2009

Kentucky Annual Economic Report 2009

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

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Center for Business and Economic Research

Department of Economics

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University of Kentucky

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CBER

From the Director . . .

This year marks the 37th year the Center for Business and Economic Research (CBER) has published the 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 2009 report contains six articles. These articles cover a wide variety of topics from the expected growth of Kentucky and the national economy to the examination of citizens' preferences for the state budget. As we have done in previous years in this annual report, we focus on important issues that face citizens and policy makers in the state such as: the 2008 financial crisis, differences in income between rural and urban portions of the state, and manufacturers' attitudes toward the future.

In putting together this issue, we have drawn on the expertise of the faculty, staff and former graduate students at the University of Kentucky. Contributors include six UK faculty members, an economic analyst, and a former graduate student who is now a faculty member at Valdosta State University. 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. Donald J. Mullineaux, a Professor of Finance. His article discusses the causes and consequences of the 2008 financial crisis, with a particular emphasis on the role of innovations in the financial sector. Dr. Mullineaux discusses how the financial situation grew from a small problem to a large one and whether the situation could have been avoided. He also provides comments on the initial policy responses to the crisis.

I contributed an article that looks back at the performance of the national and state economies over the recent period and provides forecasts for the coming year. My forecast for the U.S. is that the economy will contract by 0.5 percent for all of 2009, that unemployment will average 8 percent for the year—which would be the highest rate since the 1982-84 recession—and that there will be almost no change in prices. My forecast for Kentucky is that the State's economy will grow by approximately 0.5 percent in 2009 but that the unemployment rate in Kentucky will average 8.2 percent for the year and will be slightly above the unemployment rate for the nation.

Dr. Brandon Koford, an Assistant Professor of Economics at Valdosta State University, examines citizens' preferences for public spending categories in Kentucky's budget using a survey of Kentucky residents in 2007. The top budget priority for Kentuckians is education; health care is also a high priority. The ranking of citizens' priorities closely matches the ranking of actual spending, although citizens are more equitable in their proposed distribution of funding than the state.

The fourth article is by Dr. Alison Davis, an Assistant Professor of Agricultural Economics. This article looks at differences in incomes between rural and urban portions of Kentucky. Dr. Davis documents differences in demographics, agriculture, education, quality-of-life indicators, and economic indicators. Her findings suggest that the lower level of income in Kentucky's rural counties is related to low levels of education, labor-force participation, and health insurance coverage.

The fifth article in the report is by Dr. John Garen, the chair of the Department of Economics, Christopher Jepsen, an Assistant Professor of Economics and the Associate Director of CBER, and Dr. Frank Scott, a Gatton Professor of Economics. In this article Drs. Garen, Jepsen, and Scott examine the aluminum industry in Kentucky. They look at recent trends in employment, salaries, productivity, and safety. The authors find that employment and earnings have remained steady or declined, whereas productivity has increased. Safety statistics have shown no clear pattern.

The final article in the report is written by Anna Stewart, an economic analyst at CBER. In this article Ms. Stewart reports on the results of the annual survey of business confidence that CBER conducts for the Kentucky Association of Manufacturers. This survey asks businesses about their performance over the past year and their expectation about the coming year. The survey results suggest that business owners are becoming increasingly pessimistic about the growth in manufacturing in Kentucky in the coming year.

In the past year, we have worked on a number of important projects at the Center for Business and Economic Research. One project we recently completed examined recent changes in the revenue sources used to finance K-12 education and the impact these changes have on the allocation of expenditures. A companion report, set to come out in January 2009, will examine whether changes in revenue sources has any impact of educational outcomes. In another report we examined the model used in Kentucky to obtain child support orders and whether the existing model needs to be modified or updated. Finally, we also recently completed a report examining the impact that increasing tuition has on enrollments in community and technical colleges. In the coming year we anticipate completing several new project we believe will address some of the important problems facing 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..

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Dr. Alison Davis

Dr. Alison Davis is an Assistant Professor in the Department of Agricultural Economics at the University of Kentucky. Dr. Davis received her PhD in Economics from North Carolina State University in 2004. Prior to her appointment at the University of Kentucky, Dr. Davis was an Assistant Professor at the University of Nevada, Reno. She is the Rural Economic Development State Extension Specialist. Her extension programs focus on local economic development, rural health, and renewable energy issues. Dr. Davis is the director of the Kentucky Rural Health Works Program. Her research interests include targeted economic development methods in addition to transportation and environmental economics.

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*

Dr. Brandon C. Koford

Dr. Brandon C. Koford is an Assistant Professor of Economics at Valdosta State University in Valdosta, Georgia. He received his Ph.D. in Economics from the University of Kentucky in 2008. Prior to his position at Valdosta State, he was a research assistant at the University of Kentucky's Center for Business and Economic Research. His research focuses on accurate estimation of preferences and monetary values for goods not typically traded in the market, such as higher education.

Dr. Christopher Jepsen

Dr. Christopher Jepsen is the Associate Director of the Center for Business and Economic Research and an Assistant Professor of Economics at the University of Kentucky. Dr. Jepsen received his Ph.D. in Economics from Northwestern University in 2000. Prior to his appointment at the University of Kentucky, he was a research fellow at the Public Policy Institute of California in San Francisco. His primary research interests are community colleges, English Language Learners, and the economics of education more broadly. He has published in important economic journals such as the *Journal of Human Resources, Demography, the Journal of Urban Economics,* and the *Economics of Education Review.*

Authors

Dr. Donald J. Mullineaux

Dr. Donald J. Mullineaux holds the duPont Endowed Chair in Banking and Financial Services in the Gatton College of Business and Economics at the University of Kentucky. He received his Ph.D. in Economics from Boston College and joined the staff of the Federal Reserve Bank of Philadelphia, where he served as Senior Vice President and Director of Research from 1979-84. Don also has held teaching appointments at the Wharton School at the University of Pennsylvania and Temple University and has served as the Curriculum Director of the American Bankers Association's Stonier Graduate School of Banking since 2002. He is a member of the Board of Directors of Farmers Capital Bank Corporation in Frankfort and was named a Distinguished Alumnus by Saint Vincent College in 1995.
Don has published over 50 articles in the academic and financial press and has consulted with a variety of commercial and investment banks, trade associations, and government agencies. He is active globally in banking education and has lectured extensively in Eastern and Western Europe, Russia, Asia, Latin America, and China. His research program currently focuses on the syndicated loan and securities underwriting markets. In both 2006 and 2007 he was named "Outstanding MBA Teacher" by the students in the program for his course on "Mergers and Acquisitions.

Dr. Frank Scott

Frank Scott is Gatton Professor of Economics at the University of Kentucky. Formerly he has been an Assistant Professor at Auburn University and Assistant and Associate Professor at the University of Kentucky. He graduated from the College of William and Mary in 1973, majoring in economics. He received the Ph.D. in economics from the University of Virginia in 1979. His teaching interests include microeconomic theory, industrial organization, managerial economics, and law and economics. His research interests include industrial organization, regulation of business, public policy, and applied microeconomics in general. He has published in a variety of academic journals on topics such as franchising, antitrust, tax policy and labor compensation, utility regulation and ratemaking, the economics of lotteries, and the economics of professional sports industries. He has received funding for his research from a variety of federal and state sources. He has served as a consultant to several state and federal government agencies and as a consultant and expert witness for the U.S. Department of Justice and numerous private-sector businesses.

Anna Laura Stewart

Anna Laura Stewart is an Economic Analyst for the Center for Business and Economic Research. Ms. Stewart has a B.B.A. in economics from Morehead State University and a M.A. from the Patterson School of Diplomacy and International Commerce at the University of Kentucky. Ms. Stewart provides economic analysis for the Center including economic impact analysis. Prior to joining CBER, Ms. Stewart served as a research fellow at the Indiana Economic Development Council, the economic development research and planning mechanism of the Indiana State Government. While at the Council, Ms. Stewart specialized primarily in labor issues such Indiana's welfare to work programs, and job growth and occupational wage analysis. Ms. Stewart was also a research assistant at MetaMetrics Inc., a private international economic consulting firm located in Washington, D.C., specializing in local development internationally.

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.*

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Anatomy of the Financial Crisis of 2008

Donald J. Mullineaux

This article discusses the factors that underpinned and facilitated the financial crisis that continues to plague the global economy. We suggest that each of the causal elements can be viewed as examples of "innovation gone awry." We explain how what appeared to be a relatively small, fairly localized problem relative to the huge scale of financial markets became a much larger problem with severely adverse implications for the global macro economy. We also consider how institutional mistakes and failures contributed to the crisis.

Introduction

The year 2008 will go down in the annals of economic history as the year of the worst financial crisis to hit the United States (and the rest of the globe) since the Great Depression. The crisis has taken a major toll on the financial system, reflected in the demise of large investment banks such as Bear Stearns and Lehman Brothers, the fall of large commercial banks such as Washington Mutual and Indy Mac, and the general loss of credit available from traditional providers. The overall economy has not been spared, and the recession now underway is expected to last through the better part of 2009, which would make it the longest downturn since the 1930s. Not surprisingly, many have asked, Why and how did this happen? Who or what is to blame? The media, with its penchant for pithy explanations for complicated issues, has pointed to "deregulation" and "greedy executives" at financial institutions as the main causes and primary culprits behind the financial meltdown. In this article, we suggest that deregulation played very little role in fomenting the crisis. The main cause, in one word, was *innovation*. Usually we think of innovation as a good thing, and it is, for the most part. But, as is the case with, say, wine and chocolate, there can be too much of a good thing. No doubt at least partly motivated by greed, financial executives pushed the financial innovation envelope beyond the boundaries of rationality. But they were aided and abetted in their efforts by other players, including politicians, the Federal Reserve, the government-sponsored enterprises (GSEs, such as Fannie Mae and Freddie Mac), some borrowers, the Securities and Exchange Commission (SEC), and the rating agencies. Our goal is to provide an anatomy of the crisis, including a brief overview of its implications and some discussion of the policy responses to what has unfolded. The problems and issues are very much in play, and things could readily change from the date of this writing (December 10, 2008).

Three innovations that played some role in underpinning the crisis include a novel strategy in banking called the *originate to distribute model*, a different form of raising funds called *securitization*, and new entry into a previously untapped area of the mortgage market called the *subprime* segment. Although the first two innovations are not recent developments, the evolution of and rapid growth in subprime lending is quite recent. The combination of these business methods and strategies was extremely profitable for financial institutions throughout the better part of the current decade. But when housing prices peaked in late 2006 and started to decline fairly rapidly in at least some markets, the inherent flaw in the package of strategies became increasingly apparent. Large profits turned quickly into whopping losses at those institutions with sizeable exposures to the subprime segment. But let's step back and look at the scenario in a bit more detail.

The Originate to Distribute Model

As professors of banking have told students for many years, commercial banks act as financial intermediaries. The defining characteristics of this business are deposit taking and lending. But for the

better part of banking history, when institutions made new loans, they held them on their balance sheets until they matured. Because banks were quite careful in assessing the creditworthiness of borrowers, loans were repaid roughly 98 to 99 percent of the time, on average. Despite the widespread success of this strategy, some bank managers, especially those at larger institutions, recognized that the capacity to grow loans was limited by the rate at which new deposits were arriving. Why not try to sell some of the loans already made to other financial institutions or investors in the capital markets and use the cash from the sales to fund new loans? This cycle of generating loans for the purpose of sale and then generating still more loans became known as the originate to distribute model. Banks were, in effect, getting paid fees to assess who was creditworthy and who was not, but not for taking the risk that the loan would default.[1] Buyers of the loans assumed the credit risk and received the interest on the loans as compensation. Although this situation implies that originators might pay less attention to the quality of the loans they originate if they no longer bear the risk, the prospect that a borrower might default would still need to be low enough for a loan buyer to find the loan attractive. But if loan buyers were less careful in assessing risks than originators, the originate to distribute strategy could result in higher defaults than the old-fashioned strategy of originating and holding the loans.

Securitization as a Funding Strategy

Securitization is a funding strategy that involves creating a bond that is collateralized by a pool of loans. Although practically any loan can be securitized, mortgages represent by far the most popular type of securitization. In 2000–2006, about 75 percent of all mortgage loans were securitized, creating assets known as mortgage-backed securities (MBS). Fannie Mae and Freddie Mac are major players in the securitization market, both as buyers of mortgages to form the pools of collateral, as guarantors on the securities, and as owners of MBS. The availability of the securitization option facilitates the use of the originate to distribute strategy, of course. The buyers of MBS, such as banks, insurance companies, mutual funds, pension funds, and wealthy individuals, find them attractive because they have higher returns than Treasury securities of like maturity, are highly liquid, and have been viewed as having relatively little default risk, either because of the perceived benefits of diversification in the pool of mortgages that form the collateral or because of guarantees, or both.[2] Commercial and investment banks also like securitization because they can earn large fees for underwriting the MBS and other asset-backed bonds. By 2007, about 10 large commercial banks were receiving more fee income from securitization activities than all 8,500 banks collectively received from traditional deposit and lending activities. The amount of securitized bonds in the United States exceeded $10 trillion by mid-2008. The volume of activity grew so rapidly during the last 3–4 years that many investment banks bought companies that specialized in originating mortgages to have ready access to the raw material (the underlying mortgages) that underpin securitization.

The Birth and Rapid Growth of Subprime Lending

Prime mortgages go to borrowers with good credit histories who make sizeable down payments and document their incomes. Subprime borrowers lack one or more of these characteristics. Subprime lending represents an innovation designed to help achieve a long-standing, politically supported social goal: an increase in homeownership, especially among low-income and minority households. From essentially zero in 1993, subprime mortgage lending grew at a compound annual growth rate of 26 percent to $625 billion by 2005, comprising close to one fourth of the total mortgage market at its peak.[3] Subprime lending was itself facilitated by another innovation, the application of credit-scoring techniques to mortgage originations, which allowed underwriting to become automated. Subprime

1 Banks that sold loans might also make some profit on the sale itself. Banks were also motivated to sell by regulations that required that loans be backed with relatively expensive capital. If the loan seller did not grant any recourse to the buyer, the loan was removed from the balance sheet and the capital requirement was avoided.

2 The Government National Mortgage Association (Ginnie Mae) insures against default on MBS in return for a fee, as do Fannie Mae and Freddie Mac.

3 If another category of mortgages, Alt-A loans, is included with subprime, the ratio rises above 30 percent in 2005–07. Alt-A borrowers have higher FICO scores than subprime customers, but remain non-prime because of a lack of documentation about income or assets, or a high loan-to-value ratio, or a high payment-to-income ratio.

borrowers typically have FICO scores below 640.[4] Some firms, such as New Century Financial and First Franklin, specialized in subprime lending, but the majority of originations were by independent mortgage brokers, who have always followed the originate to distribute strategy. Some 12 million new homeowners were created over the last 8–10 years, and home ownership rose from 64 to 69 percent.

To provide the funds necessary to support the rapid growth of subprime lending, originators turned to securitization. Brokerage firms, banks, and even homebuilders issued so-called "private-label" MBS that often lacked the guarantees associated with the securities issued by Fannie Mae and Freddie Mac. In yet another innovation, the MBS themselves became collateral for other securities called collateralized debt obligations. Over the period 2000–2007, the volume of subprime mortgage-backed securities grew by 800 percent.

