	ALL LOCAL GOVERNMENTS	16.4%	9.2%	1.8%	0.3%	0.7%	0.9%	12.8%	7.6%	50.3%
1987	ALL LOCAL GOVERNMENTS	14.5%	7.3%	1.6%	0.4%	1.8%	3.0%	14.0%	14.9%	42.5%
1992	ALL LOCAL GOVERNMENTS	15.2%	7.3%	2.0%	0.3%	0.4%	4.6%	14.3%	11.7%	44.3%
1997	ALL LOCAL GOVERNMENTS	17.0%	8.8%	2.1%	0.3%	0.3%	3.2%	13.2%	14.4%	40.6%
2002	ALL LOCAL GOVERNMENTS	18.3%	9.7%	2.1%	0.3%	0.3%	2.7%	14.3%	13.3%	39.1%

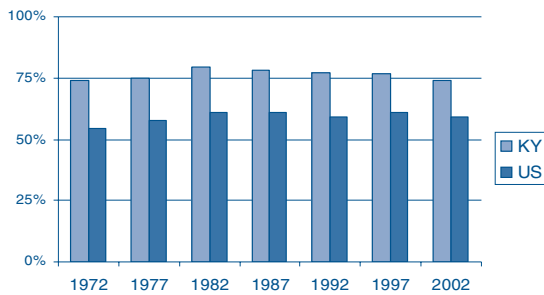
## *The Composition of Kentucky's Local Government Revenue*

source of revenue for local governments are transfers from the state. In 2002, just over 39 percent of total revenues of local governments were transfers from the state. What follows is an analysis of each of these major revenue sources and, where appropriate, a comparison with local governments in the rest of the nation.

### **Comparison of the Local Tax Structures of Kentucky and the U.S.**

One of the most common methods for evaluating differences in state and local government tax structures is by comparing the degree of fiscal centralization. Fiscal centralization is measured by the percent of state tax revenues to total state and local tax revenues. Figure 1 shows that in each of the seven census years, Kentucky has a more fiscally centralized tax structure than the nation on average. In fact, in 2002, only six states had a higher degree of centralization than Kentucky. When you consider all sources of revenue, and not just taxes, the difference between Kentucky and the national average narrows slightly. It does not change Kentucky's relative standing with other states.

**Figure 1: Percent of State Taxes to Total State and Local Taxes**



It is important to note that in 2002 just over 80 percent of all monies transferred to local governments went to school districts. Therefore, the degree of fiscal centralization in Kentucky may be skewed by the fact that Kentucky's state government funds a large portion of elementary and secondary education. A

comparison of Kentucky's and the nation's local governments excluding school districts indicates that while Kentucky remains more fiscally centralized, the difference between the nation and Kentucky does narrow slightly.

As previously noted, state transfers to local governments in Kentucky are an important source of revenue for some local governments. In 2002, 30.7 percent of the state's revenues were transferred to local governments. This however is lower than the national average of state transfers to local governments of 47.7 percent. Part of the reason Kentucky is below the national average in monies returned to local governments and yet generates more money at the state-level is that federal transfers that pass through state government on their way to local governments are included in the census data as state transfers. Additionally many transfers are determined by population size. When you control for population differences, Kentucky transfers 39.1 percent, which is slightly higher than the national average of 37.1 percent. An additional driver of state transfers is determined by not only where revenues are collected, but where and by whom governmental services are provided. A state government that provides many services that could be provided by local governments may be very fiscally centralized yet generate below average revenue transfers.

Table 2 highlights the magnitude of fiscal centralization by comparing the relationship of tax collections by the state and for each type of local government. During the past seven censuses spanning thirty years, Kentucky has generated approximately 75 percent of all its tax revenue at the state-level and there has been only slight fluctuations in this relationship.

**Table 2: Percent of Kentucky's Total State and Local Taxes by Type of Government**

Year	STATE	COUNTIES	CITIES	SPECIAL DISTR.	SCHOOL DISTR.
1972	73.8%	4.9%	8.3%	0.1%	12.9%
1977	75.1%	5.0%	7.9%	0.3%	11.7%
1982	79.4%	4.8%	8.0%	0.4%	7.4%
1987	78.0%	5.1%	8.4%	0.4%	8.1%
1992	77.0%	4.8%	8.1%	0.7%	9.5%
1997	76.7%	4.4%	7.7%	0.9%	10.3%
2002	74.0%	5.2%	8.6%	1.3%	11.0%

## *The Composition of Kentucky's Local Government Revenue*

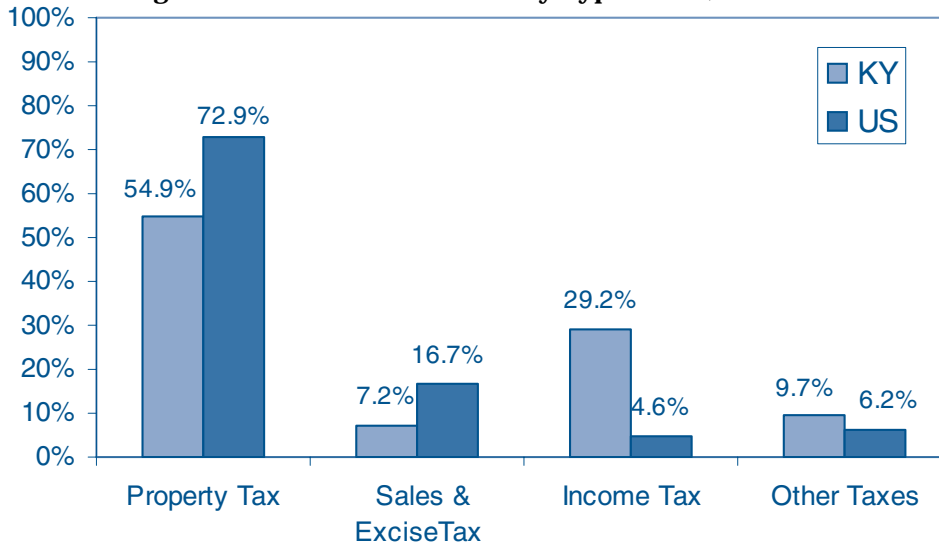
Another comparison of tax structures can be made between Kentucky's and the nation's local governments by examining the amount of revenue generated by different types of taxes. Figure 2 presents the percent of total taxes collected in Kentucky and the nation using four major tax classifications: property; sales and excise; income; and other taxes such as license taxes and taxes not elsewhere classified.

### **Property Tax**

The property tax represents an important revenue source for local governments, but as previously noted, Kentucky's local governments rely on it less than local governments in most other states. Nonetheless, the property tax is the second largest source of local revenue in Kentucky based on the nine categories discussed at the beginning of this

report (state transfers was the largest source total revenue in 2002). It is important to recognize that much of the property tax revenue is generated by school districts. When examining the composition of revenue for counties and cities, it is user fees, charges, and other revenue such as interest earnings

**Figure 2: Percent of Local Taxes by Type of Tax, 2002**

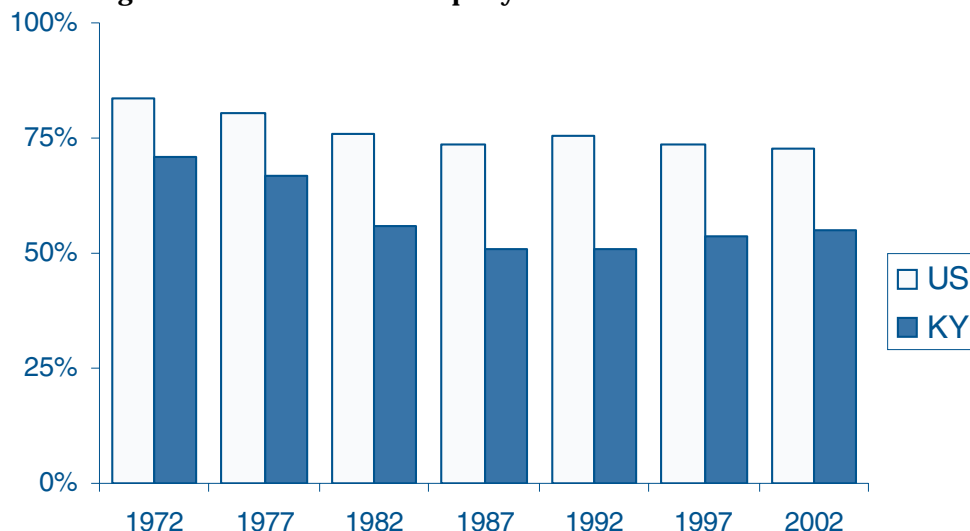


In 2002, Kentucky's local governments relied more heavily on the occupational income taxes and other types of taxes, which includes the premium insurance tax, than the U.S. on average. This contrasts with most local governments in the U.S., which rely mostly on property and general sales and excise taxes as their sources of tax revenue. Interestingly, Kentucky's tax structure has not converged to the U.S. average over the past thirty years, rather it has moved further away from the average local government tax structure.

on revenue that are relatively more important than the property tax as a source of revenue.