One key difference between prime and subprime mortgages is that the latter are usually structured as hybrids in which the interest rate is fixed for the first two or three years, then resets to a variable, and typically much higher, rate. This so-called 2/28 or 3/27 loan structure creates a strong incentive for borrowers to refinance at or near the rate reset period. About 80 percent of subprime mortgages also have prepayment fees (versus only about 2 percent of prime mortgages), making refinancing more profitable in this case. The end result of this approach to structuring subprime loans is that the payoff profile becomes highly dependent on housing prices. As long as housing prices are increasing sufficiently, lenders and borrowers win from refinancing. But if housing prices decline, refinancing is no longer rational, and borrowers face a high prospect of defaulting following the rate reset. Housing prices began to decline nationally in the summer of 2006, and it quickly became clear that plenty of losing bets outstanding were embedded in both the mortgages and the securities that they appeared to be securing. The S&P/Case Shiller Index of house prices in 20 large U.S. markets nationally has dropped in every subsequent quarter since the peak and is down almost 21 percent through the third quarter of 2008.[5]

Why Did a Small Problem Become a Large Problem?

Although the subprime market grew rapidly, it remained only a very small portion of the U.S. credit markets, which were roughly $24.4 trillion at year-end 2007. Yet credit became widely unavailable during the financial crisis, and various segments of the market were widely described in the press as "frozen," "shut down," or "non-functional." How did a problem in a small segment of the market get transmitted to the wider credit market? The first signs of the crisis became visible in two little-known, but sizeable segments of the market: the repurchase agreement (RP) market and the asset-backed commercial paper (ABCP) market.

Repurchase agreements are secured loans, primarily extended by one financial institution to another. The key element of an RP is that if the borrower defaults, the lender seizes the collateral and sells it to recoup the value of the loan. Various types of collateral exist, only a small portion of which are subprime-backed securities. Nonetheless, this huge market (estimated to be about $7 trillion) almost completely dried up in August 2007 and remained dormant for several months. Traders were unwilling to accept most types of collateral because they were unsure they would be able to sell at any price close to the loan value in the event of default. Without the funding supplied by RPs, the issuers were forced to cut back dramatically on their lending.

Commercial paper is short-term debt (less than 90 days) that is often unsecured, but it can also be backed by financial assets, including subprime loans or loans to institutions with exposures in the subprime market. Issues of ABCP had increased from about $600 billion in 2005 to $1.2 trillion by the fall of 2007. Recognizing the emerging problems in the subprime market, when such debt matured during the fourth quarter of 2007 lenders simply refused to provide new financing, and the volume of ABCP dropped sharply in just a few months to roughly $800 billion.

Much of the decline in willingness to lend reflected a high degree of uncertainty about the value of assets in general, but especially about so-called *structured assets*, only part of which were subprime-related.[6] As 2008 unfolded, it became increasingly

4 FICO scores were developed by Fair Isaac and Company as an inexpensive means of predicting loan default. FICO scores range from 350 to 800. The lower the score, the higher the prospect of default.

5 In contrast, the Office of Federal Housing Enterprise estimates that U.S. homeowners enjoyed an increase in their house prices of over 54 percent, on average, from 2001 to 2005.

6 A *structured asset* is one with a cash flow that is derived from some other asset or is contingent on some specified event.

clear that sizeable losses would be incurred by large institutions that were heavily invested in subprime-related assets. Under accounting regulations, these assets are required to be marked to market on the balance sheets of the institutions holding them. Losses on these assets, which totaled as much as 30–50 percent of their value, must be subtracted from the equity on the companies' balance sheets.

Many of the large investment banks active in the subprime area were very highly leveraged, which means they had relatively little equity to support losses. For example, Bear Stearns, which was acquired by JP Morgan Chase in March 2008—preventing an imminent bankruptcy, used only about $3 dollars of equity to fund every $100 of assets. In other words, Bear Stearns was borrowing money, much of it for fairly short periods, to invest in assets that represented large bets on housing prices. As the lenders saw the prospective losses accumulating, they refused to roll over their loans, and Bear Stearns was no longer viable. A similar fate awaited Lehman Brothers, which was even more highly leveraged and declared bankruptcy on September 15, 2008. Because virtually no trading was being done in the distressed subprime assets, these instruments became increasingly difficult to value. Consequently, no one had a strong sense of the magnitude of the losses financial institutions were facing. Banks were increasingly unwilling to lend, not just to households and businesses, but even to each other. Faced with a drastic decline in liquidity and recognizing they were over-leveraged, many institutions began to sell assets. But this simply drove asset prices down even further, and institutions were caught in a debt-deflation cycle.

To address the lack of liquidity and to attempt to restore some confidence that financial failures would be limited, the Treasury and the Federal Reserve created a series of programs (referred to more colloquially as "bailouts") to inject funds into the credit markets in the form of loans and investments. The Federal Reserve, which formerly lent only to depository institutions, is now lending to investment banks, insurance companies, issuers of commercial paper, and managers of money market mutual funds.[7] The Fed is no longer a banker's bank, but is instead acting like a regular bank. And like a regular bank, it may suffer losses on some of its loans. If that happens, the taxpayers will bear those losses. The most publicized of these programs, the Troubled Asset Relief Program (TARP), makes up to $700 billion available to financial institutions in the form of preferred stock investments.

The total funds that have been made available to date through all these governmental efforts have been estimated to be $3–4 trillion. More may come. These funds have been either borrowed by the Treasury or involve monies created by the Federal Reserve through its monetary policy authority. These amounts do not measure the taxpayers' financial exposure to the bailouts, however, because some (small? large?) chance exists that all the loans will be repaid and the preferred stock redeemed. If this were to happen, the taxpayers would actually profit because the interest on the loans and the dividends on the stock are higher than the Treasury's cost of borrowing. But reasonable prospects are that at least some of the funds will not be repaid. Because we cannot readily predict defaults by the recipients of government funds, the taxpayers' exposure is unknown and is likely to be uncertain for some time.

The economy is mired in what appears to be a lengthy recession, so more bailouts may be on the horizon, and some losses to taxpayers seem almost inevitable. It appears very likely that substantial government funds will soon be made available to forestall what will otherwise be a substantial number of foreclosures. Although the size and substance of such a program is unknown, it may prove the riskiest to the taxpayers. In the limited experience we have in the area of loan modifications to forestall foreclosures, a relatively high percentage of modified loans are back in default within less than a year.

Taxpayers face still another risk. The Federal Reserve's balance sheet has ballooned from about $800 billion to roughly $2.5 trillion as of year-end 2008. Some of the increase in Federal Reserve assets is funded by borrowings from the Treasury, but a sizeable portion reflects the creation of bank reserves, which is contributing to a rapid expansion of the U.S. money supply. This increase in the money supply is designed to be temporary, and the Fed's

Structured assets contain embedded options.

7 As a result of the financial crisis, no large, free-standing investment banks are remaining in the United States. Lehman Brothers went bankrupt, Bear Stearns was acquired by JP Morgan Chase, Merrill Lynch was acquired by Bank of America, and Morgan Stanley and Goldman Sachs have become bank holding companies. Affiliating with a financial holding company or becoming a bank holding company improves access to financial support from the Federal Reserve, but also permits the Fed to be more involved in regulating these companies.

objective will be to shrink its balance sheet (and consequently the money supply) as the financial crisis ebbs. If the Fed fails to accomplish this, the U.S. economy will transition to a permanently higher rate of inflation. Since inflation erodes the real value of assets, the outcome would ironically be similar to the one that current policies are trying to prevent: further declines in asset values and the attendant wealth losses. The Federal Reserve has announced that it is considering borrowing money in the capital markets to avoid using money creation to fund its rescue operations. This would be yet another unprecedented action on their part.

Could We Have Avoided This Mess?

We have identified a chain of events, each encouraged to some extent by financial innovation, which culminated in the financial crisis of 2008. But did all this have to happen this way? Who might have prevented, or at least mitigated, the crisis? Who aided and abetted the crisis? Politicians certainly played some role by treating housing as a sector of the economy that deserved strong governmental support and in providing an implicit guarantee on the debt of Fannie Mae and Freddie Mac.[8] These two government-sponsored enterprises held or guaranteed over $5 trillion dollars worth of outstanding mortgages at the time of their demise. The Federal Reserve also laid some of the foundation for the crisis by keeping interest rates very low (below the rate of inflation) from 2002 through much of 2005, facilitating the increased demand for housing. Also culpable were borrowers who assumed mortgage obligations much beyond their abilities to repay and institutions that were willing to extend those credits. The Securities and Exchange Commission might have made some efforts to restrain the very rapid growth in the use of financial leverage by investment banks. The rating agencies failed to adequately inform investors of the risk inherent in the menu of new structured products, especially those backed by subprime loans. Finally, the boards of directors of the companies that contributed to the financial crisis failed to adequately perform their governance roles in restraining excessive risk taking. In other words, plenty of blame for the financial crisis can be spread around.

The crisis has taught us many costly lessons. No doubt significant efforts will be made to address some of these failings through new regulations, including some likely restructuring of our regulatory architecture (that is, who will be responsible for regulating what). Efforts to enhance the coordination of regulation globally are also quite likely. It is too early to speculate what these efforts might entail, but given the large scale of the crisis, the governmental response will almost surely likewise be large. A definite risk exists of regulatory overkill and multiple applications of the law of unintended consequences. The crisis is far from over, and the needed corrections in the financial system will be complicated by the weak state of the U.S and global economies. Yet the credit markets must begin again to perform their vital functions for the recovery to get underway. The economy and the financial system are definitely sailing in uncharted waters, and we remain some distance from the shores of financial health and economic well being.

8 The implicit debt guarantee became quite explicit when both Fannie and Freddie were placed in conservatorship in September. In addition to the guarantees, Fannie and Freddie were provided with $200 billion in government funds in the form of preferred stock investment.

The Year the Wheels Fell Off the Economy: A Review of Economic Performance in 2008 and Forecasts for 2009

Kenneth R. Troske

The year 2008 will certainly be remembered as one of the most turbulent years in recent memory with the continuing deterioration of the housing market, the sudden collapse of the financial sector, and the subsequent decline in prices and output. In addition, the federal government's response to these problems has produced one of the largest expansions of government into the private sector since the Great Depression. In this article I review the main trends we have seen in the U.S. and Kentucky economies in the past several years, discuss the trends we have seen in the parts of the economy that I expect to have a significant impact in the coming year – the housing, financial and manufacturing sectors, personal consumption and fuel prices – and discuss my predictions for 2009. My forecast for the U.S. is that the economy will contract by 0.5 percent for all of 2009, that unemployment will average 8 percent for the year – which would be the highest rate since the 1982-84 recession – and that there will be almost no change in prices. My forecast for Kentucky is that the State's economy will grow by approximately 0.5 percent in 2009 but that the unemployment rate in Kentucky will average 8.2 percent for the year and will be slightly above the unemployment rate for the nation.

I. Introduction

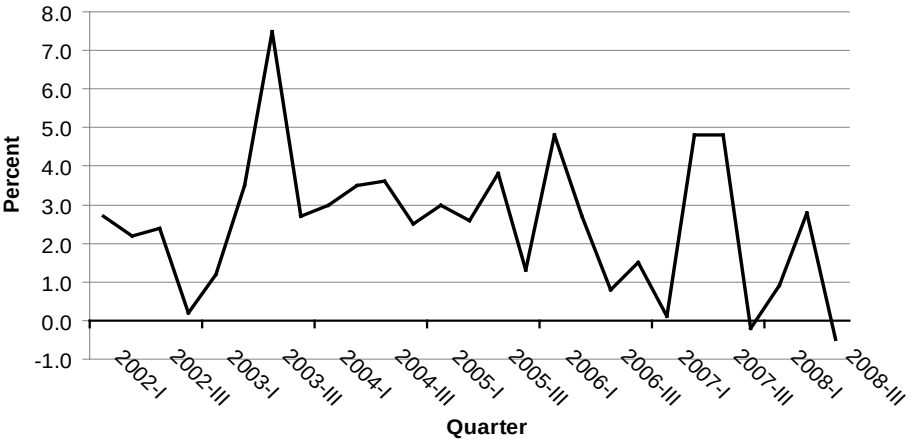
Wow. 2008 will certainly be remembered as one of the most turbulent years in recent memory. While the economy experienced slow, but fairly persistent, growth through the first half of the year, there were signs of impending trouble—the continuing deterioration of the housing market and rapidly rising prices for food and energy. However, almost no one predicted what happened to the economy in the last three months. Confidence in the financial sector of the economy seemed to evaporate almost overnight leading to a significant drop in the stock market and the freezing up of credit markets. This in turn lead to a precipitous decline in consumer spending, which has spread the troubles in the financial and housing sectors to the rest of the economy. The result has been a decline in output, a significant increase in the unemployment rate, and falling prices. In an attempt to reverse the decline in the economy, the federal government along with the Federal Reserve System instituted the largest expansion of the government sector since the Great Depression: nationalizing banks and insurance companies, purchasing an extensive amount of commercial paper, and even taking an ownership stake in private auto makers. Unfortunately, similar to what we saw in the Great Depression, there is no evidence that any of these actions has had an impact on the economy—at least not yet. Given all of these changes, the economy we have in January 2009 is certainly a much different economy than the one we faced in January 2008.

While Kentucky certainly has not escaped the turbulence that has rocked the national economy, if there is a silver lining, it might be that the Kentucky economy appears to be experiencing a much smaller slowdown than states such as California, New York and Florida. While unemployment has risen in Kentucky, and the troubles in the auto industry have had a significant effect on the State's economy, Kentucky appears to have experienced much less turbulence in the housing sector, so consumers in Kentucky seem to be more confident than consumers elsewhere. Of course any optimism about the Kentucky economy must be tempered by the recognition that Kentucky remains one of the poorest states in the country and our relatively better performance during the current recession is unlikely to change this fact.

So what should we expect from the economy in the coming year? Well, it appears that the problems in the housing sector—declining prices, slowing housing starts and high rates of foreclosure—will persist throughout 2009 and into 2010. This in turn will limit the growth in both the U.S. and

Kentucky economies. However, I do expect that both economies will start growing again, although not until the latter half of 2009. So while I believe we will continue to see slow or negative growth and relatively high rates of unemployment in 2009, I remain confident that when I write this forecast next year I will be writing about the beginning of a recovery instead of the continuation of a recession.

Figure 1: Percentage Change in U.S. Gross Domestic Product (GDP)



Source: U.S. Department of Commerce, Bureau of Economic Analysis

In the rest of this article I will review the main trends we have seen in the U.S. and Kentucky economies in the past several years. I will also examine some of the trends we have seen in the parts of the economy that I expect to have a significant impact in the coming year—the housing, financial and manufacturing sectors, personal consumption and fuel prices. Finally, I will discuss in more detail my predictions for 2009.