Figure 3 presents a comparison of property tax collections as a percent of total local taxes for Kentucky and the U.S. Since the 1970s, the percent

**Figure 3: Percent of Local Property Taxes to Total Local Taxes**



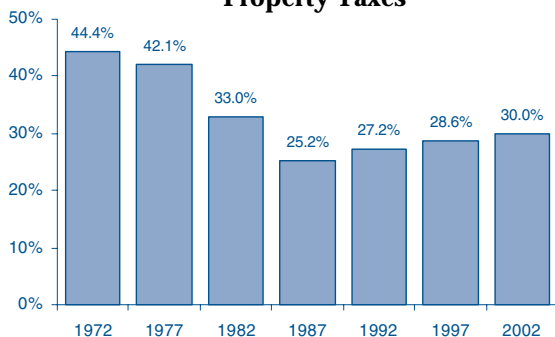
## *The Composition of Kentucky's Local Government Revenue*

contribution of the property tax has declined in Kentucky, but in 1997 and 2002 there were slight increases. Noteworthy is the effect property tax limitation efforts of the late 70s had on revenue generated from the property tax. That effort in Kentucky is represented by HB44 (1979). The effect of these limitation efforts is equally noticeable in both Kentucky and the U.S. However, the effect in Kentucky appears larger.<sup>1</sup>

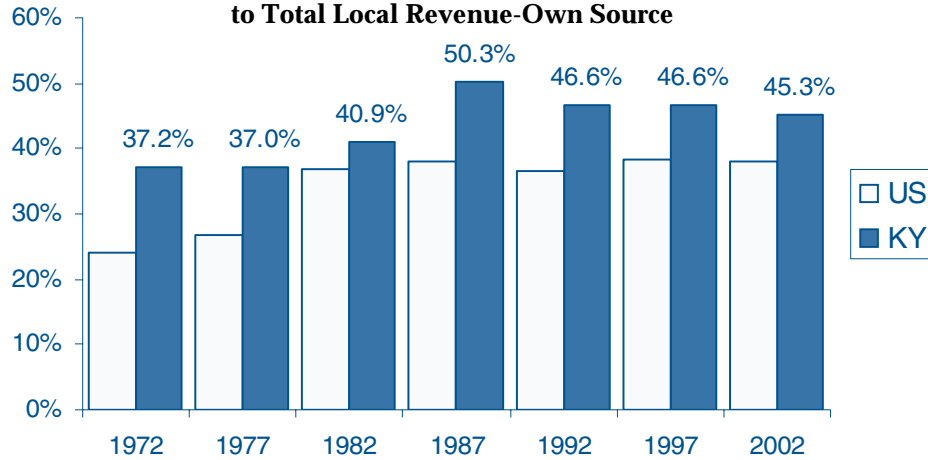
Kentucky school districts raise a significant amount of their revenue through property taxes. In 2002, nearly 60 percent of all property tax revenue generated through local taxes were raised by school districts. Kentucky is similar to the U.S. in this respect. When comparing Kentucky with the U.S., excluding school districts, differences in property tax collections become more pronounced. For example in 2002, local governments in the U.S. (excluding school districts) collected on average 16.5 percent of total tax collections through the property tax, Kentucky's local governments generated a mere 5.8 percent.

Figure 4 shows that in Kentucky dependence on local property taxes, measured as the percent of total local revenues-own source, has declined. The property tax has rebounded somewhat from a low of 25.2 percent of revenues in 1987, but remains well below the share of revenue reached in the 70s.

**Figure 4: Percent of Local Property Taxes**



**Figure 5: Percent of Local User Fees and Other Revenues to Total Local Revenue-Own Source**



### **User Fees, Charges and Other Revenues**

While the property tax has declined in relative importance as a revenue source for local governments, user fees and other revenues (which in recent census years is predominately interest income) have become an increasingly important source of revenue. Figure 5 shows the percent of local revenue-own source derived from these fees and other sources and compares these with the U.S.

User fees along with other non-tax sources of revenue play an important role in local government finances in Kentucky. Compared with the U.S., Kentucky's local governments are more reliant on these types of non-tax revenues, however, the difference between the two has narrowed slightly in the past two census years.

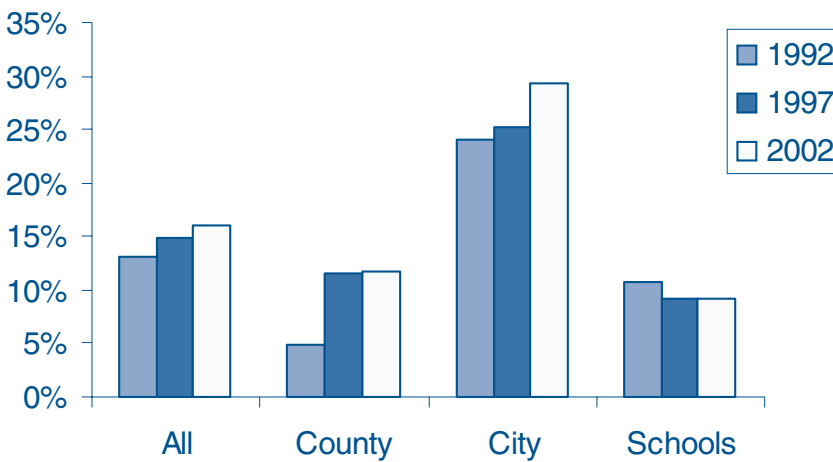
### **Occupational Income Tax**

The occupational income tax is another important revenue source, however, it is not equally available to all local governments. Statutory provisions determine whether a local government can assess an occupational tax and the maximum tax rate that can be assessed. Currently, all counties and incorporated cities can levy the occupational tax, but are allowed different rates according to the size of the local government. School districts can also levy the tax. The occupational tax, while labeled as an income tax by the census bureau, may be better thought of as a license tax since it is based solely on

## *The Composition of Kentucky's Local Government Revenue*

income related to employment and may include wages and salary, company profits or both. The occupational tax ignores all other potential sources of income such as interest and capital gains, plus it does not allow for exemptions or deductions. Figure 6 below shows the percent of local revenue generated from the occupational income tax by the different local governments for the last three census years.

**Figure 6: Percent of Occupational Income Tax to Total Local Revenue-Own Source**



Based on data compiled by the Kentucky Society of CPAs, in 2005, 139 cities and 59 counties are levying an occupational tax. Two school districts (Jefferson and Fayette) are also levying the tax. It is clear from Figure 6 that this tax represents an important source of revenue for cities, generating just over 29 percent of the cities' total local revenue-own source. Since 1987, both cities and counties have increased their use of the occupational tax.

### Conclusions

Local governments in Kentucky, including school and special districts, have several unique features relative to local governments in the U.S. The most obvious difference is that Kentucky's local governments rely far less on the property tax. In 1972, Kentucky's local governments received 44.4 percent of their local own-source revenues from property taxes. By 2002, reliance had declined to 30 percent. On the other hand, Kentucky's local governments obtain a comparatively larger share of

revenues from taxing income. These two comparative differences between Kentucky and the nation have increased over time. Another feature of Kentucky's local government finances is the degree of fiscal centralization. In 2002, 74 percent of all state and local taxes were collected by the state. This compares with 59.1 percent for the U.S.

A significant source of local revenue is charges such as user fees. The reliance on user fees and other

miscellaneous revenues increased in the 1980s and has remained near 46 percent of total local revenues for the last three censuses. Kentucky's local governments have always relied more on these types of revenues than the nation. Occupational taxes for some local governments in Kentucky are another important source of revenue. The reliance on the occupation tax by local governments is

a unique feature of Kentucky's tax structure. In 2002, 29 percent of Kentucky's local government tax collection was from the occupational income tax, the U.S. average was less than 5 percent.

### About the Data

The Census of Government Finances is a government financing survey of five different levels of government. The levels of government are the state, counties, cities, school districts, and special districts. The census surveys these localities every five years for fiscal information including tax collections, fees and charges, and intergovernmental transfers. The data is aggregated at each level of government, which does not allow for analysis of individual or regional local governments. Thus, the aggregated data provides the overall or "average" structure and may not be at all representative of any individual local government.

Because the data is collected through a survey instrument, it is subject to missing data and reporting

## ***The Composition of Kentucky's Local Government Revenue***

errors, especially for smaller localities such as the special districts. Generally, the smaller the taxing district, the greater the chance for error. State-level data represents actual, non-survey type data, while special districts data (the smallest level of government) represents an estimation of finances based on survey data and imputations. The data is combined into revenue categories, which may not always be appropriate for Kentucky. For example, the premium insurance tax is not specifically accounted for in the local government data, but is captured in the category for other select sales taxes not elsewhere classified.

Because the data is aggregated by each type of local government and by revenue categories, one is required to discuss in broad, general terms local government tax structures. Finally, as with any aggregated or averaged data, the data can be dominated by a few large localities. Wherever the data is dominated by one or more localities, the results will tend to be less representative of the typical local government.

### **Endnotes**

1 Factors other than the implementation of legislation such as HB44 may have constrained property tax collections. If the emergence of HB44 was a representation of voter sentiment regarding the use of the property tax to fund government services, then lower collections might be expected independent of HB44's direct effect on collections. That, however, is an empirical question, which cannot be answered using this data.

### **Appendix A: Revenue Categories**

**Property Tax-** Includes taxes applied to real property such as, land and structures plus personal property. Personal property can be either tangible such as automobiles and boats or intangible such as bank accounts and stocks and bonds.

**Income (Occupational) Tax-** Taxes levied on the gross income of individuals or on the net income of corporations and businesses.

**Public Utility Tax-** Taxes imposed on public utilities, both privately and publicly-owned either as a direct tax on consumers or as a percentage of gross receipts of the utility.

**Motor Vehicle and Operator Licensing Tax -** Includes the licenses imposed on owners or

operators of motor vehicles for the right to use public highways, such as fees for title registration, license plates, vehicle inspection, vehicle mileage and weight taxes on motor carriers, highway use taxes, and off-highway fees. It excludes: Personal property taxes on motor vehicles; sales or gross receipts taxes on the sale of motor vehicles; taxes on motor carriers based on assessed value of property; and other taxes on the business of motor transport.

**Other Select Sales (Excise) Taxes-** Includes the sales taxes applicable to sales of all types of goods and services or to all gross receipts, whether at a single rate or at classified rates plus sales use taxes. Also, taxes imposed on the sale of particular commodities or services or on gross receipts of particular businesses separately and apart from the general sales tax. Excludes the Public Utility Tax, which is included in a separate revenue category.

**Taxes Not Elsewhere Classified (NEC)-** Taxes not listed separately or provided for in any other category. For local governments this will include some taxes on businesses such as the insurance premium tax.

**Fees and Charges -** These are revenues received from the public for performance of specific services which benefit the person charged and from the sale of commodities or services except for utilities and liquor store revenues.

**Other Revenue-** Miscellaneous general revenues, which includes special assessments; interest income; sale of property; and rents and royalties.

**Intergovernmental State Transfers (IGR)-** Includes monies transferred from state government, including grants, shared taxes, and contingent loans and advances for support of various functions or for general financial support. Intergovernmental revenue is reported in the general government sector, even if it is to support activities in other sectors (such as utilities). IGR excludes amounts received from other governments for support of public employee retirement or other insurance trust funds. The transfer of Federal aid through the state government is reported as intergovernmental revenue from the state at the local level.



# Poverty Trends in Kentucky: A Return to Normal?

*Attila Cseh, Kenneth Troske & James P. Ziliak*

*In this article we examine changes in the poverty rate in Kentucky between 1990 and 2005. We show that in the mid to late 1990s the poverty rate in Kentucky fell quite dramatically, almost equaling the national rate by 1999. However, since 2000 the poverty rate in the Kentucky has risen much more rapidly than the national rate, suggesting that the trends in the 1990s may have been anomalous. We show that no single identifiable demographic group accounts for the observed changes—all groups experienced declining poverty in the 1990s and rising poverty since 2000. We also find that movements in the poverty rate reflect changes in income among both the wealthiest and poorest households in Kentucky and that changes in poverty closely match changes in the entire economy of the Commonwealth. These later findings suggest that policies designed to promote the economic growth of Kentucky will help both rich and poor alike*

## I. Introduction

The devastation wreaked upon the Gulf Coast by Hurricanes Katrina and Rita laid bare the plight of America's poor and renewed attention to the underlying causes of poverty and material deprivation. Here at home in Kentucky we shared in the nation's mourning of the loss of life and property from the hurricanes, but the news that there are still poor in America was less noteworthy given the Commonwealth's long struggle against economic hardship. In this article we examine recent trends in poverty in Kentucky and relate them to overall changes in the income distribution and economic activity. While the article is primarily descriptive we do identify some important links between poverty, inequality, and macroeconomic performance in Kentucky. Our analysis uncovers some surprising trends. Over the past 15 years there has been a rise in income across the entire income distribution. Moreover, for the first time since the creation of the modern poverty thresholds in the 1960s, the poverty rate in Kentucky in the late 1990s nearly coincided with the national poverty rate. The convergence of poverty and income to the national levels in the 1990s was not driven by a select few demographic groups but was shared widely across urban and rural communities, women, children, and racial groups. Disconcerting, however, is that the gains made in the 1990s appear to be slipping away in the early 2000s. In the past 4 years both the poverty rate and household income in Kentucky

have moved away from the national levels in what appears to be a return to normal historical trends. We observe that the recent divergence stems both from the worsening economic conditions in Kentucky relative to the nation as a whole, as well as from an overall shift in the income distribution to lower income levels and higher inequality.

## II. Poverty in Kentucky and in America

Our portrait of poverty in Kentucky and in the United States draws from our own analysis of the 1990–2005 waves of the Annual Social and Economic Study of the *Current Population Survey* (CPS). The Annual Social and Economic Study is conducted each March and serves as the primary source of information regarding money income, poverty and health insurance in the United States. In the CPS individuals are classified as being in poverty if they are a member of a household where the household income is below the poverty threshold. In the U.S. the poverty threshold is fixed (in real dollars) over time but varies by the number of individuals living in the household. In 2004 a four person household consisting of two adults and two related children was considered poor if total household income was less than \$19,157. The poverty rate for a given group in a given year is measured as the number of individuals in the group living in poverty in that year divided by the total number of people in the group. In 2004 the poverty rate for Kentucky was 18 percent while for the entire U.S. it was 13 percent.

## Poverty Trends in Kentucky: A Return to Normal?

Our measure of the poverty rate in Kentucky refers to a two-year moving average of the number of persons in poverty, while the parallel measure for the United States is on an annualized basis. The Census Bureau recommends two-year averages when examining state-specific outcomes in the CPS. Likewise, our measure of household income for Kentuckians is a weighted two-year average and adjusted by the Consumer Price Index for Urban Consumers (CPI-U) to reflect real 2004 dollars.

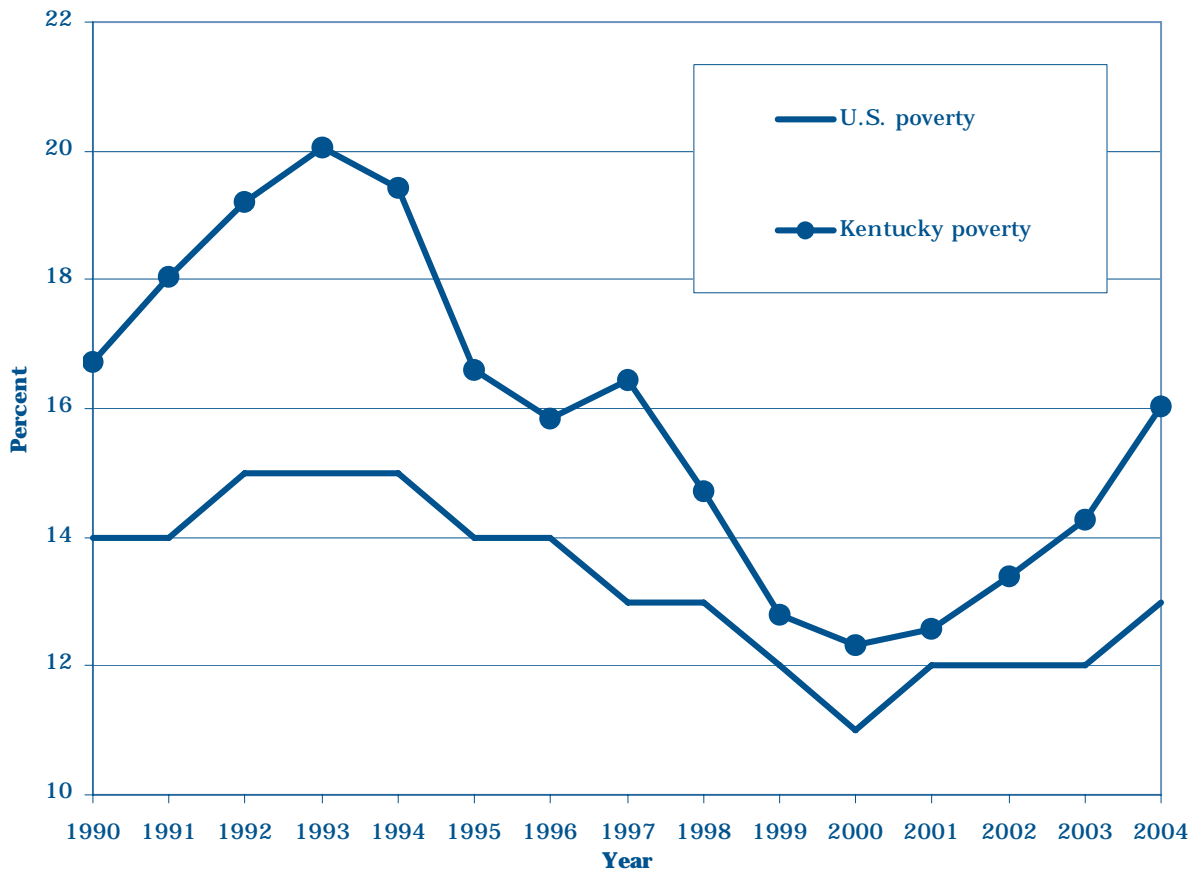
We start our analysis with Figure 1 which compares the poverty rate in Kentucky to the overall rate in the nation. Historically there has been a yawning gap between poverty in Kentucky versus that in the nation as a whole. This gap reached a peak in the early 1990s when the poverty rate in Kentucky was 33 percent higher than the national rate. However, from the mid to late 1990s the poverty rate in the Commonwealth fell much more quickly than the national poverty rate so that by 1999 they differed by less than one percentage point, a difference that was well within the margins of being

statistically indistinguishable from the national rate. Beginning in 2000, however, the poverty rate in Kentucky accelerated at a much faster pace than the national rate so that by 2004 poverty in Kentucky was over 25 percent higher than the national rate of 12.7 percent and had returned to a level similar to that in 1990. Indeed, according to the most recent Census Bureau report Kentucky's position vis-à-vis the other 49 states fell between 2003 and 2004 from being the 10<sup>th</sup> poorest state to being the 6<sup>th</sup> poorest state in the nation (based on two-year averages).