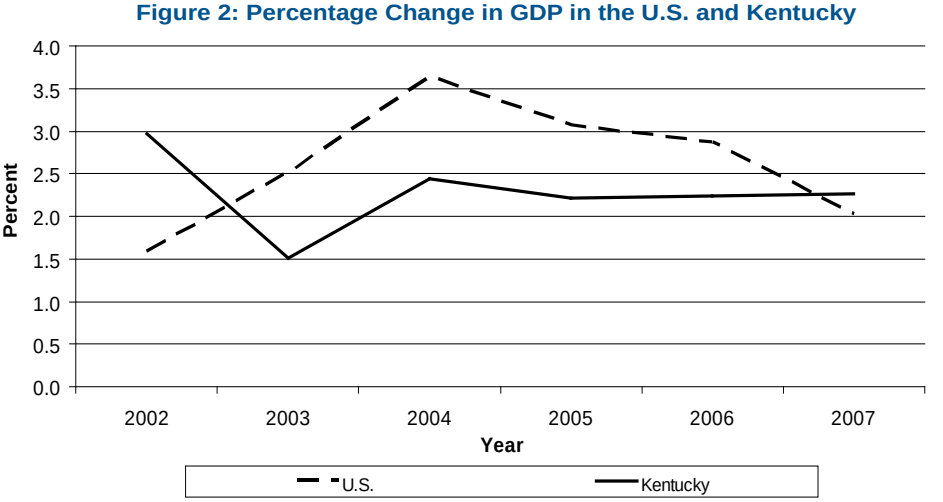
II. Overview of the U.S. and Kentucky Economies

A. The Slowing Economy

According to the business cycle dating committee of the National Bureau of Economic Research, the U.S. entered a recession in December of 2007. Figure 1, which plots the percentage change in the Gross Domestic Product (GDP) by quarter for the U.S., shows that the economy did indeed experience a contraction in the fourth quarter of 2007, of approximately -0.2 percent. However, the U.S. economy expanded in both the first and second quarters of 2008, albeit by less than 2 percent, before again contracting in the third quarter by -0.5 percent. Forecasts for the fourth quarter are for an even larger contraction, with some economists forecasting a contraction of the U.S. economy of 4 to 6 percent, which would be the largest quarterly decline in the economy since 1982. Clearly the U.S. economy is struggling.

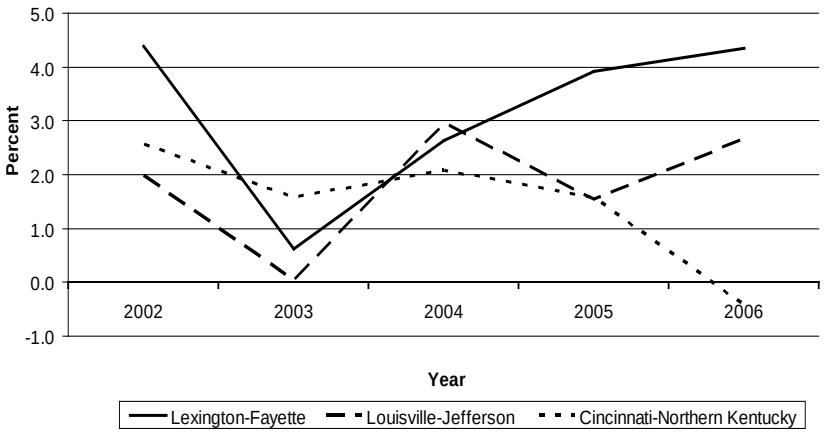
The data presented in Figure 2 shows the annual growth in GDP for both the U.S. and Kentucky. This figure makes clear that in the last several years the U.S. economy has grown faster than the Kentucky economy, but that the U.S. economy may now be growing at a slightly slower rate than the Kentucky economy. In 2007 the Kentucky economy outperformed the U.S. economy and all indications are that this will continue to be true in 2008. Figure 3, which presents the annual growth in GDP for the largest metropolitan statistical areas (MSA) in Kentucky, shows that there have

Figure 2: Percentage Change in GDP in the U.S. and Kentucky



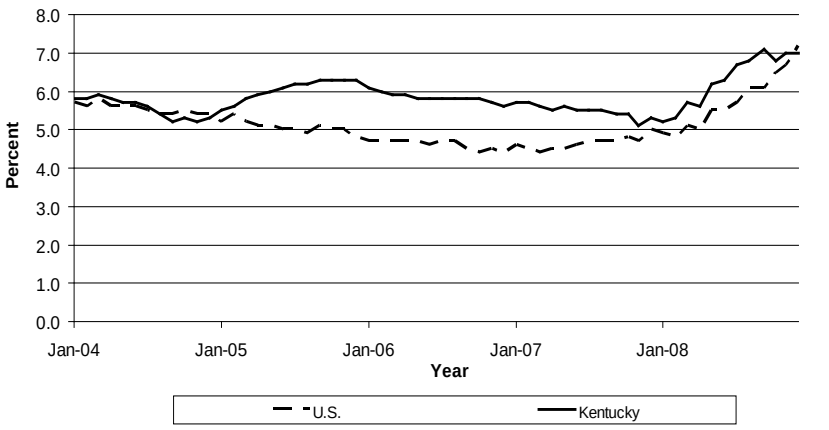
Source: U.S. Department of Commerce, Bureau of Economic Analysis

Figure 3: Percentage Change in GDP in Kentucky's Major Metropolitian Statistical Areas (MSAs)



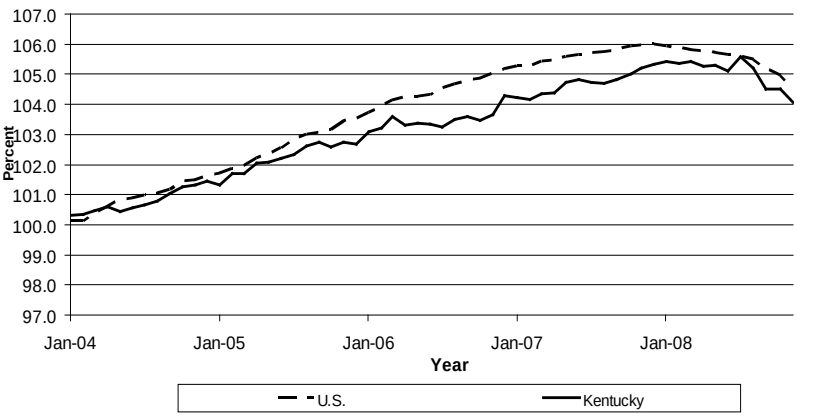
Source: U.S. Department of Commerce, Bureau of Economic Analysis

Figure 4: Unemployment Rate for the U.S. and Kentucky



Source: U.S. Department of Labor, Bureau of Labor Statistics

Figure 5: Employment Growth in the U.S. and Kentucky



Source: U.S. Department of Labor, Bureau of Labor Statistics

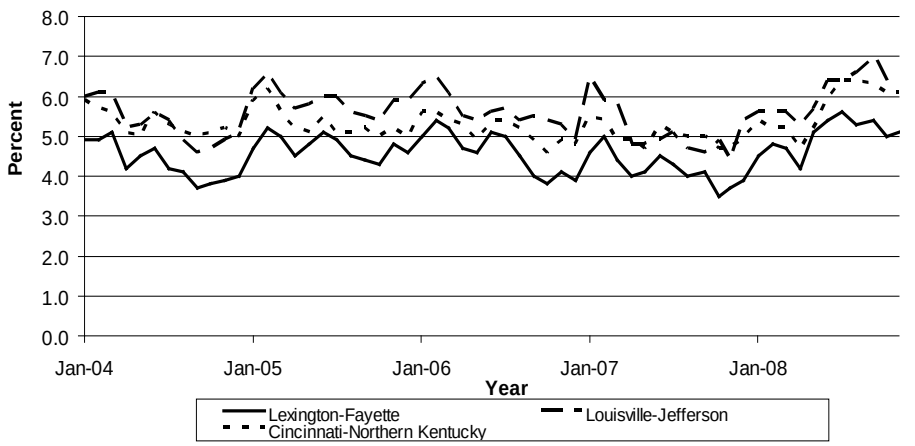
been some significant differences in economic performance across different areas in Kentucky. Since 2004 the Lexington-Fayette MSA has been the fastest growing of the three areas, followed by the Louisville-Jefferson MSA, with the Cincinnati-Northern Kentucky MSA experiencing the slowest growth.

B. The Deterioration of the Labor Market

Further evidence that the U.S. economy entered a recession in the fourth quarter of 2007 is provided by Figure 4, which shows the unemployment rates for the U.S. and Kentucky. Between January 2004 and January 2007 the unemployment rate in Kentucky was higher than the unemployment rate for the entire U.S. Since then, however, the unemployment rates in Kentucky and the U.S. have been similar. Throughout 2008 the U.S. and Kentucky unemployment rates have been rising fairly consistently. In December 2008 the unemployment rate in the U.S. was 7.2 percent, which is a 44 percent increase over the rate twelve months earlier. In Kentucky in December 2008 the unemployment rate stood at 7.0 percent, which is 32 percent higher than a year earlier.

Further evidence of the deteriorating labor market is provided in Figure 5, which shows the growth in employment in the U.S and Kentucky. In this figure employment in a period is measured relative to employment in January 2003. In other words, I have divided the actual employment in a month by the employment in January 2003, and then multiplied this ratio by 100. If the resulting number is bigger than 100, this means that employment in a given

Figure 6: Unemployment Rate for Kentucky's Major MSAs



Source: U.S. Department of Labor, Bureau of Labor Statistics

month is higher than employment in January 2003; and if the number is less than 100 then employment is lower. The actual value shows the percentage change in employment since January 2003. This figure shows that employment in the U.S. has been declining since December 2007, while employment in Kentucky has been declining since March 2008. This figure also shows that between January 2004 and December 2007 growth in employment in the U.S. exceeded employment growth in Kentucky, but since then the fall in employment in the U.S. has been greater than the fall in employment in Kentucky.

Figures 6 shows that there are some obvious differences in labor markets across metropolitan areas in Kentucky. While all three metropolitan areas have seen increases in unemployment rates over the past year, the Lexington-Fayette MSA continues to enjoy unemployment rates that are much lower than the rates for the state as a whole and lower than the rates for the Louisville and Cincinnati-Northern Kentucky MSAs

C. A Bright Spot: Prices

The recent fall in prices is one of the few bright spots in the economy. As is shown in Figure 7, both the overall Consumer Price Index (CPI) as well as the core CPI have declined fairly significantly in recent months (the core CPI excludes food and energy prices). As I will show in the next section, much of the decline in the overall CPI is the result of a decline in energy prices. However, the fact that the core CPI has also fallen shows that the prices of other goods and services have fallen as well. It is these falling prices that lead some economists to predict that consumer spending will rebound, which would indicate the beginning of a recovery.

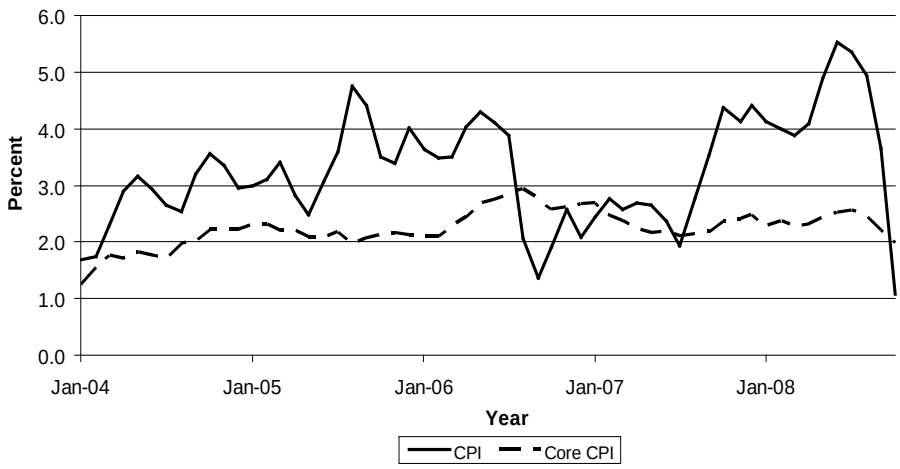
III. A Closer Look at the Economy

In this section I will to take a closer look at some of the parts of the economy that have contributed to the current downturn, and are expected to determine when the recovery begins. These parts of the economy include the housing, manufacturing and financial sectors, personal consumption expenditures and energy prices. I will start by looking at the financial sector.

A. A Loss of Confidence in the Financial Sector

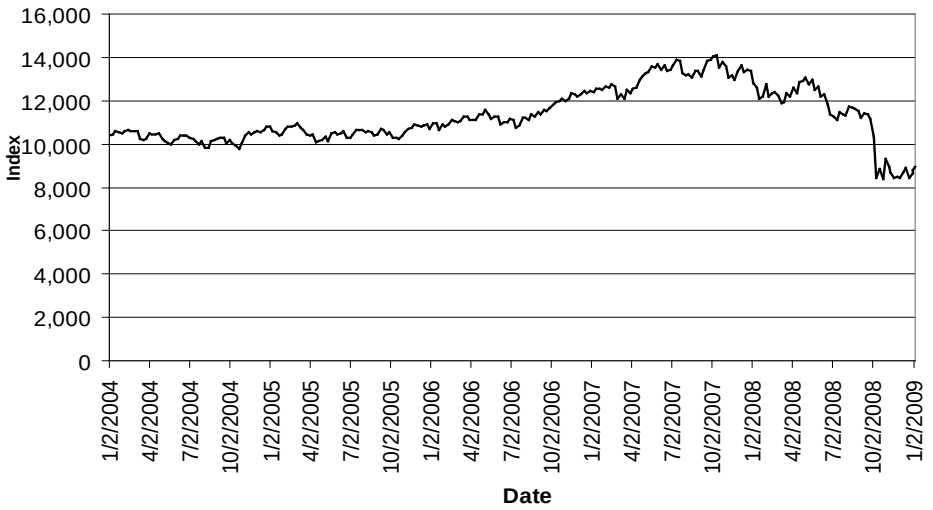
Clearly the recent loss of confidence in the financial sector has contributed to the size of the economic downturn. The extent of this loss in confidence can be seen in Figure 8, which plots the Dow Jones Industrial Average since January 2004. This figure shows

Figure 7: Monthly Change in the Consumer Price Index (CPI)



Source: U.S. Department of Labor, Bureau of Labor Statistics

Figure 8: Weekly Average of the Dow Jones Industrial Average



Source: Dow Jones Indexes

that the Dow rose fairly steadily between January 2004 and October 2007, when it reached its peak at around 14,100 points. Then between October 2007 and September 2008 the Dow experienced a fairly steady decline in value to around 11,500 points. However, between the beginning of September and the beginning of December the Dow plummeted—dropping nearly 3000 points or 26 percent of its value. This loss of confidence quickly spread to other sectors of the economy.