### III. Similar Poverty Trends Were Experienced Across Groups and Regions

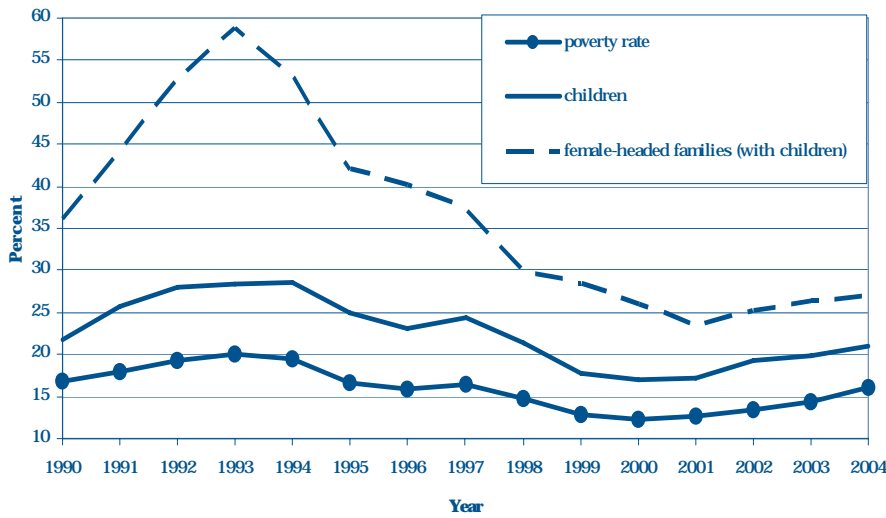
The aggregate poverty rate provides a snapshot of the poverty experience of the general population but masks the possibly divergent experiences across different demographic groups and regions of the Commonwealth. In Figures 2 and 3 we compare the overall poverty rate in Kentucky to the poverty rates of female-headed families with children and of children ages 17 and under (Figure 2) and to the

Figure 1. Poverty Rate in the U.S. (annual) and in Kentucky (two-year average)



## Poverty Trends in Kentucky: A Return to Normal?

Figure 2. Poverty Rate in Kentucky for the General Population, for Female-headed Families, and for Children



poverty rates in metropolitan and non-metropolitan regions (Figure 3). Figure 2 shows that children are more likely to be poor than the population as a whole. This unsettling result is not unique to Kentucky but is pervasive across the nation. Part of the explanation for high poverty rates among children over the past couple of decades is the growth of out-of-wedlock births and the concomitant rise of female-headed families. Indeed, Figure 2 reveals that poverty amongst female-headed families with dependent children is typically two to three times higher than the statewide rate. While the poverty levels of female heads and children exceed those found in the general population, these groups share common trends over the past 15 years. During the 1990s there was a large cyclical decline in poverty amongst children and women—with poverty rates of female heads reaching nearly 60 percent in 1993 before plummeting to around 25 percent by 2000—but since 2000 poverty for both groups has risen, although the poverty rate amongst female-headed families remains below the rate in the early 1990s.

A similar picture emerges in Figure 3 where we compare poverty rates across metropolitan and non-

metropolitan regions within Kentucky. Rural poverty consistently exceeds urban poverty in Kentucky, but the trends across regions are similar suggesting that all Kentuckians shared in the prosperity of the 1990s and all are facing increasing hardship after 2000.<sup>1</sup> One bright spot in this figure is that poverty rates in the rural areas remain well below the rates seen in the early 1990s. However, this finding is tempered by the fact that urban poverty rates are now even higher than they were in

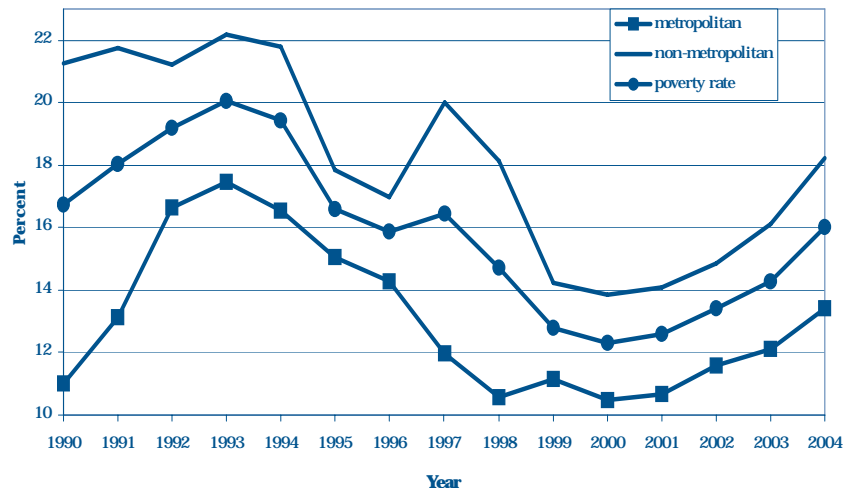
the early 1990s. These trends likely reflect the fact that many rural poor moved to cities (or are commuting in greater numbers) in the 1990s to take advantage of better job opportunities.

Finally, comparing the poverty rates of whites and non-whites (not shown) paints a similar picture. Poverty rates for both whites and non-whites in Kentucky fell in the mid to late 1990s, but have begun to rise again after 2000 and are approaching the rates seen in the early 1990s.

### IV. Links Between Poverty and the Distribution of Income

Because official U.S. poverty lines are constant across years in inflation-adjusted terms,

Figure 3. Poverty Rates in Kentucky for the General Population and by Metropolitan Status

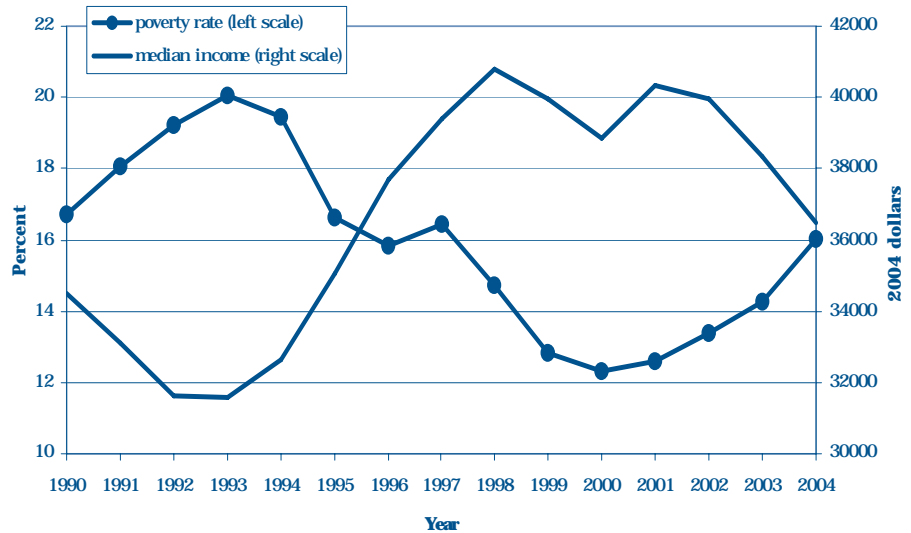


## Poverty Trends in Kentucky: A Return to Normal?

poverty rates are determined by both the shape and location of the income distribution (Gundersen and Ziliak 2004). This implies that, all else constant, a rising median income reduces poverty while rising income inequality exacerbates poverty. Figure 4 depicts the relationship between the poverty rate and median household income in Kentucky. It is clear from the figure that poverty is affected by the level of median income in the state—when median income is high poverty rates are low and when median income is low poverty rates are high. Indeed the trends are near mirror images of one another, suggesting that poverty in Kentucky is closely tied to the economic well being of the typical household. One difference is that while poverty in 1990 is nearly the same as in 2004, real median income is \$2,000 higher by the end of our sample period, which indicates a long-term rise in median income.

In Figures 5–7 we relate the poverty rate in Kentucky to the income levels among households at the 10<sup>th</sup> percentile of the income distribution

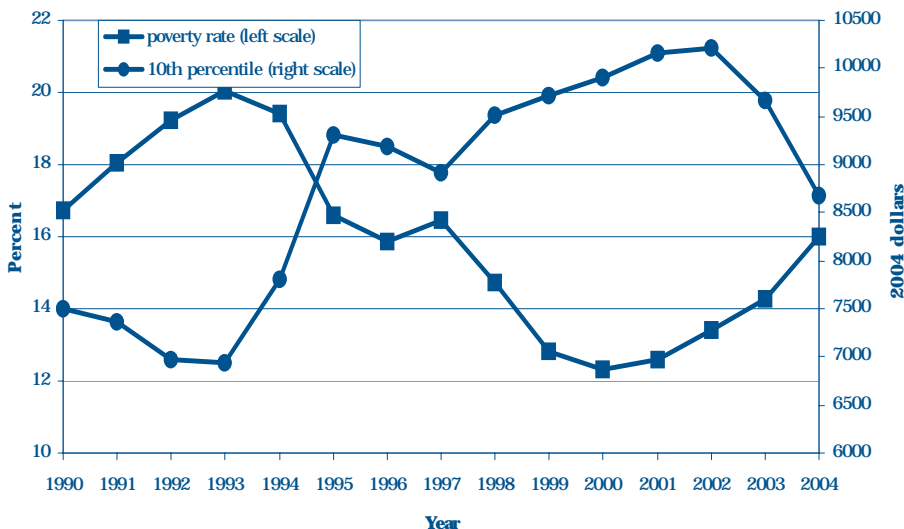
Figure 4. Poverty Rate and Median Household Income in Kentucky



(Figure 5), to income level of households at the 90<sup>th</sup> percentile of the income distribution (Figure 6), and to the ratio of the income of households at 90<sup>th</sup> percentile of the income distribution to the income of households at the 10<sup>th</sup> percentile of the distribution (Figure 7). The income of households at the 10<sup>th</sup> percentile of the distribution is a commonly used indicator of the income of the poorest households while the income of households at the 90<sup>th</sup> percentile is a commonly used measure of the income of the wealthiest households. To construct these measures you first divide the household income distribution

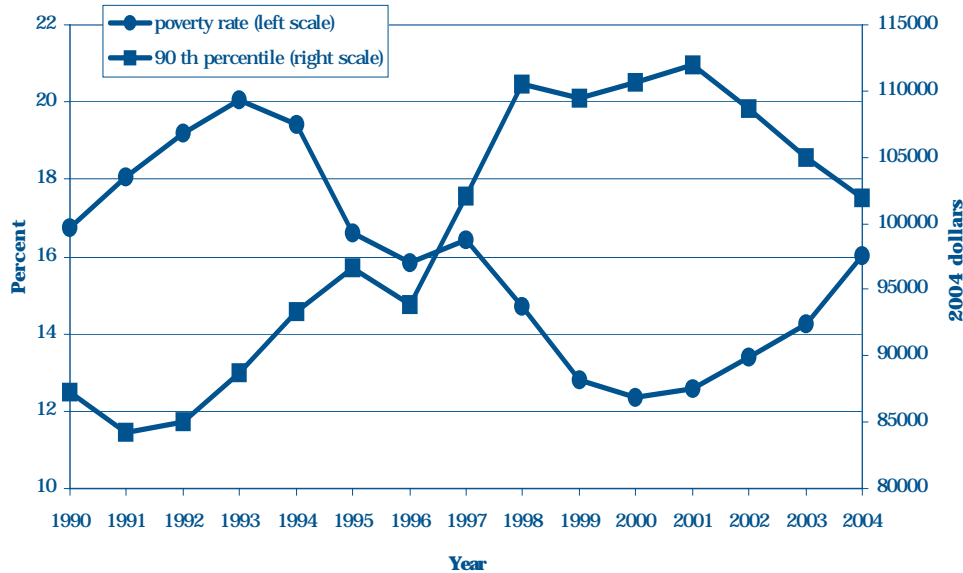
into 100 equally sized groups with households in the first group having the lowest income and households in the last (or 100<sup>th</sup>) group having the highest income. The income of households at the 10<sup>th</sup> percentile of the income distribution is the average income of households in the 10<sup>th</sup> group while the income of households at the 90<sup>th</sup> percentile of the income distribution is the average income of households in the 90<sup>th</sup> group. The ratio of

Figure 5. Poverty Rate and the 10th Percentile of the Income Distribution in Kentucky



## Poverty Trends in Kentucky: A Return to Normal?

Figure 6. Poverty Rate and the 90th Percentile of the Income Distribution in Kentucky



in Figure 6 we see that trends in income among the richest Kentuckians also seems to be a mirror image of poverty rates, much like we saw for median income in Figure 4. The income of the wealthiest households is at a minimum in the early 1990s when the poverty rate is at its peak, while the income of households at the 90<sup>th</sup> percentile peaks in 2000 when the poverty rate is at its lowest point. Again, since 2000 the real income of the

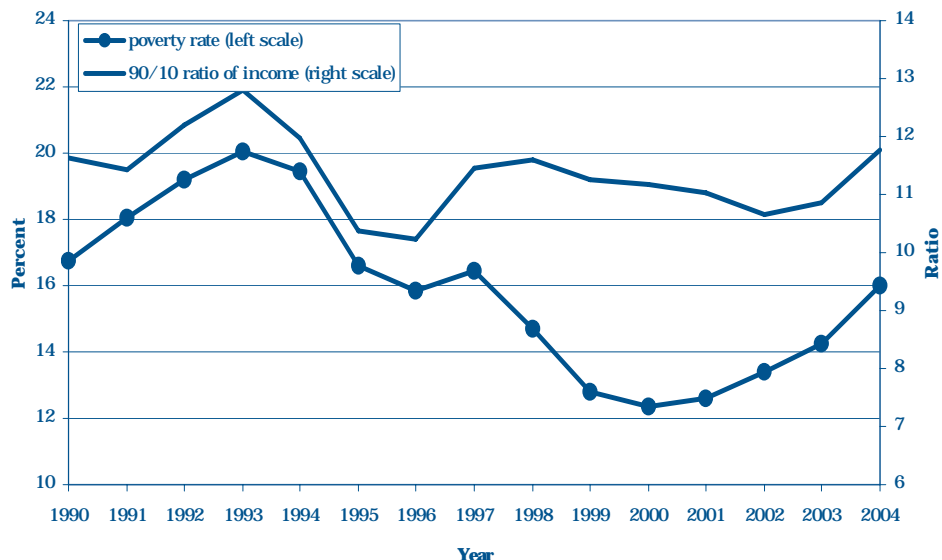
income at the 90<sup>th</sup> percentile of the income distribution to income at the 10<sup>th</sup> percentile of the income distribution is a commonly used measure of the dispersion or difference in income between the wealthiest and poorest households. By plotting this measure Figure 7 directly examines the link between poverty and income inequality.

wealthiest Kentuckians has steadily fallen while the poverty rate has steadily increased.

Figure 5 demonstrates that poverty is closely tied to the income levels at the 10<sup>th</sup> percentile of the income distribution. The poverty rate peaked in 1992 when the income of households at the 10<sup>th</sup> percentile was at its lowest point and the poverty rate is at its lowest level in 2000 when the income of the poorest households reaches a peak. The rise in the poverty rate since 2000 is exactly matched by the fall in the income of households at the 10<sup>th</sup> percentile of the distribution. These trends are exactly what one would expect given that the poverty line in the U.S. is fixed in real dollars.

We should stress that there is no reason why movements in the poverty rate over time should so closely mirror the movements in household income at the median (Figure 4) or the 90<sup>th</sup> percentile (Figure 6) of the distribution. The poverty rate is a measure of the number of poor households. Therefore changes in the poverty rate will correspond to changes in the number of individuals at the bottom of the income distribution; that is changes in the

Figure 7. Poverty and Income Inequality in Kentucky



Perhaps more surprising is the fact that

## Poverty Trends in Kentucky: A Return to Normal?

number or income of the poorest households. However, it is entirely possible that the income of the poorest households is falling while the income of the median or wealthiest households remains constant or actually rises. In fact, it has often been claimed that this is what has happened in the recent past in the U.S.; the poor have gotten poorer while the rich have gotten richer. However, Figures 4-6 show that in Kentucky in the mid to late 1990s both the rich and poor got richer, while since 2000 both the rich and poor have gotten poorer.

Figure 7 demonstrates that there is a positive association between the poverty rate and the inequality of income in the Commonwealth. Indeed the R-squared from the simple regression of the poverty rate on income inequality is 0.32, indicating that there is a significant positive relationship between the level of poverty and the difference in income between the wealthiest and poorest individuals in Kentucky. Hence, the overall conclusion from examining Figures 4-7 is that economic status of poor Kentuckians is tied both to the level of income in the Commonwealth and to its distribution.

### IV. Links Between Poverty and the Business Cycle

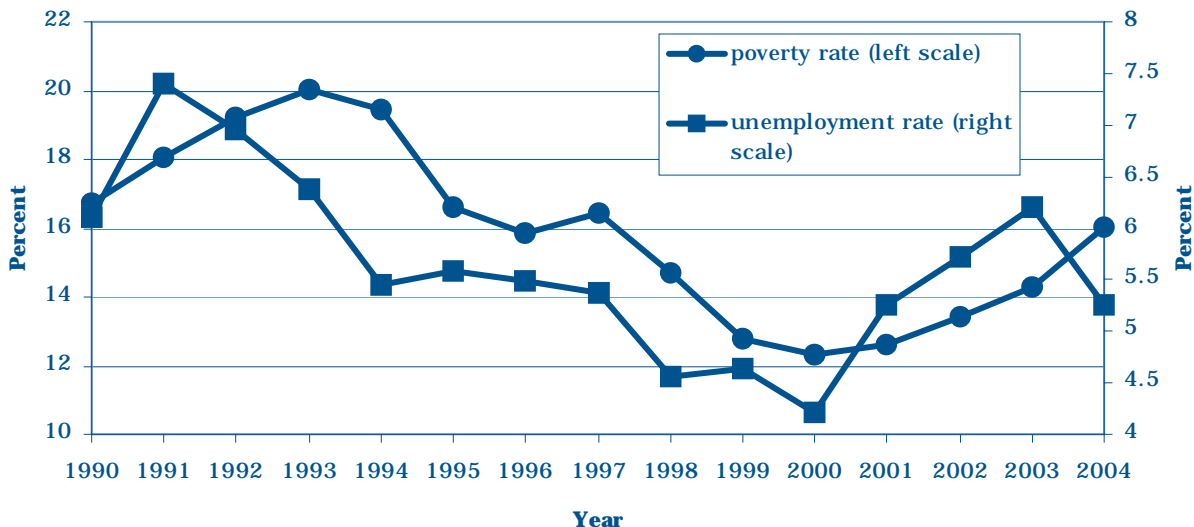
The adage 'A rising tide lifts all boats' suggests that poverty should be countercyclical insofar as economic growth should reduce poverty. Economists typically test this hypothesis by

modeling the relationship between the poverty rate and the unemployment rate. The unemployment rate, which measures the fraction of the labor force that is unemployed and actively seeking employment, is perhaps the most pervasive barometer of macroeconomic performance. In Figure 8 we depict trends in the poverty rate and in the unemployment rate from 1990–2004. Data on unemployment rates come from the Bureau of Labor Statistics (<http://www.bls.gov>). Figure 8 shows that movements in the unemployment rate are strongly connected to changes in the poverty rate. In fact, poverty tends to respond to unemployment with a lag, and if the recent decline in unemployment in 2004 were to persist into the future then poverty is likely to decline again. Unfortunately, the early reports indicate that unemployment in Kentucky is again on the rise in 2005 and thus poverty is likely to continue its upward trend until the economy improves.

### V. Conclusion

To summarize, the initial figures in this article show that the poverty rate in Kentucky fell quite dramatically in the 1990s, almost equaling the poverty rate in the nation as a whole, but that poverty has been rapidly increasing since 2000 and has almost returned to the levels of the early 1990s. Our initial figures also show that the secular trends in the poverty rate are similar for identifiable

Figure 8. Poverty Rate and Unemployment Rate in Kentucky



## ***Poverty Trends in Kentucky: A Return to Normal?***

demographic groups: women and children; urban and rural residents; and whites and non-whites. Our later figures show that changes in poverty in Kentucky closely match changes in both the overall level of income as well as the level of income inequality in Kentucky. Somewhat surprisingly we have seen that movements in the income of the wealthiest Kentuckians closely mirror movements in the poverty rate showing that the recent increases in poverty do not simply reflect a decline in income among the poorest residents of the Commonwealth, but reflect a fall in income among most households in the Commonwealth. Our final figure shows that movements in the poverty rate are closely related to the overall performance of the Kentucky economy.