B. The Continuing Slide in the Housing Market

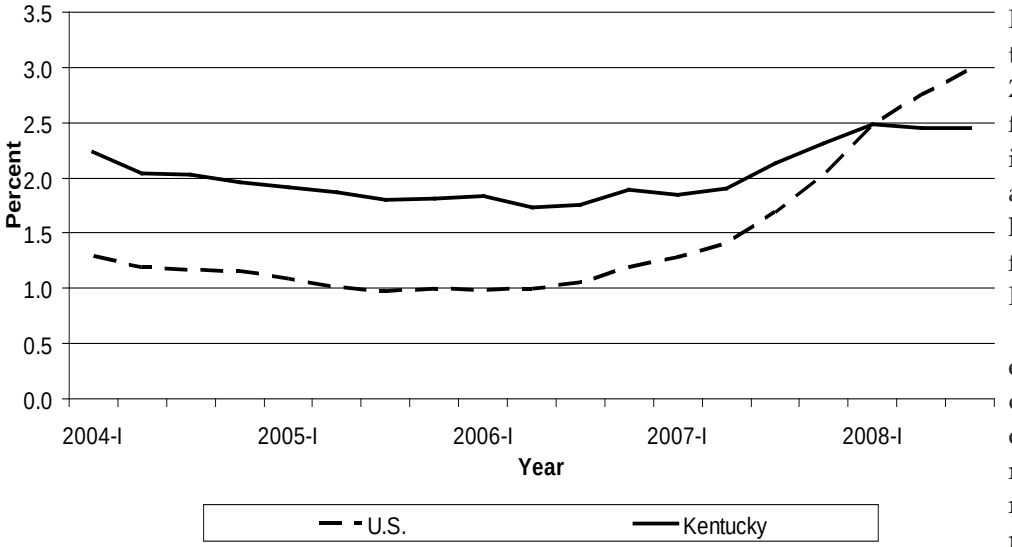
With the rising foreclosure rates, falling prices and the slowdown in new construction the housing sector has received close scrutiny since the end of 2006. However, in 2008 the problems that have plagued the housing sector have finally spread to the rest of the economy.

We start by looking at Figure 9 which shows the percent of all mortgages that are in foreclosure for both the U.S. and Kentucky. Looking first at the line for the U.S. we can see that the foreclosure rate has been rising since the beginning of 2006, but accelerated quite dramatically starting in early 2007. It appears as if the growth in the foreclosure rate may have slowed in the last few quarters, although we will need more quarters of data before we can say with any confidence that the growth in foreclosures has slowed or stopped.

Comparing the foreclosure rate for Kentucky with the rate for the entire country shows that the foreclosure rate in Kentucky has been higher than the rate for the entire U.S. for most of the period in this chart. However, while the foreclosure rate in Kentucky has risen in recent years, the increase in Kentucky has been smaller than the increase in the rest of the country, and there has been relatively little change in the foreclosure rate in Kentucky in the first three quarters of 2008. In fact, the foreclosure rate in the U.S. is now almost 20 percent higher than the foreclosure rate in Kentucky.

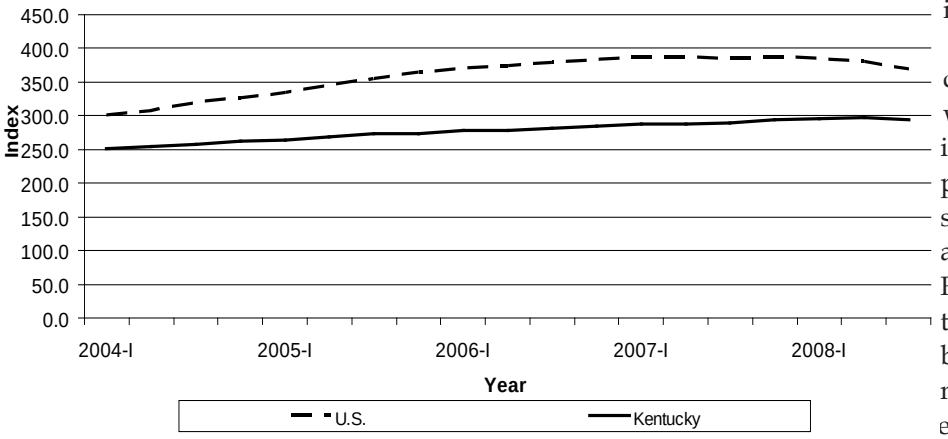
As has been extensively discussed, one of the primary reasons for the rising foreclosure rate has been falling

Figure 9: Foreclosures as a Percentage of All Mortgages



Source: Mortgage Bankers Association, obtained from the Federal Reserve Bank of Cleveland

Figure 10: Office of Federal Housing Enterprise Oversight (OFHEO) Housing Price Index for the U.S. and Kentucky



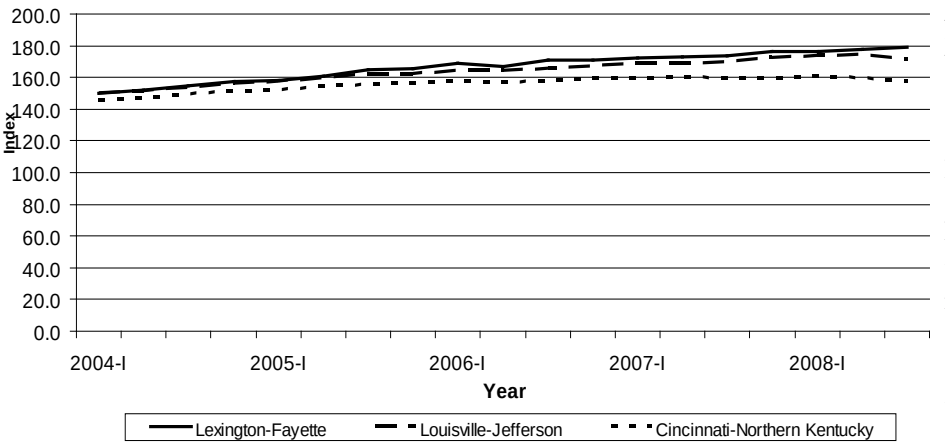
Source: U.S. Office of Federal Housing Enterprise Oversight

housing prices. In Figure 10 I plot the Office of Federal Housing Enterprise Oversight, or OFHEO, housing price index for both the U.S. and Kentucky. Looking at the line for the U.S. shows that housing prices reached a peak in the second quarter of 2007 and have been falling since then. In contrast, the price index for Kentucky shows that housing prices in this state, while they have fallen somewhat, have not declined as much as they have in other parts of the country.

Further evidence of the relative stability of housing prices in Kentucky is found in Figure 11 which presents the OFHEO housing price index for the Lexington, Louisville and Cincinnati-Northern Kentucky MSAs. This figure again shows that, while prices have fallen in both Louisville and Northern Kentucky, the declines have been small. This relatively small decline in housing prices in all of Kentucky and in Kentucky's main metropolitan areas is consistent with the lower foreclosure rate in the state.

One obvious question to ask is: "When will it all end?" That is, when will housing prices stop falling and start rising again? I address this question in Figure 12 which shows the number of new houses built and the number of new households formed each year since 1990 in the U.S. Over the long run the number of new houses built will equal the number of new households formed. While the line showing the number of new households jumps around a bit, it does tend to track the number of new houses built fairly closely until 2003. Then there are several years when the number of new houses built exceeds the number of new households formed. Essentially, this means that builders were building more houses than there were people to buy those houses. When there is more of a good then there are people to buy the good, prices will fall. Since houses are a durable asset it will take several years where the number of new households formed exceeds the number of houses built before this market will stabilize and prices will begin to rise again. As can be seen in the figure, the number of new households exceeded the number of new houses in 2007, and preliminary data suggests the same thing will be true in 2008. However, given the number of new houses being built each year, it is likely that we will continue to have an "excess" stock of housing and falling housing prices until 2010. This downward pressure on housing prices will limit the size of any economic recovery until then.

Figure 11: OFHEO Housing Price Index for Kentucky's Major MSAs

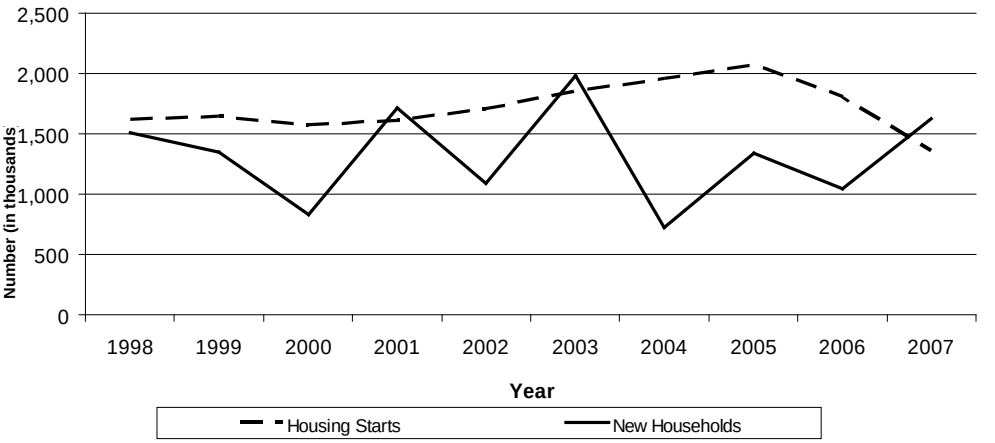


Source: U.S. Office of Federal Housing Enterprise Oversight

This analysis should also make clear the problem with efforts designed to prop up

housing prices or to try and subsidize mortgages rates. Any effort to artificially increase housing prices will just encourage builders to build more houses, which will exacerbate the existing excess supply and postpone any recovery. Unfortunately, the only way out of the current housing crisis is to wait until we have enough new households willing to buy the houses that have already been built.

Figure 12: Number of New Houses and New Households in the U.S.



Source: U.S. Department of Commerce, Bureau of the Census

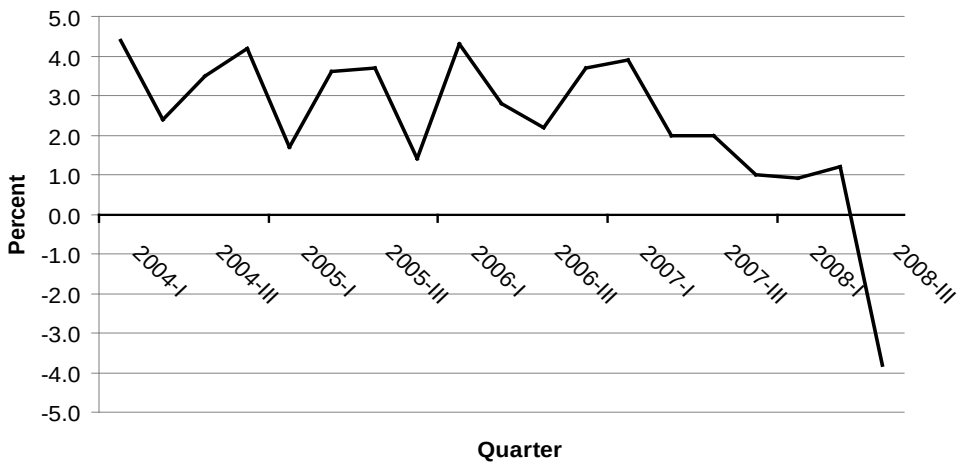
C. Personal Consumption: Spreading Problems to the Rest of the Economy

Much of the growth in the economy in the last several years was fueled by the continual growth in consumer expenditures. However, as the old adage states, what goes around comes around, so it should not be surprising that much of the recent downturn has also been fueled by a significant decline in consumer spending. For most people their investments in both the stock market and the housing market represent their main source of wealth: so it was only a matter of time before declines in these sectors would have an impact on consumer spending. This is what is illustrated in Figure 13, which shows the growth in personal consumption expenditure by quarter in the U.S. As is seen in this figure, the growth in personal consumption began to slow in the second quarter of 2007 and remained anemic through the first half of 2008. However, in the third quarter of 2008 personal consumption expenditure actually declined by 3.8 percent, which is the first decline in consumer expenditure since 1991. This decline in expenditures transferred the problems in the financial and housing sectors of the economy to other parts of the economy, such as the auto industry and retail trade.

D. The Manufacturing Sector: An Important Determinant of the Kentucky Economy

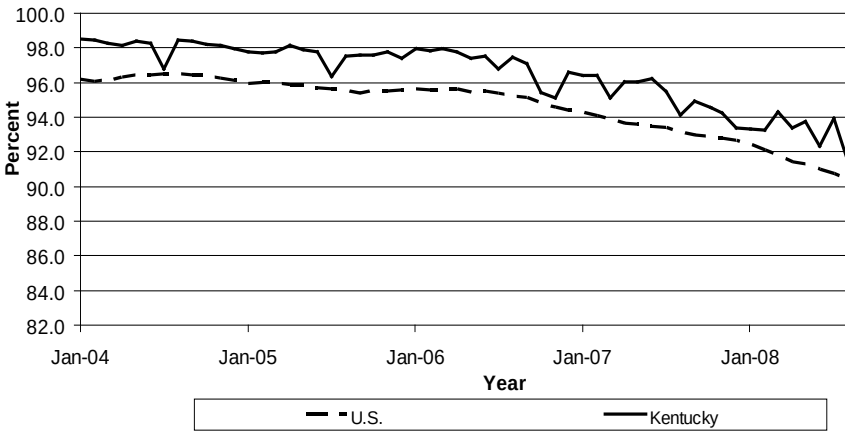
While the manufacturing sector has declined in importance in recent years, it still remains a significant industry in terms of both output and employment, particularly in Kentucky. The manufacturing sector accounts for over less than 10 percent of employment in the entire U.S. but accounts for 13 percent of employment and almost

Figure 13: Growth in Personal Consumption Expenditure in the U.S.



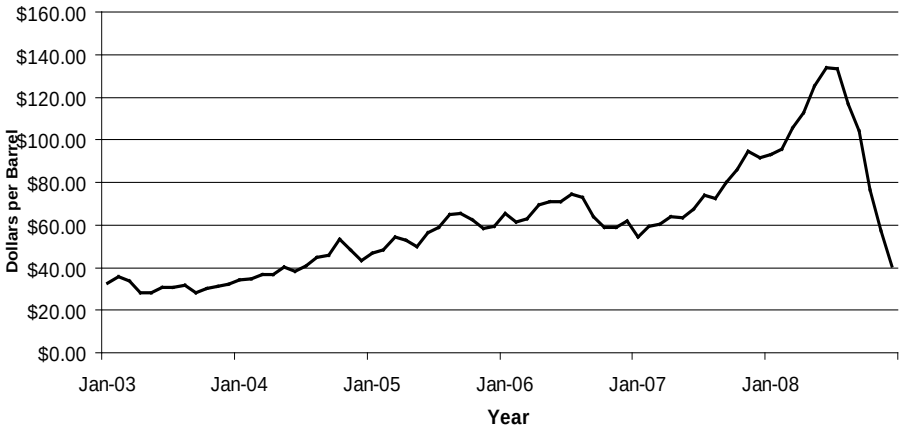
Source: U.S. Department of Commerce, Bureau of Economic Analysis

Figure 14: Growth in Manufacturing Employment in the U.S. and Kentucky



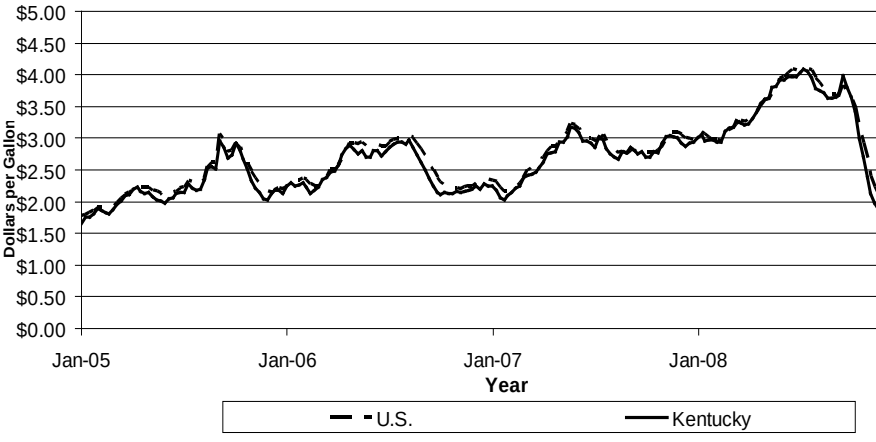
Source: U.S. Department of Labor, Bureau of Labor Statistics

Figure 15: Spot Price of a Barrel of Oil



Source: U.S. Department of Energy, Energy Information Administration

Figure 16: Average Price of a Gallon of Gasoline in the U.S. and Kentucky



Source: U.S. Department of Energy, Energy Information Administration and Department for Energy Development and Independence, Kentucky Energy Watch

20 percent of earnings in Kentucky. Therefore, the performance of this one sector is an important determinant of the performance of the economy—particularly in Kentucky. To assess the performance of the manufacturing sector, Figure 14 plots growth in manufacturing employment for the U.S. and Kentucky. This figure is constructed in a similar manner as Figure 5—employment in each period is measured relative to employment in January 2003. Numbers greater than 100 indicate that employment has grown since January 2003, while number less than 100 indicates that employment in the sector has fallen since January 2003.

Figure 14 shows that manufacturing employment has declined since 2003 for both the U.S. as a whole and in Kentucky. For the entire country manufacturing employment fell fairly rapidly between January 2003 and January 2004, was stable through the middle of 2006, but began to fall fairly quickly over the last two years. In contrast, in Kentucky manufacturing employment remained steady through the middle of 2006, but since then has been declining at a much faster rate than for the U.S. as a whole.

Table 1: Forecast for 2009			
	2008 Forecast	Actual Performance 2008	2009 Forecast
Real GDP Growth--U.S.	2.3%	1.2%	0.5%
Unemployment Rate--U.S.	4.7%	5.7%	8.0%
Inflation--U.S.	2.7%	2.5%	0.6%
Employment Growth--U.S.		-1.4%	-1.0%
Employment Growth--Kentucky		-1.2%	-0.5%
Growth in Manufacturing Employment--U.S.		-4.3%	-4.5%
Growth in Manufacturing Employment--Kentucky		-4.5%	-4.0%
Real GDP Growth--Kentucky	2.4%	---	1.0%
Unemployment Rate--Kentucky	5.7%	6.3%	8.5%

This decline in manufacturing was particularly large in the second half of 2008 when manufacturing employment fell by 5 percent. By the end of 2008 manufacturing employment in both the U.S. and Kentucky was over 10 percent lower than it was in January 2003. Given the greater importance of the manufacturing sector in the Kentucky economy, this recent drop in manufacturing employment in Kentucky is an area of concern.

E. Some Hope for the Future: Falling Energy Prices

After being a source of significant concerns for the last several years, in the last six months changes in all prices in general, and energy prices in particular, represent one of the few bright spots in the current economy. Figure 15 shows the price of a barrel of oil since 2003. As this figure shows, after rising for five and a half years, the price of a barrel of oil has fallen by 70 percent in the last six months and has returned to a level last seen in mid 2004. Figure 16 shows that this fall in the price of oil produced a similar decline in the price of gasoline in both the U.S. and Kentucky. The hope is that falling fuel prices will lead to an increase in consumer confidence, which would in turn lead to growth in consumption expenditures and to growth in the overall economy.

IV. Outlook for 2009

So what will 2009 bring? In Table 1 I present my forecast for the coming year. In column 1 I present my forecast for 2008, in column 2 I show the actual performance in 2008, and in column 3 I present my prediction for 2009.

While I do believe that the economy will begin to grow again in 2009, my prediction is that the economy will continue to contract in the first half of the year and that the continuing problems in the housing sector will limit any growth that does occur. Therefore, my forecast is that the economy will contract by 0.5 percent for all of 2009, that unemployment will average 8 percent for the year—which would be the highest rate since the 1982-84 recession—and that there will be almost no change in prices.

I am relatively more optimistic about the performance of the Kentucky economy in the coming year in the state. While I believe that manufacturing employment will continue to decline in the coming year, I feel that the relative strength of the housing market in Kentucky will mean that the Kentucky economy will grow by approximately 0.5 percent in 2009. However, I do expect that the unemployment rate in Kentucky will grow to 8.2 percent for the year and will be slightly above the unemployment rate for the nation.

Of course any optimism about the performance of the Kentucky economy should be tempered by the recognition that Kentucky remains one of the poorest states in the country and that this dubious distinction is unlikely to change in the near future. Kentucky's main problem is that Kentucky's workforce remains one of the least educated workforces in the country. It is this structural problem that policy makers should focus on fixing if they hope to raise the standard of living in the state. Unfortunately, given the budgetary problem facing the state, it is unlikely that any solution to this problem will be developed in the near future.

Citizens' Budget Choices for the State of Kentucky

Brandon C. Koford

Efficient allocation of public funds depends on good information about citizens' values of public programs. The present paper reports on an effort to elicit citizens' preferences over public spending categories in Kentucky. The data come from a representative sample of Kentucky residents surveyed in the summer of 2007. Estimates show that individuals place highest value on education, followed by health care.

Introduction

The role of citizens in public budgeting decisions is of interest in a form of representative government. While citizen participation may have to fight a culture of public budgeting in which elected officials and administrators work to establish budget priorities, the general consensus is that the public should be involved in the budget process. One example of an elected official seeking citizen input in budget decisions in Kentucky includes then Governor Ernie Fletcher's 2006-2007 town hall meeting tour to discuss the desires of the citizenry on how to best use state budget dollars.

Former Governor Fletcher used one of the many methods for involving citizens in the budget budgeting process. Others include focus groups, issue advisory boards, open house informational discussions, traditional public meetings, and survey research. Additionally, Donahue et al. (2008) note the increasing use of surveys by local government to assess the level of citizen satisfaction with governments services. The primary problems with these traditional methods of citizen involvement are that many fail to obtain a representative sample, and almost all fail to include a budget constraint. Including a budget constraint when obtaining citizens' input over budgetary decisions has at least two advantages. First, citizens faced with a budget constraint must trade off support for some programs with lack of support for others. In other words, the budget constraint imposes the condition that citizens cannot have more of everything. Second, the budget constraint adds a degree of realism for citizens participating in the budget process.

The purpose of the current work is to describe the results of an effort to involve citizens of Kentucky in the budget process through a widely distributed survey. The method uses state of the art techniques for survey research and also incorporates a budget constraint into citizens' decision making. The technique involves surveying a representative sample of Kentucky as well as asking respondents to allocate a $100 million expansion to a public budget among the categories contained in the budget. The dollar amount of the expansion is clearly indicated, and thus respondents are asked to make decisions while facing the public budget constraint. Asking citizens to make choices across budget categories in this fashion provides a measure of citizens' preferences for state spending categories.

The technique has several advantages for eliciting citizens' preferences. First, the method requires respondents to make decisions in the context of a budget constraint. This method adds realism to the survey design and results in more credible responses. Second, the technique provides survey respondents with relevant information for making decisions over public budget categories. Specifically, respondents are given a description of the programs funded by each budget category and the fixed budget expansion to be allocated across the categories. Finally, the technique handles concerns about representative participation through random sampling methods.

Survey

Elicitation of citizens' preferences over spending categories takes place within the context of a survey distributed across the state of Kentucky. After a brief introduction, respondents are provided with a scenario in which they are prompted to allocate a surplus $100 million in the Kentucky Overall State Budget among the categories within the budget. Specifically the survey read:

> *Please consider the budget categories below. If you were making the choices for the state of Kentucky and an extra $100 million were available to be added to the existing budgets,*

Figure 1. Example of Allocation Exercise for Overall State Budget

CHOICES FOR KENTUCKY'S OVERALL STATE BUDGET

Please consider the budget categories below. If you were making the choices for the state of Kentucky and an extra $100 million were available to be added to the existing budgets, how much of the $100 million would you put in each of the following budget categories? If you put more money into a given area, the programs in that area would be expanded. If no money is allocated to a given area, programs would be maintained at current levels. The total should add up to 100.

1	**$**_____	**AGRICULTURE**: Animal health, livestock services, and pest management
2	**$**_____	**CULTURAL INSTITUTIONS**: State libraries, arts and humanities, museums, and historical societies.
3	**$**_____	**ECONOMIC DEVELOPMENT**: Industrial development, marketing information, community and regional planning, housing and building construction.
4	**$**_____	**ENVIRONMENT**: Air and water pollution prevention, waste management, mining and minerals, forestry, conservation, and energy efficiency.
5	**$**_____	**FINANCE AND REVENUE**: Investment and debt management, computer information systems, property valuation, taxation and collection.
6	**$**_____	**HEALTH CARE**: Medicare, Medicaid, county health departments, mental health services, and services for the disabled.
7	**$**_____	**HUMAN RESOURCES**: Social services, food stamps, and aid to families with dependent children.
8	**$**_____	**JUSTICE**: Jails and correctional systems, state police, and the courts.
9	**$**_____	**LABOR AND WORKER'S COMPENSATION**: Occupational safety and health payments to workers suffering job-related injuries and diseases
10	**$**_____	**NATIONAL GUARD**: Military affairs, veterans affairs, and disaster relief.
11	**$**_____	**SCHOOLS**: Public elementary, middle, and high school construction and maintenance, teacher salaries and retirement system, and Kentucky Educational Television.
12	**$**_____	**TOURISM**: State parks, fish and wildlife programs, and the state fair.
13	**$**_____	**TRANSPORTATION**: Highway construction and maintenance, airports, and public transportation.
14	**$**_____	**UNIVERSITIES**: State university and community college construction and maintenance, faculty/staff salaries, research, and student loans.

PLEASE MAKE SURE THE TOTAL ADDS UP TO $100

Figure 2. Example of Allocation Exercise for Overall Public Education Budget

CHOICES FOR KENTUCKY'S OVERALL PUBLIC EDUCATIONAL BUDGET

Budget choices are made all the time within state agencies. If you were making the choices for the education budget for the state of Kentucky and an extra $100 million were available to be added to the budget categories shown below, how much of the $100 million would you put in each category? If you put more money into a given category, the programs in that category would be expanded. If no money is allocated to a given category, programs would be maintained at current levels. The total should add up to 100.

1	$_____	**LOCAL K-12 PUBLIC SCHOOLS:** Expenditures in this category are used to fund teaching and learning programs, tutoring services, nutrition and health services, student assessment programs, construction of new buildings, and purchases of new technology for local K-12 public schools.
2	$_____	**STATE 4-YEAR COLLEGES:** Expenditures in this category are used to fund instruction, research, public service, academic support, scholarships/fellowships, construction of new buildings, and purchases of new technology at the state 4-year colleges such as the University of Kentucky, the University of Louisville, and the regional state universities.
3	$_____	**KENTUCKY COMMUNITY AND TECHNICAL COLLEGE SYSTEM:** Expenditures in this category are used to fund instruction, public service, academic support, scholarships/fellowships, construction of new buildings, and purchases of new technology for the Kentucky Community and Technical College System.
4	$_____	**VOCATIONAL AND WORK FORCE TRAINING PROGRAMS:** Expenditures in this category are used to fund education and technical training to new and existing workers to match the needs of Kentucky businesses and industry.

PLEASE MAKE SURE THE TOTAL ADDS UP TO $100

how much of the $100 million would you put in each of the following budget categories? If you put more money into a given area, the programs in that area would be expanded. If no money is allocated to a given area, programs would be maintained at current levels. The total should add up to 100.

For an example of the entire allocation exercise, see Figure 1. Budget categories were selected to represent general budget areas in the Kentucky State Executive Budget. Each category is accompanied by a description of the services funded by the category. Respondents are told that allocating money to a given budget would allow the programs in that category to expand beyond current levels. If the respondent allocated no money to a given budget category, they were told that the programs in that category would be maintained at current levels. A similar allocation exercise is replicated for the Public Education Budget (see Figure 2). Because the respondent is given an extra $100 million in public funds, each allocation is made in the context of this explicit budget constraint.

The survey was distributed June and July of 2007 by the survey research firm Knowledge Networks. The sample was drawn based on random digit dialing techniques and random white pages sampling in the state of Kentucky. A total of 10,370 households were invited to complete the survey. Of those surveys mailed, 804 were undeliverable. A total of 2,956 surveys were returned for a response rate of 31 percent (2,956 / 9,566). The estimation sample used for data analysis in this context was further adjusted for individuals under the age of 18

Table 1. Demographics of KCTCS Survey vs. American Community Survey 2005 for Kentucky†

		KCTCS Survey	American Community Survey 2005
Gender	Female	54.42%	51.87%
Age	18-29	23.34%	20.93%
	30-39	16.70%	18.38%
	40-49	21.08%	20.51%
	50-64	26.41%	24.12%
	65 or over	12.47%	16.04%
Race	White	89.82%	90.97%
Education	Less than High School Diploma	13.13%	20.65%
	High School Diploma or Equivalent	32.94%	34.93%
	Some College	21.39%	20.30%
	Associate Degree	9.22%	6.30%
	Bachelor's Degree	13.60%	11.06%
	Master's Degree or Beyond	9.72%	6.76%
Household Income	Under $25,000	34.00%	35.02%
	$25,000 - $39,999	19.45%	18.11%
	$40,000 - $59,999	20.07%	18.72%
	$60,000 - $99999	17.63%	18.29%
	$100,000 or more	8.84%	9.86%

†Both the KCTCS Survey statistics and the American Community Survey statistics are for those individuals 18 years old or over. KCTCS Survey statistics are based on the estimation sample n = 1706.

Table 2. Allocations for Kentucky's Overall State Budget ($100 Million Increment)

Budget Category	Mean	Standard Deviation
Schools	$16.2	12.3
Health Care	$14.3	10.9
Universities	$10.1	8.4
Environment	$8.0	6.9
Economic Development	$7.0	7.8
Transportation	$6.8	6.4
National Guard	$6.2	6.3
Agriculture	$5.6	6.4
Human Resources	$5.5	6.2
Cultural Institutions	$4.6	5.2
Justice	$4.6	4.9
Labor and Worker's Compensation	$4.4	5.1
Tourism	$3.9	4.3
Finance and Revenue	$2.9	4.2

Allocations that are significantly different at the 5 percent level are set apart by a shaded row. Allocations that are above (below) the double lines are greater (less) than the proportional allocation of $7.1 million. n = 1706.