While tentative, these results suggest that the economic status of the poor in Kentucky is directly affected by the overall level of income in the Commonwealth and by the health of the macroeconomy. This implies that policies designed

to enhance the economic environment and promote economic growth will have a significant positive impact on the economic well-being of the poorest individuals in Kentucky.

### **References**

Gundersen, Craig and James P. Ziliak. 2004. "Poverty and Macroeconomic Performance Across Space, Race, and Family Structure," *Demography* 41(1): 61–86.

### **Endnotes**

1 The higher poverty rate in 1997 in non-metropolitan Kentucky coincides with a drop in income among low-income Kentuckians (see Figure 6). It is not clear why we observe this drop, and only in non-metropolitan areas. A possible factor is that 1997 is the first full year of implementation of federal welfare reform and these reforms may have differentially affected rural communities in Kentucky. More research is needed before a definitive conclusion can be drawn.

# Trends in Kentucky's Unemployment Rate; Real or Illusionary?

*Brad A. Trenkamp*

*The reason for the recent divergence of Kentucky's unemployment rates from the national unemployment trend is investigated. The methodology for determining the estimated unemployment rate at both national and the state level is discussed. It is concluded that short-term variations in Kentucky's reported unemployment rate may not accurately reflect current economic conditions in the state.*

## Introduction

Beginning in January 2004 the unemployment rate in Kentucky noticeably diverged from the national rate. By the end of 2004 Kentucky's unemployment rate was almost a one-half percentage point below the national rate. However, this relatively low rate of unemployment was short-lived—starting in January 2005 Kentucky's unemployment began to rise while the U.S. rate continued to decrease and by March 2005 Kentucky's rate exceeded the national average by close to one-half a percentage point. One obvious question is why Kentucky's unemployment rate differs from the national rate and, more particularly, why did Kentucky's unemployment rate increased in early 2005 while the national rate continued to decrease. This article explores possible reasons for the observed differences in the U.S. and Kentucky unemployment rate.

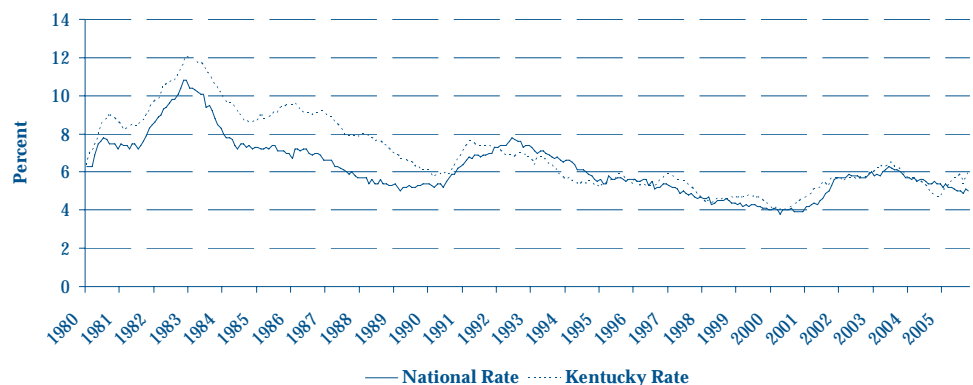
## Historical Unemployment in Kentucky

Historically the level of Kentucky's unemployment has not always matched that of the nation. As illustrated in Figure 1, the rates of unemployment often differ even though the long-term movements follow each other fairly closely.

These differences were particularly large throughout the 1980's when Kentucky was experiencing higher rates of unemployment than the U.S. as a whole. These differences can be largely attributed to the transition in the Kentucky economy from one more heavily based on agriculture and mining to one based more on manufacturing and service industries. This can be seen in the early 1990's when Kentucky's unemployment rate started following the national rate fairly closely with the exception of a couple periods when Kentucky dropped and then moved above the national average.

However, as mentioned earlier, Kentucky has recently fallen below the national rate and then quickly risen above it. Although it should not necessarily be expected that Kentucky's rate be the same as the national rate it serves as a convenient point of comparison. The national rates, which tend to be far more accurate (because of a much larger

**Figure 1: Unemployment Rate**  
(Monthly:Seasonally Adjusted)





sample size) than state estimates and allow comparisons to the national climate as a whole.

### Current Trends

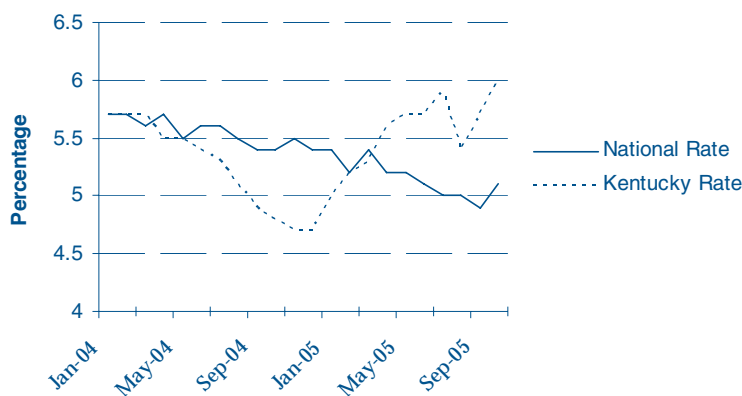
As illustrated in Figure 2, in the past two years, Kentucky's trend has deviated from that of the rest of the nation. In the figure we can see the drop in Kentucky's rate in late 2004 and the sudden rise above it in early 2005. There are a couple possible reasons why this has occurred. One reason may be that these estimates are accurate and there is something about Kentucky that is causing these fluctuations. Another reason may be that these estimates are not that accurate and it is difficult to be certain what Kentucky's actual rate of unemployment is on a monthly basis.

The unemployment rate is defined as the ratio of the number of persons unemployed to the labor force. The total labor force is expressed as the sum

unemployed in any given month is much more variable than the number of people employed. The trend in the number of people employed shows a smooth and fairly predictable pattern while the trend in the number of people unemployed is much more erratic and more difficult to predict.

Comparing monthly changes in the number of people employment and unemployment is easier when we look at the percentage change over time. This is what is plotted in Figure 4. Figure 4 again shows that, on a monthly basis, there is very little change in the estimated number of people employed, while there are wide swings in the estimated number of people who are unemployed. This in turn suggests that much of the change in the state unemployment rate is due to changes in the estimated number of people who are unemployed and not due the changes in the estimated number of people who are employed.

**Figure 2: Recent Unemployment Rate Differences**



of the number of persons employed and unemployed. By closely examining the components of Kentucky's and the national labor force estimates it may be possible to discern whether short term variations in the unemployment rate are reliable enough to be to cause immediate concern.

### Changes in Labor Force

In this section I decompose changes in Kentucky's unemployment rate into changes in its two components -- the number of people employed and the number of people unemployed. Figure 3 plots the number of people employed and employed in Kentucky in every month since January 1995. Figure 3 shows that the number of people

### Comparing Changes in the National and State Unemployment Rate

Next I want to compare changes in the national and state unemployment rates, as well as compare changes in the components of these employment rates. The goal is to see whether there are differences in the movements of the components of the two unemployment rates, which will help us understand why the two unemployment rates have diverged.

To start with, Figure 5 plots the number of people employed and unemployed in the nation, starting in January 1995. Comparing Figure 5 with Figure 3, which plots the same information for Kentucky, we can see that the trends in the estimated number of employed and unemployed are similar prior to 2004, but since 2004 the number of individuals unemployed in the nation has fallen while the number of individuals in Kentucky unemployed has risen.

Looking at the monthly percentage change in the number of people employed and unemployed in the U.S. and Kentucky, which is plotted in Figure 6, we again see that changes in the estimated number of people that are unemployed are much more variable than changes in the number of people that

## Trends in Kentucky's Unemployment Rate; Real or Illusionary?

Figure 3: Kentucky Employment and Unemployment

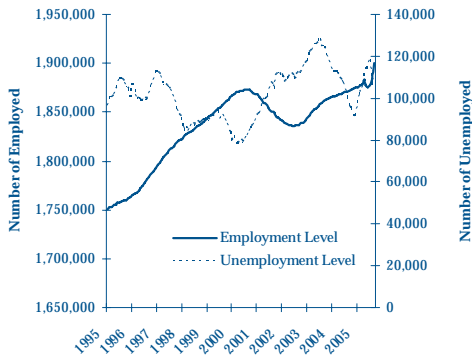
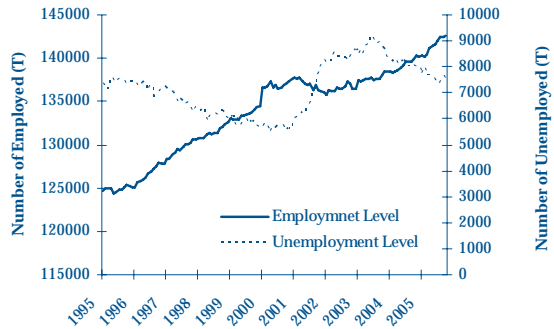


Figure 5: National Employment and Unemployment

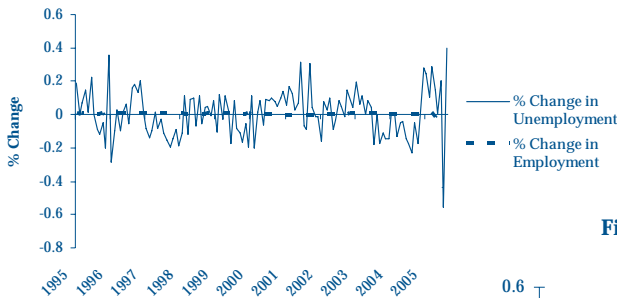


are employed. Figure 6 also shows that the percentage changes in the estimated number of people unemployed in Kentucky is much more variable than the similar rate for the U.S.—particularly since April 2004. This implies that Kentucky's unemployment rate will also be much more variable than the U.S. rate, which can also be seen in Figure 6. In the next section I discuss some possible reasons why estimates of the number of

in the state estimates. The BLS estimates national unemployment rates using the Current Population Survey (CPS). The CPS is the national monthly survey that identifies a sample of the population that is employed (with a job), unemployed (persons without a job who are available and willing to work), or not in the labor force (persons who are neither employed nor unemployed).<sup>1</sup> The national level estimates tend to be fairly accurate because BLS uses a relatively large sample for the nation. However monthly state estimates should be viewed with more caution because, especially for smaller states such as Kentucky, they are based on much smaller samples.