Table 3. Allocations for Kentucky's Public Education Budget ($100 Million Increment)

Budget Category	Mean	Standard Deviation
Local K-12 Public Schools	$33.8	14.7
State 4-Year Colleges	$22.6	9.8
KCTCS	$22.4	8.1
Vocational and Work Force Training Programs	$21.2	9.8

Allocations that are significantly different are set apart by a shaded row. Allocations that are above (below) the double lines are greater (less) than the proportional allocation of $25 million. n = 1706.

and for surveys with incomplete or missing data. The final estimation sample contained 1,706 usable observations. Table 1 compares demographic information for the estimation sample to Kentucky as a whole using data from the Census Bureau's American Community Survey 2005. The table shows that the gender, age, race, education, and income demographics of the survey sample are representative of the state as a whole.

Dillman (2007) notes two important items that put the survey's response rate in context. First, general populations surveys, such as the one discussed here, typically have lower response rates than surveys administered to specific subpopulations—attendees to a particular school or employees of a specific firm, for example. Second, response rates typically decline with survey length and complexity. The survey described herein contained 14 pages, 28 questions, with several questions requiring respondents to allocate dollars over as

Table 4. Comparison Between Actual Budget Totals and Survey Respondents' Allocations: Overall State Budget

	2007 Percent	2007 Ranking	Budget Survey	Survey Ranking
Health Care	28.21%	1	14.30%	2
Schools	24.17%	2	16.20%	1
Universities	21.45%	3	10.00%	3
Transportation	10.52%	4	6.80%	6
Human Resources	4.61%	5	5.50%	9
Justice	3.91%	6	4.60%	10
Finance and Revenue	2.98%	7	2.90%	14
Labor and Worker's Compensation	1.10%	8	4.40%	12
Cultural Institutions	0.99%	9	4.60%	11
Environment	0.98%	10	8.00%	4
National Guard	0.56%	11	6.20%	7
Agriculture	0.33%	12	5.60%	8
Economic Development	0.13%	13	7.00%	5
Tourism	0.07%	14	3.90%	13

Table 5. Comparison Between Actual Budget Totals and Survey Respondents' Allocations: Public Education Budget

	2007 Percent	2007 Ranking	Budget Survey	Survey Ranking
Local K-12 Public Schools	50.95%	1	33.80%	1
State 4-Year Colleges	41.31%	2	22.60%	2
Kentucky Community and Technical College System	5.71%	3	22.40%	3
Vocational and Work Force Training Programs	2.03%	4	21.20%	4

many as 14 categories. Seen in the context of the survey's length and complexity, the response rate is high. In addition, similar demographics between respondents and the state as a whole provide reassuring evidence that the sample is representative.

Results

The budget allocations were used to obtain respondents' relative valuations on programs that make up the budget. Respondents' allocations for the Overall State Budget Categories are presented in Table 2. The table shows citizens' strong preference for education in the state. The "Schools" category received the largest portion of the surplus funds with an average of $16 million. The average respondent also cares a great deal about health care as evidenced by their allocation of a substantial portion of the additional funds for the "Health Care" category, which is comprised of state financed health care such as Medicaid and mental health services. The "Universities" category received the third highest allocation with a $10 million average allocation. Education and health care are the two biggest priorities for the typical respondent. All other budget categories would receive substantially less money than these programs, with the "Finance and Revenue" category receiving the fewest dollars at $3 million.

Next, Kentucky citizens' views on education spending are explored in more detail. Specifically,

Table 6. Comparisons Between Allocations for Kentucky's Overall State Budget: 2007 & 1995

Budget Category	2007 Mean	2007 Rank	1995 Mean	1995 Rank
Education†	$26.3	1	18.0	1
Health Care	$14.3	2	12.1	2
Environment	$8.0	3	8.7	3
Economic Development	$7.0	4	7.5	6
Transportation	$6.8	5	8.6	4
National Guard	$6.2	6	4.4	11
Agriculture	$5.6	7	5.6	8
Human Resources	$5.5	8	5.7	7
Cultural Institutions	$4.6	9	4.0	12
Justice	$4.6	10	8.2	5
Labor and Worker's Compensation	$4.4	11	5.2	9
Tourism	$3.9	12	5.1	10
Finance and Revenue	$2.9	13	3.4	13

†To be comparable with the 1995 survey, the 2007 survey's *Schools* and *Universities* categories were combined into the single *Education* category.

the mean allocation for each category of the Public Education Budget is presented in Table 3. The "Local K-12 Public School" category receives the most out of any category with an average allocation of $34 million. The K-12 schools likely received the largest increase in resources because most citizens in Kentucky have had some personal interaction with K-12 schools, whereas a much smaller percentage have attended a public post secondary school. According to the American Community Survey 2005, 79 percent of people 25 years and over had at least graduated from high school while only 19 percent had a bachelor's degree or higher. The remaining three categories – "Vocational and Work Force Training Programs," "Kentucky Community and Technical College System" (KCTCS), and "State Four-year Colleges" would receive approximately the same allocation in funding of roughly $22 million per program. This result implies citizens prefer that vocational / work force training programs, KCTCS and the state's four-year colleges grow at approximately the same rate.

It is interesting to compare respondents' allocations with the allocations of the actual budget. Tables 4 and 5 compare actual budget figures for the 2007 Kentucky State Budget to respondents' allocations for the additional $100 million. Interestingly in Table 4, the top three spending categories in the 2007 actual Overall State Budget are also the categories receiving the three highest allocations from respondents. Similarly, the "Tourism" category ranks low in the actual budget and in respondents' allocations. Table 5 shows the similarity between the actual budget ranking and respondent ranking for the Public Education Budget. The rankings match perfectly even though magnitudes vary substantially. In general, it appears that respondents' rank orderings are similar to the rank order of the actual budget. The primary difference between the two is that respondents tend to allocate more evenly than the state government.

In order to obtain a sense of respondents' preferences over time, a comparison between the current survey results and results obtained from the University of Kentucky's Center for Business and Economic Research in 1995 (Blomquist et al. 2004) is also performed. The results are striking. Table 6 shows that after 12 years, the top three categories receiving the most dollars allocated remain the same. In addition, of the top five allocations in 2007, four are in the top five in 1995. Furthermore, the fifth category, "Economic Development," was ranked sixth in 1995. Kentuckians place an emphasis on education, health care and environmental programs, and this preference appears to be stable over time.

Conclusion

The work here has presented a method for eliciting citizens' preferences over state spending categories. One limitation of the work in the context of the current economic climate is that the survey focuses on an expansion in spending areas. Indeed, when the survey was written, an expansion seemed to be appropriate considering Kentucky's budget surpluses in fiscal years 2005 and 2006. The state legislatures of the 2008-2010 budgetary session faced a very different concern, however. Instead of surplus funds, legislatures were faced with the task of how to trim budgets in order to adjust the state's budget shortfall. Many strategies were discussed and few public programs were spared cuts in funding. Understanding the preferences of citizens when faced with decisions to cut programs would result in a public more satisfied, or less dissatisfied, with public programs.

Although the present work did not ask respondents about a budget shortfall, clearly lessons can be learned from the preferences elicited from citizens in the survey. There appears to be a strong preference for allocating dollars to educational programs. This preference appears in both 1995 and 2007. Similarly, respondents allocate fewest dollars to the "Finance and Revenue" category in both years. One possible way of using the elicited preference information would be to assume that citizens would prefer the largest budget cuts to occur in categories to which they allocated the fewest dollars . If that assumption holds true, then citizens' preferences would indicate that a budget shortfall be address by cutting the most funds from the "Finance and Revenue category". The category to receive the fewest budget cuts would be the "Schools" category. Ultimately if budget actions in response to a budget shortfall are to be consistent with the preferences of the citizenry, a survey questioning citizens on their preferences regarding budget cuts would be appropriate.

References:

Blomquist, Glenn C., Michael A. Newsome, and D. Brad Stone. 2004. "Public Preferences for Program Tradeoffs: Community Values for Budget Priorities." *Public Budgeting & Finance* 24, no. 1 (Spring): 50-71.

Dillman, Don A. 2007. *Mail and Internet Surveys: The Tailored Design Method*. Second ed. Hoboken: John Wiley & Sons.

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Kentucky's Urban/Rural Landscape:
What is driving the differences in wealth across Kentucky?

Alison F. Davis

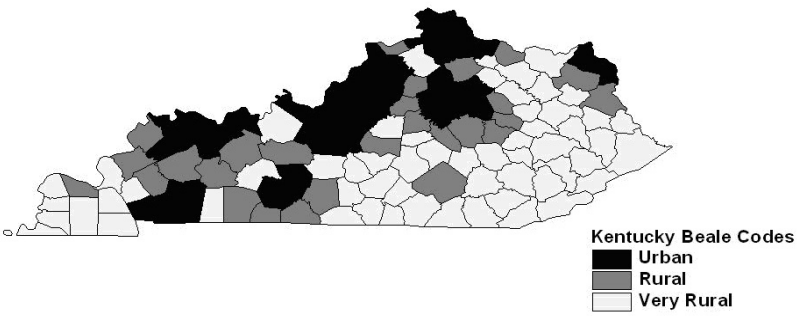
Kentucky has persistently trailed behind its peer states in income and income growth, regardless of its relatively strong growth in the urban areas. It appears that Kentucky lags behind because of slow growth in its rural communities. This article empirically addresses the differences between the urban and rural counties of Kentucky. There is evidence that there are significant differences in many socio-economic and quality of life indicators between the rural and urban counties. In addition, while we typically classify Kentucky as either urban or rural, there is further significant variation among just the rural counties. Preliminary evidence suggests that the issues that plague rural areas, such as labor force participation rates, educational attainment levels, and lack of health insurance coverage, negatively influence the average household income in a county. Changes in industry, such as the loss of manufacturing or mining jobs, did not appear to be significantly related to income. Therefore, the results provide support for rural economic development policy to be directed towards the individual, specifically the improvement of workforce skills.

I. Introduction

While some of Kentucky's neighboring states have improved their status in per capita income, Kentucky has remained stagnant. Kentucky, with a per capita income of $31,111, is currently ranked 46th in the nation with only South Carolina, Arkansas, West Virginia, and Mississippi faring worse.[1] However, there are vast differences across the rural and urban areas of Kentucky that are driving this result. The urban areas of Kentucky have witnessed significant growth; in some instances outpacing the growth of many of the urban areas in Kentucky's bordering states. Sanford and Troske (2007) found that the lack of progress in Kentucky is largely determined by the low level of growth in the rural areas of Kentucky, particularly in Eastern Kentucky. Policy that is created to address the economic issues of Kentucky, treating the state as a whole, will likely be unsuccessful because of the large degree of heterogeneity in its people, industry, and landscape. This paper examines the differences between urban and rural Kentucky and estimates the impact of demographic, economic, and quality of life variables on per capita income at the county level.

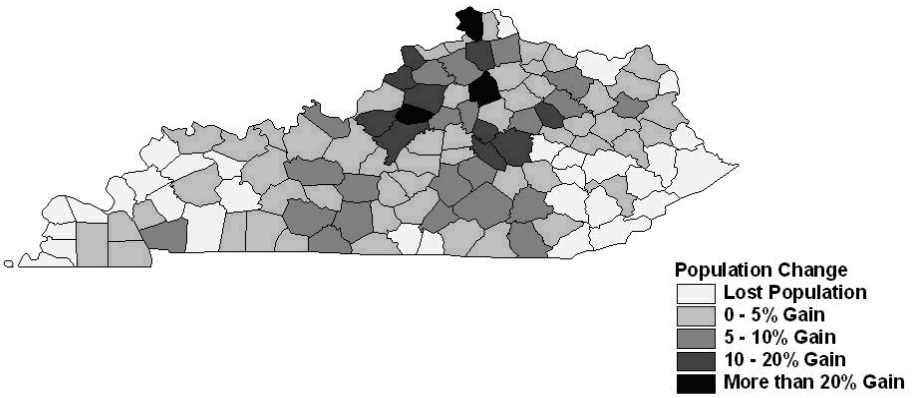
Kentucky is composed of 120 counties where thirty-five counties are classified as urban and the remaining 85 counties are rural based on the Department of Agriculture's Urban-Rural continuum codes (sometimes called Beale codes) produced by their Economic Research Service (ERS). These codes from 1 (most urban) to 9 (most rural) allow counties to be ranked on their degree of rurality. Figure 1 illustrates the distribution of rurality across Kentucky. Most of the rural areas are in Eastern, South Central and far Western Kentucky.

Figure 1: Kentucky's Urban/Rural Landscape



Source: Author's calculations from ERS Urban Rural Continuum Codes, 2003

Figure 2: Kentucky Population Change 2000 - 2006



Source: Author's calculations from U.S. Census Bureau, 2000 – 2006.

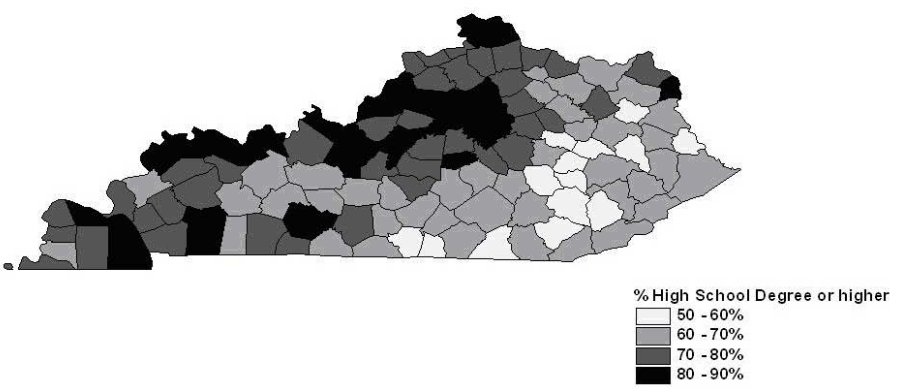
II. Kentucky Demographics

Approximately 4.2 million people live in Kentucky. The largest urban areas account for about 2.4 million people; thus there are about 1.8 million residents living in rural areas of Kentucky.[2] From 2000 – 2006 there has been a slight outmigration of population from areas in Eastern Kentucky and Western Kentucky and a large influx of people into Kentucky's metropolitan areas. From Figure 2, we cannot determine if the rural residents are moving into the Kentucky cities or are instead moving out of the state.

Education has always been considered the driving factor in economic growth in Kentucky. Many believe that implementing policies that would improve high school graduation rates would have an enormous impact on the incomes of rural areas. Of course, no such policy exists in any state to combat high school dropout rates because researchers cannot explain why education rates are low; without understanding the cause, it is impossible to adequately address the problem. Figure 3 illustrates the distribution of education as measured by the average percentage of individuals twenty-five years of age or older with at least a high school degree. In Eastern and South Central Kentucky, there are numerous counties where the high school graduation rate is hovering around 50 to 65%. These numbers have been improving over time, but many of the rural areas of Kentucky still fall short of the national average.

Figure 4 provides an interesting depiction of the role age might play in rural economies. The Western portion of the state, where agriculture still plays a large role in economic development, has a high percentage of older individuals (aged 65 and older). These senior citizens are likely either still working on the farm or are retired. The future of agriculture is uncertain when there are not future generations willing to take over the family farm. Also one can assume that many Kentuckians would like to retire where they were born, particularly in these rural areas of Kentucky where land and nature are at its best. However, many of these areas lack the infrastructure to support a retirement community, such as health facilities and transportation services, and thus, at their current state, are not attractive to older individuals.

Figure 3: Percentage of individuals, 25 years of age or older, with at least a high school degree

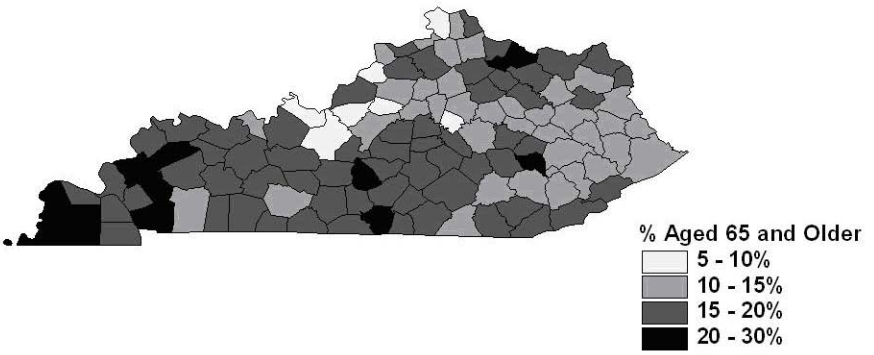


Source: Author's Calculations from U.S. Census Bureau, 2000

III. Agriculture in Kentucky

Kentucky's rural areas were at one time dominated by agricultural activity. Thus, when describing activity at the county level, it is important to recognize the role of agriculture in today's economy. In the past, tobacco production was typically a successful enterprise, regardless of farm acreage. The livestock industry and the equine markets also contributed to farm income. The tobacco buyout initiated in 2005 changed the agricultural landscape in Kentucky. The tobacco buyout program injected millions of dollars into rural areas as a result of land being taken from tobacco production because of changes in price floors and quotas. The intended goal was to promote local economic development either through new non-agricultural enterprises or other value-added, new agricultural opportunities in rural areas. The results from this relatively new program on Kentucky agriculture cannot be identified until at least the 2007 Census of Agriculture data are released. In addition, because of the newness of the program, significant impacts on a county's economy in terms of jobs and income changes are not expected to be visible for quite some time.

Figure 4: Percentage of population aged 65 and older



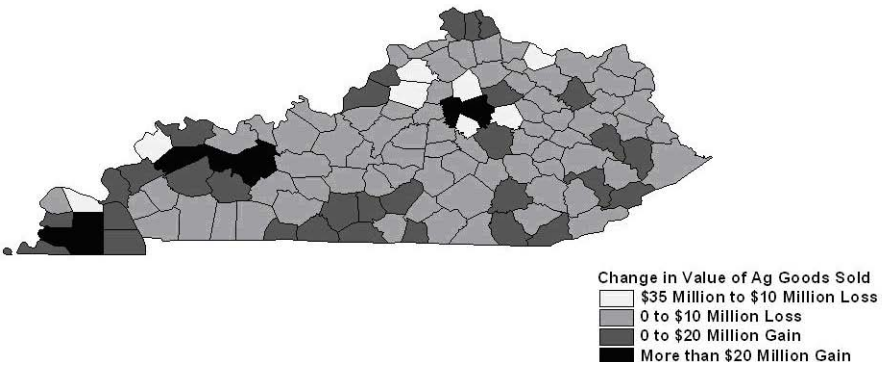
Source: Author's calculations from U.S. Census Bureau, 2000

Currently, Kentucky's top five agricultural commodities are[3]:

1. Cattle and Calves ($623 Million)
2. Poultry and Eggs ($561 Million)
3. Grains and Oilseeds ($518 Million)
4. Horses, ponies, donkeys and mules ($491 Million)
5. Tobacco ($404 Million)

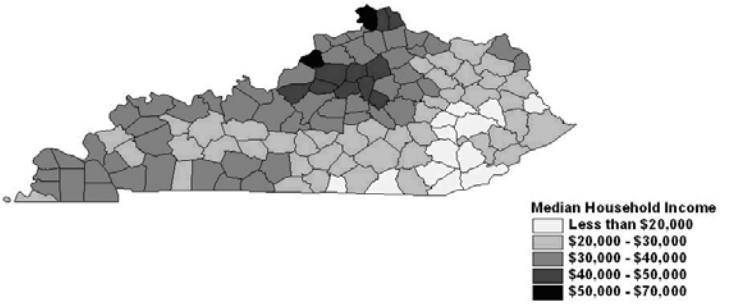
Overall, a large majority of the counties (83 of 120) either realized a substantial or moderate loss in agriculture, as measured by the difference in the market value of goods sold from 1997 to 2002 (Figure 5). All over the country, the age of the average farmer is in the fifties, and when they retire, there are not new farmers willing to take over. Thus, counties that used to rely on agriculture for a large portion of their income must turn to other industries for job and wealth creation.

Figure 5: Change in market value of agricultural goods sold, 1997 to 2002



Source: Author's calculations from National Agricultural Statistics Service, 1997 and 2002

Figure 6: Median household income

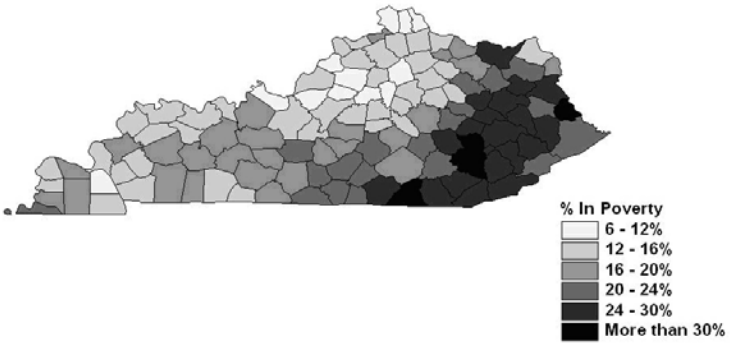


Source: Author's calculations from U.S. Census Bureau, 2004

IV. Kentucky's Economic Situation

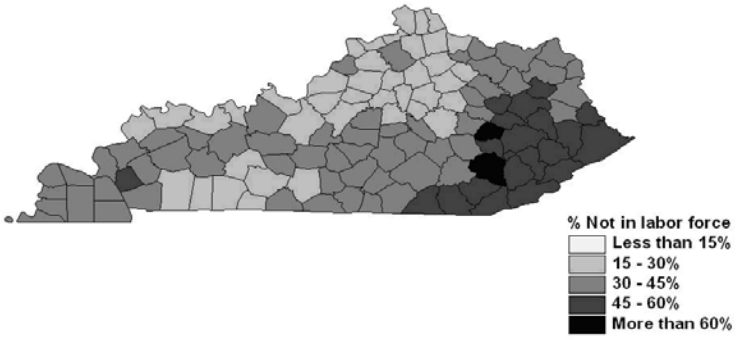
As mentioned in the introduction, Kentucky ranks in the bottom 10% nationally in per capita income. Over the decades this ranking has not changed. Regardless of the high growth in the urban areas and the moderate to slight growth in the rural areas, Kentucky has not been able to outpace its Southern neighbors. Figure 6 shows a very distinct delineation of income regions. Appalachian and South Central Kentucky ranks the lowest, followed by Western Kentucky and then Central Kentucky. As would be expected, poverty levels follow a very similar trend (Figure 7).

Figure 7: Percentage of all people in Poverty



Source: Author's calculations from U.S. Census Bureau, 2004

Figure 8: Percentage of Kentucky males not in the labor force



Source: Author's calculations from U.S. Census Bureau, 2000

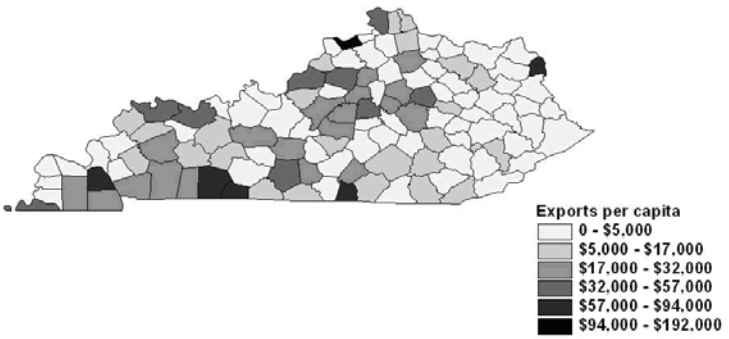
Economists and policy makers have tried to understand the reasons behind lagging incomes. The most obvious explanation was described earlier, the low levels of education attainment rates. However, there are other factors that likely play a role as well. One of the striking results is the labor force participation rate of males, ages 18 to 65. This is considered the most likely subset of the population to be both in the labor force and working. Figure 8 shows that in many Eastern Kentucky counties, over 50% of men of working age are not considered part of the labor force. In two counties, over 60% of the men are not part of the labor force. This suggests that only 40% to 50% of men of working age are receiving a paycheck; others either have no source of income or are receiving disability payments and/or public assistance.

The business climate of any area can be measured in several ways. For example, the value of manufacturing exports, the number of new establishments, and changes in payroll are all possible indicators. To evaluate the entrepreneurial climate, the number of patents and the number of nonemployee establishments are measured.

The value of manufacturing exports does not appear to follow a predicted pattern (Figure 9). Eastern Kentucky and some areas of Western

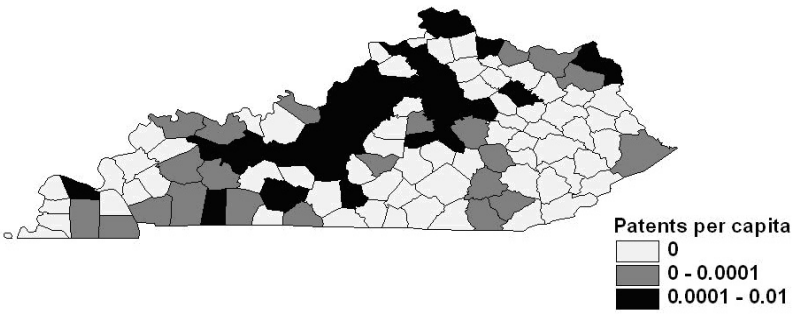
Kentucky have very little if not zero manufacturing exports. Counties on the Tennessee border and the Ohio River have higher levels of exports as well as some of the urban counties. Many rural counties did not receive a single patent in 1999 (Figure 10), the most recent year of data available. It is of little surprise that the counties with higher levels of patents per capita are in the metropolitan areas where the universities and high-tech firms are located. In addition, rural counties have a smaller share of nonemployment establishments, suggesting a smaller number of entrepreneurs (Figure 11).

Figure 9: Manufacturing exports per capita



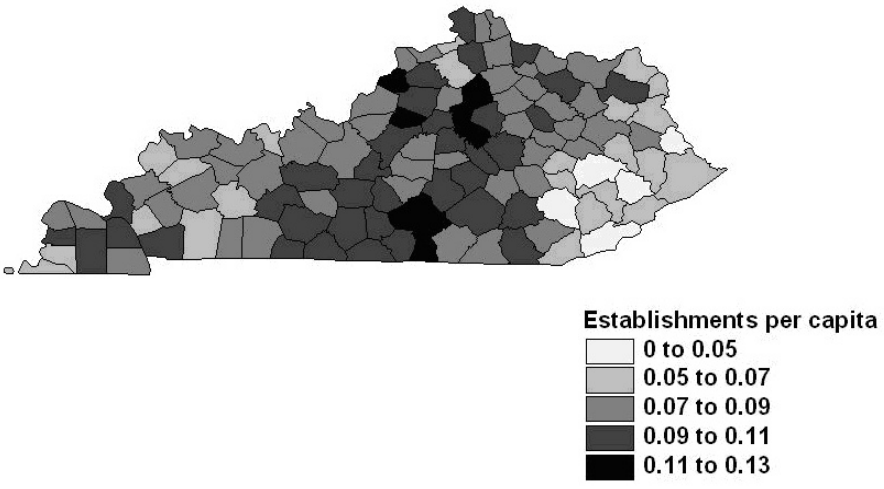
Source: Author's calculations from Economic Census, 2002

Figure 10: Patents per capita



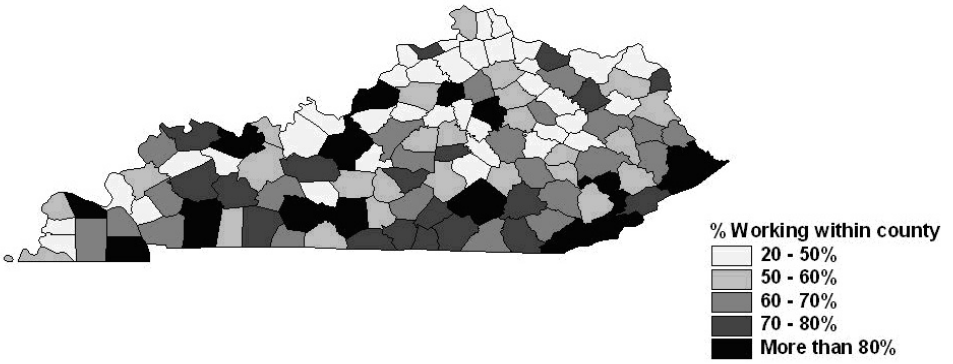
Source: Author's calculations **from U.S. Patents Office, 1999**

Figure 11: Nonemployer Establishments Per Capita



Source: Author's calculations from Economic Census, 2002 Nonemployer Statistics

Figure 12: Percentage of individuals working within county of residence



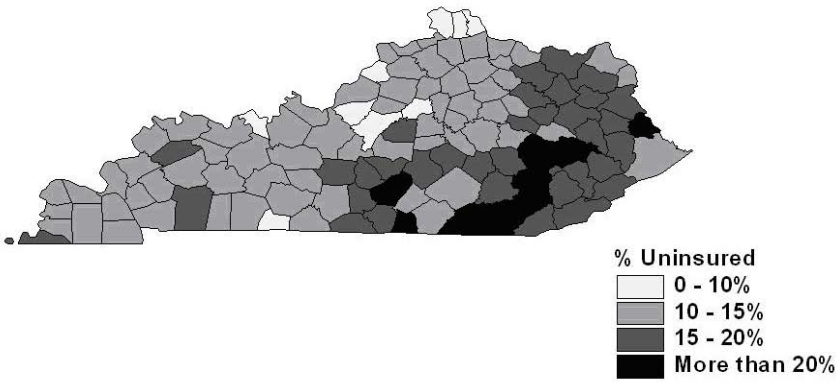
Source: Author's calculations from U.S. Census Bureau, 2000

V. Kentucky's Quality of Life

There are other factors that indicate the satisfaction of an individual living in a particular county or region besides income-related measures. These indicators include accessibility, transportation, crime, health, and natural amenities. Figures 12 and 13 provide a brief overview of how some of these indicators vary over the state and throughout different rural regions. Commuting long distances takes time away from other activities. Figure 12 is interesting in that it has several interpretations. In the counties that surround the three major metropolitan areas, Lexington, Louisville, and Northern Kentucky, many individuals commute out of their county into an urban county. Thus we expect that fewer people would be working in their county of residence. However, once we move out to the rural counties, many individuals are commuting out of their county either to work in the urban areas or commuting to surrounding counties because the jobs are not available within their own county. Essentially, this figure shows that there might be a differentiation between necessity and choice. Those who live near urban counties might have made the job choice first and then purchased a home in a surrounding county. In rural counties, residents have chosen where to live first and then must commute out of the county because of limited job selection.