Estimation methods for monthly state unemployment rates differ from those used for estimating national rates. State Local Area

Figure 4: Percentage Changes in Kentucky's Labor Force Components over Time

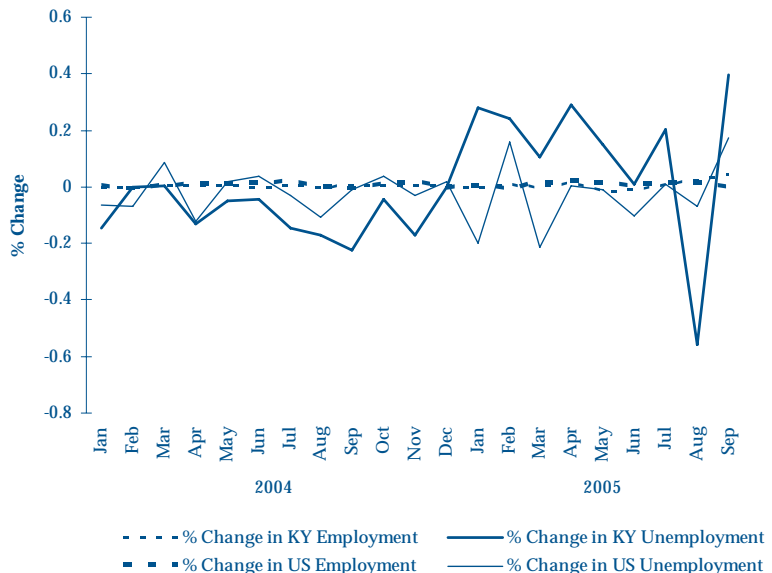


people unemployed in Kentucky might be more variable than estimates of the number of people unemployed in the entire United States.

### Bureau of Labor Statistics Estimation of Unemployment

This section discusses the methods Bureau of Labor Statistics (BLS) uses to estimate state and national monthly unemployment rates and how differences in these methods may account for some of the variation we see

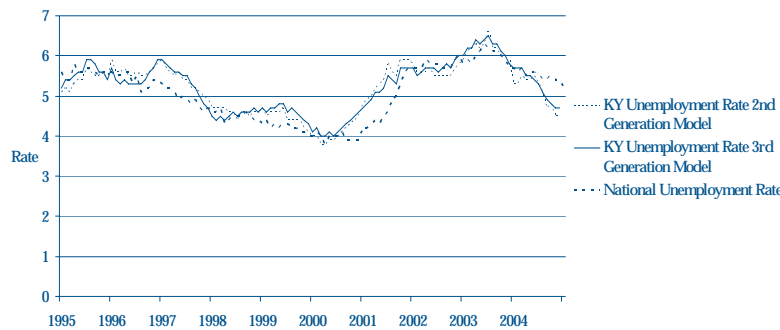
Figure 6: Percentage Changes in Labor Force Components



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Unemployment Statistics (LAUS) use three components to produce estimates of unemployment because the CPS sample for most states is too small to produce reliable estimate employment and unemployment. These components include the state CPS estimates as well as Current Employment Statistics (CES) and Unemployment Insurance (UI) claims. BLS has also instituted a revised estimation methodology beginning in January 2005 that was designed to improve monthly state labor force

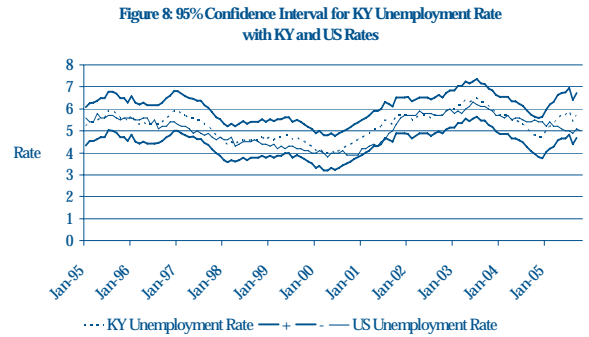
Figure 7: KY Unemployment Rates From 2nd & 3rd Generation LAUS Models Plotted With US Unemployment Rate



estimates. The new design methodology (3<sup>rd</sup> generation model) includes improved benchmarking methods, input data and geographic profiles using 2000 census data.<sup>2</sup> When the methodology was introduced BLS also went back and re-estimated the old data (2<sup>nd</sup> generation model) using the new method.

Figure 7 shows the monthly unemployment rate for Kentucky using data from the 2<sup>nd</sup> and 3<sup>rd</sup> generation models along with the national rate. As we can see from the figure the two models track each other quite closely. It does not appear that monthly differences in state and national trends are due to the implementation of the 3<sup>rd</sup> generation model. In fact the 3<sup>rd</sup> generation estimates are most likely more accurate, as BLS has claimed.

It is also useful to look at the amount of variance associated with Kentucky's monthly unemployment rate estimates. Using the standard errors for Kentucky's estimated unemployment rates, which can be obtained from the BLS, it is possible to construct a 95 percent confidence interval around the estimates. The 95 percent confidence interval tells us the range over which we are 95 percent confident that Kentucky's estimated unemployment



rate lies. This is shown in Figure 8.

When the confidence interval is plotted around the Kentucky unemployment rate, along with the national rate, we can see that the national rate lies within the confidence interval for the state estimate. Figure 8 shows that it is possible that Kentucky's true unemployment rate may be the same as the national rate since 2004. This in turn suggests that, over much of this time period, we cannot reject the hypothesis that the national unemployment rate and the state unemployment rate are the same. The estimate of Kentucky's unemployment rate is just too imprecise to conclude that there have been different trends in the national and state unemployment.

**Conclusion**

In this article I have examined possible reasons why Kentucky's unemployment rate has diverged from the national rate since 2004. The main conclusion from this analysis is that, given the relatively small sample sizes used to estimate the number of individuals who are unemployed in states such as Kentucky, we tend to see large month-to-month movements in the estimates and consequently, large month-to-month movements in the state unemployment rate. Given these small sample sizes, much of these observed movements are likely due to errors in the estimates, meaning it is difficult to compare changes in the state unemployment rate with changes in the national rate. In other words, much of the divergence we have seen between the state and national unemployment rates could be due to errors in the estimated state rate, and the two rates may have actually moved together. In the end the main

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conclusion is that one should not put much faith in short-term movements in the state unemployment rate, but should instead focus on long-term trends.

**Endnotes**

- 1 For more information on CPS estimation methodology see [http://www.bls.gov/opub/hom/homch1\\_a.htm](http://www.bls.gov/opub/hom/homch1_a.htm)
- 2 For more information on LAUS estimation methodology see <http://www.bls.gov/lau/laumthd.htm>.

# The Economic Impact of 100% Smoking Bans

*Ryan Phelps*

*This paper reports results from an ongoing investigation into the economic impact of regulation that prohibits smoking inside all restaurants and bars. Estimates of the impact of smoking bans on industry employment levels are obtained for both the restaurant and bar industries using national data. The results indicate that county level industry employment is reduced by bar smoking bans. The estimated impact of restaurant smoking bans depends on the regulating county's population and the percentage of neighboring counties that also ban smoking in restaurants.*

## Introduction

Recently both Lexington and Louisville have enacted smoking bans that apply to specific industries.<sup>1</sup> Although this type of regulation is new to Kentucky, local municipalities began introducing 100% smoking bans as early as 1990.<sup>2</sup> While many of the early bans were introduced in California, today 12 states have prohibited smoking in restaurants. Eight of these states have also prohibited smoking in bars.<sup>3</sup> This paper examines the relationship between industry employment and the onset of industry smoking bans. The implications of smoking bans are of particular interest to Kentucky due to historic role of the tobacco industry in the commonwealth. This paper attempts to provide insight by examining employment in communities that adopted these policies prior to 2002.

Smoking bans have the potential to alter the performance of the industries that they affect. The goal of this paper is to determine whether smoking bans have had an economic impact. To address this question I examine county level industry employment. Because consumers may react to a ban by taking their business into or out of regulated areas I also consider the potential for regulation to affect industry in neighboring counties. The results indicate that county level industry employment is reduced by bar smoking bans. The estimated impact of restaurant smoking bans depends on the regulating county's population and the percentage of neighboring counties that also ban smoking in restaurants.

Smoking bans have a relatively short history.

According to the Centers for Disease Control and Prevention, smoking was banned on domestic airline flights scheduled for two hours or less in 1987 and extended to include all domestic airline flights in 1989. Today there is a large body of legislation which prohibits smoking in certain locations. A subset of this legislation addresses the restaurant and bar industries directly.

California has led the nation in adopting these policies. In 1990 the first restaurant and bar smoking ban was passed by San Luis Obispo, California. Five years later California passed a state wide restaurant smoking ban. Today areas covered by this type of regulation are home to more than a quarter of the nation's population. The California state ban alone applies to over 12% of the nation's population.

Previous research looked into the causes behind this type of regulation and shows that voters' preferences are a motivating factor. Smokers are less likely to vote for these bans. This research also revealed that the general population is less accepting of bans that affect bars. Interestingly, reported evidence suggests that smokers who are trying to quit may be in favor of smoking bans in order to reduce future temptation.

Public health is certainly another motivation behind smoking bans. The potential for health improvements as a result of smoking bans is clear. The harmful effects of cigarette smoking are common knowledge, and it is a simple extension to assume that, as a health input, smoke free air is strictly better than air containing environmental tobacco smoke (ETS). However, the extent to which ETS is detrimental to health remains controversial.

While smoking bans may have potential in the form of improved public health outcomes, they can also have economic costs, and it is important to examine whether regulation is the best mechanism to bring about any potential benefits. To begin to answer this question we need to have some idea of how these regulations have affected the industries of concern.

**Data**

County level industry employment figures are from the County Business Patterns dataset, which is a Census Bureau annual summary of county level industry performance. The primary data analyzed is for the restaurant and bar industries for the years 1992 through 2002. Annual county level population and racial composition data from the Census Bureau is also used. The Smoking ban variables were constructed using data from The Americans for Nonsmokers' Rights Organization (ANR), which publishes a list of state, county and local 100% smoking bans. Finally, county level per-capita personal income was obtained from the Bureau of

**Table 1**  
**Demographic differences in U.S. Counties as of 2002**

	<b>No Smoking Bans</b>	<b>100% Smoking Bans</b>
<b>Average employment</b>	30,990	159,339
<b>Average Population</b>	79,823	420,372
<b>Number of Counties</b>	2943	120

Economic Analysis's Regional Economic Information System (REIS).

Table 1 displays a few of the inherent differences between counties that banned smoking in restaurants or bars before 2002 and those that did not. The table reports the 2002 averages of total county employment and population. From the large differences in population and employment it is possible to infer there will also be differences in urban -rural proportions as well as differences in racial diversity and income levels. It is beyond the scope of this investigation to explore the effects of all these factors but efforts made to control for their effects are discussed briefly below.

**Method**

To accurately determine whether a relationship exists between smoking bans and industry employment other factors that contribute to industry employment must also be taken into consideration. The standard approach used to estimate and test the existence of relationships between a dependent variable and several independent variables is linear regression. In this case I model industry employment as a function of applicable smoking bans and county level; population, per-capita personal income and racial composition.<sup>5</sup> These variables are included due to their potential to affect restaurant and bar demand. Secondly, because industry employment may be affected by annual national trends, the model also accounts for the impact of any given year on industry employment. Finally, there is a strong potential for unobserved county characteristics to contribute to industry employment levels. Examples of these county specific factors may include aesthetic features or access to major expressways. These characteristics, provided they do not change over time, are also accounted for in the model.

**Findings**

Estimates of the relationships between industry employment and the variables described above are reported for the bar and restaurant industries separately. Table 2 details the results. Two sets of results are reported for each industry. The second column for each industry reports results from a model that includes variables indicating the presence of a smoking ban in neighboring counties. The NAICS variable in the restaurant employment model is necessary to control for differences in the SIC and NAICS definitions of the restaurant industry.<sup>6</sup>

Interpreting the results in column one is rather straight forward. When multiplied by 100, the reported coefficients can be interpreted as the average percentage change in county level bar employment due to a one unit change in the named variable. Holding other factors constant, banning smoking in bars is estimated to reduce industry employment on average by approximately 17%. Also, a 10,000 person increase in population is estimated to increase bar employment by approximately .7% on average. The second and third rows in column two suggest that banning smoking

in bars in neighboring counties does not have a significant impact on bar employment. In fact, the addition of these variables to the model appears to confound the estimate of the impact of the smoking ban itself, that is, even though a smaller negative impact is shown it becomes nonsignificant.

The restaurant industry results, reported in columns three and four, are slightly more complicated to interpret. This model allows smoking bans to have different impacts in counties of different populations. Therefore the estimated impact of a smoking ban depends on a county's specific population. For instance a county wide smoking ban in a county of 500,000 residents would be predicted to reduce restaurant employment by approximately 1.9%. On the other hand, a county wide smoking ban in a county of 200,000 residents would be predicted to increase county restaurant employment by approximately .27%. The reported results suggest that larger counties, in terms of population, are affected more negatively by smoking bans.

Column four suggests that banning smoking in neighboring counties does impact restaurant employment. It is not clear from Table 2 however what the impact of a smoking ban in any given county would be. To simplify the interpretation of these results Table 3 reports the estimated average percentage change in restaurant employment after the enactment of a restaurant smoking ban for several different scenarios. For example, the estimated percentage change in county level

**Table 3**  
**Estimated Average Percentage Change**  
**In County Restaurant Employment**  
**Due to the Enactment of**  
**A County Wide Restaurant Smoking Ban**

Scenario		
All Neighboring Counties	County Population	% Employment Change
Do Not Ban Smoking	1,000,000	14.3
Do Not Ban Smoking	500,000	17.6
Do Not Ban Smoking	200,000	19.6
Also Ban Smoking	1,000,000	-6.7
Also Ban Smoking	500,000	-3.4
Also Ban Smoking	200,000	-1.5

restaurant employment for a county with 500,000 residents, a restaurant smoking ban and no regulated neighbors is approximately a 17.6% increase. State wide regulation is predicted to have a very different effect. Indicating that all border counties also have restaurant smoking bans changes the estimated impact to an employment decrease of 3.4%.

Over all the results suggest that banning smoking in bars is detrimental to industry employment. This estimated reduction is not due to changes in population, per-capita income, time trends or constant county specific factors. The estimates suggest that bar employment is not significantly affected by the banning of smoking in bars in neighboring counties. Also, the population of the regulated county does not appear to affect

**Table 2**  
**Industry Employment Semi-log Models**

	Bar Industry		Restaurant Industry	
Smoking Ban	-0.1703***	-0.0545	0.0170	0.2087**
Smoking Ban Neighbor		-0.2003		0.3072***
Smoking Ban Neighbor Interaction		0.0613		-0.5175***
Population (10,000)	0.0071***	0.0073***	0.0105***	0.0104***
Population (10,000) Smoking Ban Interaction			-0.0007***	-0.0007***
Per-capita Personal Income (\$1,000)	0.0078**	0.0078**	0.0227***	0.0228***
% Caucasian	0.0024	0.0024	0.0059***	0.0059***
NAICS			-0.5519***	-0.5542***
Counties	2043	2043	3002	3002
Adjusted R <sup>2</sup>	0.945	0.945	0.979	0.979

Results control for county and year fixed effects. Bans are lagged twice to prevent potential endogeneity. Standard errors are clustered at the county level of observation. Statistical significance is indicated at the 1%(\*\*\*) , 5%(\*\*) and 10%(\*) levels.

of the regulated county does not appear to affect the magnitude of the employment reduction.

The relationship between restaurant employment and restaurant smoking bans depends on a number of factors. The reaction of restaurant employment is more negative for more populated regulating counties. Potential employment gains associated with restaurant smoking bans appear to be reduced when neighboring counties also ban smoking in restaurants. These findings support some degree of between county substitution. These estimates of the impact of smoking bans on employment are sensitive to both specification and data inclusion. This may be due to the fact that the data include relatively few regulating counties. These results would benefit from the inclusion of more current data.

Using an estimate of Lexington's 2004 population and the fact that no neighboring counties have also banned smoking in restaurants or bars, Lexington is predicted to see a 19.1% increase in restaurant employment associated with the 2004 smoking ban. The bar industry is predicted to experience a 17% decrease in bar employment. Using an estimate of Jefferson County's 2004 population leads to an estimated 16.3% increase in restaurant employment. The difference in estimates is driven by population differences between the two cities. Also the type of ban in Jefferson County does not meet the definition of a 100% smoking ban as defined by the data. Overall however based on national data Lexington should expect a reduction in bar industry employment but an increase in their restaurant industry employment as a result of the smoking ban. Louisville should also see a increase in restaurant employment.

## References

ANR Foundation Local Tobacco Control Ordinance Database: U.S.A ©, 3/3/05  
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Department of Health and Human Services Centers for Disease Control and Prevention <http://www.cdc.gov/tobacco/overview/regulate.htm> (Accessed Thursday, October 05, 2005.)

WLKY News  
<http://www.wlky.com/news/5320395/detail.html>  
(Accessed Monday, November 28, 2005)

## Endnotes

- 1 Lexington's ban, which became effective on 4/27/2004, prohibits smoking in bars and restaurants. More recently Louisville passed legislation prohibiting smoking in restaurants only. According to Louisville local news provider WLKY, Louisville's ban, which went into effect on 11/14/2005, does not apply to businesses where alcohol sales comprise more than 25% of revenue. This provision excludes the Louisville ban from the 100% smoking ban legislation as defined in my data.
- 2 In order for a ban to fall into the 100% category it must completely prohibit smoking in an establishment. Also, legislation is not included if it allows smoking in an attached ventilated area or contains exemptions based on size. 100% bar bans are bans that meet the above requirements and apply to freestanding bars.
- 3 Figures as of 10/4/2005 as reported by Americans for Nonsmokers' Rights Organization.
- 4 For instance, if both smokers and non smokers are equally concerned with a business's smoking policy, and both groups are equally represented in the population, one would anticipate little if any change in industry performance as a result of a smoking ban. After the smoking ban, "smokers" would reduce their patronage of the regulated businesses but "nonsmokers" would take their place.
- 5 The results reported in the findings section are from a semi-log model which relates the natural logarithm of the dependent variable, employment, to the independent variables. This is done because industry employment is reported as a positive non-zero integer. This simple transformation of employment provides a more continuous dependent variable which can be modeled more accurately.
- 6 The restaurant industry is defined as SIC code 5812 (eating places) from 1990 through 1997. In 1998 the Census Bureau changed its industry classification system from the Standard Industry Classification system (SIC) to the North American Industry Classification System (NAICS). The new classification could not be matched to the old classification.



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