Another factor contributing to quality of life is health status. There are numerous indicators that measure health status: lack of physical activity, prevalence of obesity, smoking rates, cancer rates, access to primary care, and the percentage uninsured. Figure 13 illustrates the uninsured rates across Kentucky. High rates of uninsured can be found in Eastern and South Central Kentucky. The problems of not having health insurance are two-fold. One, individuals do not seek preventative care and only visit a health care provider after they are already ill or in an emergency situation. Second, the uninsured often visit public hospitals for non-life threatening issues and thus put a strain on hospital finances when they are unable to pay their bill.

Figure 13: Percentage of individuals without health insurance



Source: Author's calculations from www.kentuckyhealthfacts.org, 2007

Table 1: Urban and Rural Demographic, Economic, and Quality Of Life Differences

Variable	Urban Average	Rural Average
Demographic Variables		
Population, 2005	50,498	16,401
Population 5 years in same house, (1995-2000 Percentage)	54.47%	61.95%
Population per square mile, 2000	221.76	61.25
High school degree or more (Percentage, 2000)	79.72%	67.30%
Aged 65 and older (Percentage, 2000)	11.70%	13.96%
Economic/Business Variables		
People of all ages in poverty - percent 2004	13.22%	20.55%
Median value of specified owner-occupied housing units, 2000	$90,403	$61,925
Median household income 2004	$42,148	$29,847
Males not in labor force (Percentage)	27.72%	39.17%
Residents working within county (Percentage)	52.32%	61.90%
Federal Government expenditure per capita FY, 2004	$5,873	$7,164
Patents Per Capita	0.000149	0.00003
Not in labor force (Percentage)	35.70%	46.03%
Receiving Public assistance (Percentage)	2.95%	5.17%
Civilian labor force unemployment rate, 2006	5.50%	6.80%
Manufacturing value of shipments, per capita, 2002	$18,760	$11,011
Wholesale sales of establishments with payroll, per capita, 2002	$16,096	$2,293
Retail trade sales of establishments with payroll per capita, 2002	$7,826	$6,852
Working in White Collar job (Percentage)	27.09%	25.79%
Additional Quality of Life Indicators		
Average travel time to work for workers 16 years, 2000	25.88	26.96
Uninsured Rate, 2007 (Percentage)	12.42%	15.92%
Drug Arrests (Per 100,000 population)	940	1089
Crime Per Capita	0.036	0.019
Mortality Rates (Per 100,000 population)	976.8	1051.7

VI. The Determinants of Per-Capita Income: A County-Level Study

The previous section used many illustrations to measure the heterogeneity of Kentucky's residents across all counties. In this section, we measure demographic, economic, and quality of life differences between urban and rural areas. Furthermore, we breakdown Kentucky's rural areas into "rural" and "very rural" to test if there are even substantial differences among Kentucky's rural regions. As would be expected given the figures above, the urban and rural areas exhibit very different characteristics (Table 1). We will just highlight a few points of interest. A larger percentage of individuals remain where they were five years ago in rural areas. This statistic suggests that rural people are less mobile. This result is not surprising, yet it does highlight the value that individuals place on their rural communities and that policies that are created to pull people away from home might not work as effectively as we

Table 2: Examining Differences Across Rural Counties

Variable	Very Rural (Beale Codes 7-9)	Rural Average (Beale Codes 4-6)
Demographic Variables		
Population, 2005	14,434	20,841
Population 5 years in same house, (1995-2000 Percentage)	63.84%	57.90%
Population per square mile, 2000	52.26	80.57
High school degree or more (Percentage, 2000)	64.7%	72.7%
Aged 65 and older (Percentage, 2000)	14.04%	13.78%
Economic/Business Variables		
People of all ages in poverty - percent 2004	22.3%	16.8%
Median value of owner-occupied housing units, 2000	$57,879	$70,614
Median household income 2004	$24,609	$31,537
Males not in labor force (Percentage)	42.0%	33.1%
Residents working within county (Percentage)	60.1%	64.4%
Federal Government expenditure per capita FY, 2004	$7,710	$6,910
Patents Per Capita	0.34	1.07
Not in labor force (Percentage)	48.5%	40.8%
Receiving Public assistance (Percentage)	5.9%	3.6%
Civilian labor force unemployment rate, 2006	7.11%	6.15%
Manufacturing value of shipments, per capita, 2002	$6,852	$17,012
Wholesale sales of establishments, per capita, 2002	$2,019	$2,688
Retail trade sales of establishments per capita, 2002	$6,881.8	$6,870.8
Working in White Collar job (Percentage)	26.9%	23.4%
Additional Quality of Life Indicators		
Average travel time to work for workers 16 years, 2000	27.75	25.25
Uninsured Rate (Percentage)	17.0%	13.6%
Drug Arrests (Per 100,000 population)	1063.4	1143.9
Crime Per Capita	0.016	0.026
Mortality Rates (Per 100,000 population)	1063.3	1026.7

would believe. There are significantly higher rates of public assistance, federal spending, poverty, and unemployment in rural counties. In addition, while drug arrests are higher in rural areas, crime is lower.

We were also interested in examining differences among rural counties. We have seen that urban counties are quite different than rural but are there discernible differences between rural counties with rural-urban continuum codes between four and six (rural but could be close to an urban area) and those that are between seven and nine (most rural). Table 2 provides the averages for the same variables as Table 1 but for the two different rural areas. Using a difference in means t-test with $\alpha = 0.05$, those variables that were found to be significantly different between the two rural areas are in bold. There are few surprises in the results. In most instances the very rural counties are significantly more "distressed" in all three categories, particularly

Table 3: Semilog Regression Results
Dependent Variable is Log Median Household Income†

	Coefficients	*Standard Error*
Intercept	9.4560	0.1471
Demographic Indicators		
Population Change (%)	0.0055	0.0012
Aged 65 and older (%)*	-0.0053	0.0031
High School Degree or more (%)	1.8723	0.1421
Economic Indicators		
Not in Labor Force, male (%)	-0.3746	0.1137
Manufacturing Per Capita	0.0007	0.0003
White Collar Worker (%)	-0.2865	0.0988
Quality of Life Indicators		
Commute Within County of Residence (%)	-0.0024	0.0004
Uninsured Population (%)	-0.0088	0.0029
Crime Per Capita	0.5550	0.2448
R^2 = 0.9464		

† All variables listed are statistically significant with α = .05, except for variables denoted with an asterisk which is significant at α = 0.10.

when measured with economic indicators.

Successful rural economic development policy relies on understanding the factors that influence the targeted intended outcome. In most instances, policy is created to improve the wealth of a region's residents. Thus, in the section, we will investigate what factors influence household income at the county level. We will utilize the data in the previous section because all of these variables are expected to impact income, either directly or indirectly.

The results from the regression analysis are given in Table 3. In total, there were 120 observations, one representing each county in Kentucky. The dependent variable was defined as the natural log of median household income. We will briefly interpret the results. All of the signs on the coefficients for the three significant demographic variables were as hypothesized. Population growth is typically a consequence of a region successfully attracting new residents. Individuals of working age would likely only move to an area where job prospects were promising, thus we would expect incomes to be higher in these communities. Counties with a high percentage of senior citizens are expected to have lower incomes because senior citizens are typically either not working or they are working part-time at relatively lower incomes. Of course, areas with higher educational attainments are associated with higher incomes on average. Small positive changes in educational attainment will reap relatively large income gains.

The results for the economic indicators suggest that the higher the percentage of males not in the labor force, the lower the median household income. This result was anticipated and is believed to be a very large influence on income. Improvements in male labor-force participation rates are associated with higher incomes.

We expected that white-collar workers earn on average higher incomes than blue-collar workers and therefore we would predict that counties with a high percentage of white-collar workers would have relatively higher household incomes. The results indicated that this prediction only holds in urban areas. In rural areas, white-collar workers likely get paid below-average incomes for their profession compared to urban areas, as well as below-prevailing wages in the blue-collar professions paid to workers in rural counties. Counties with a high value of manufacturing exports have higher incomes. This result was expected for two reasons. Manufacturing plants will likely hire some share of local workers. The more valuable the produced goods, the higher the incomes the firm will be able to pay their workers. In addition, manufacturing plants might also purchase some of their inputs

locally, thus infusing the local economy with dollars generated from a valuable export business.

There were three statistically significant quality-of-life indicators: the percentage of households commuting within the county, the percentage of uninsured individuals, and crime per capita. A county with a large share of households working within their county of residence will have lower average income, all else held constant. This result appears to support the notion that out of necessity people leave their home county and commute to surrounding counties or urban areas for work; staying home results in lower incomes. Counties with high levels of uninsured populations experience lower levels of income. This variable could be a proxy for a quality-of-job variable. Lower-quality jobs are typically low paying and often do not offer health insurance. Finally, areas with higher crime will have higher incomes. This result was not as hypothesized but this variable could also be measuring other indicators that might describe positive opportunities that you might also find in an urban area, such as high growth and quality job opportunities.

VII. Conclusion

In the past, we have explored Kentucky's standing in relation to the rest of the nation and the surrounding southern states. However, little has been done in the literature to examine how the rural and urban areas of Kentucky differ from one another. We have always known that we have at least two distinct economies, the cities of Kentucky and the lagging rural areas. This study examines, at the county level, the differences in demographic, economic, and quality of life conditions for urban and rural areas. We further differentiate the rural areas by rural-urban continuum codes to explore possible subtle differences that might be useful in designing effective policy tools.

In addition, we also investigate the factors that are correlated with household income at the county level. This county-level study has not been done in Kentucky before, and the results reveal that effective economic development policies should target the improvement in both high school education attainment rates and male labor force participation rates. Although it is uncertain exactly how to achieve improvements in both of these variables, we can conclude that there would likely be large payoffs to the rural regions of Kentucky in terms of higher incomes.

VIII. References

Sanford, Kenneth, and Kenneth Troske (2007), "Why Is Kentucky So Poor? A Look at the Factors Affecting Cross-State Differences in Income," 2007 Kentucky Annual Report," 1-10.

(Endnotes)

1 Bureau of Economic Analysis, State Personal Income 2007
2 U.S. Census Bureau 2006 estimate based on 2003 ERS Urban-Rural continuum codes.
3 U.S. Census of Agriculture, 2002

The Aluminum Industry in Kentucky

John Garen, Christopher Jepsen, and Frank Scott

This article summarizes recent trends in Kentucky's aluminum industry. Data from the Bureau of Labor Statistics and the Census Bureau show that employment and compensation in the industry have either held steady or declined in recent years. A similar trend can be seen for output, although productivity has grown substantially. Finally, safety statistics have no clear pattern.

I. Introduction

The aluminum industry has a substantial presence in Kentucky. In general, the state has a larger share of its workforce in manufacturing compared to the national average (Sanford and Troske, 2007). The aluminum industry is a major component of manufacturing, especially in Kentucky. Aluminum products differ widely in their nature, their production processes, and their level of technology. Examples of aluminum products include aluminum door and window frames in construction, high-tech aluminum alloys used in airplanes, aluminum foil and packaging products, aluminum ladders and flashlights, and aluminum water bottles.

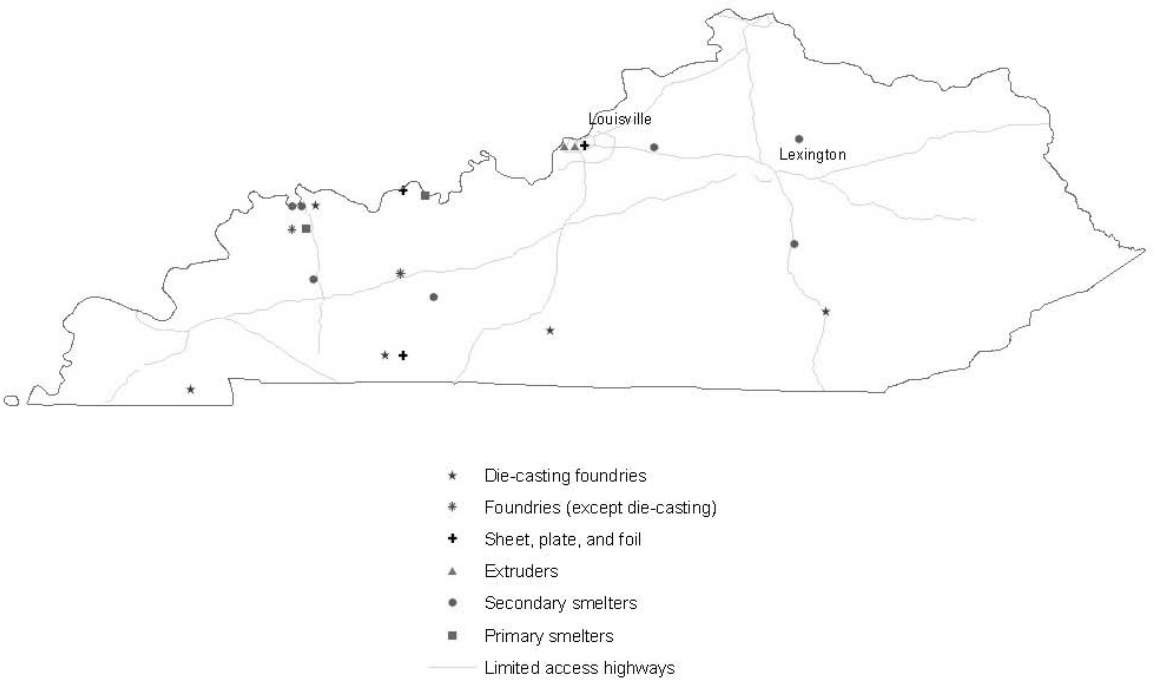
The North American Industry Classification System (NAICS) contains seven industry classifications related to aluminum manufacturing. Two categories deal with the production of aluminum. In primary aluminum production, alumina is smelted to produce primary aluminum. In secondary smelting and alloying of aluminum, aluminum scrap, and usually some primary aluminum as well, is smelted and alloyed into aluminum billets and other forms of commodity aluminum. The remaining five NAICS codes are for different aluminum manufacturing methods and products. They are: (1) sheet, plate, and foil manufacturing, (2) extruded product manufacturing, (3) other aluminum rolling and drawing, (4) die-casting foundries, and (5) foundries except die-casting.

Of these seven industries, four have a substantial presence in Kentucky. Primary aluminum production is rare in the United States. Although Kentucky does contain a small number of primary aluminum producers, the number is too small to allow the government to publish state-level statistics on primary aluminum production in Kentucky.[1] These primary smelters have a production capacity that equals approximately 16 percent of the U.S. primary smelting capacity (Kentucky Cabinet for Economic Development, 2008). Furthermore, these smelters have a workforce in excess of 1,000 employees.

State-level statistics also are not available for the broad category of other aluminum rolling and drawing, as well as for the category of foundries except die-casting. These two sectors appear to be smaller – in terms of workforce and production – than the other NAICS codes (Kentucky Cabinet for Economic Development, 2008). Therefore, we focus on the remaining four industry classifications for Kentucky. In this article, we discuss employment and compensation; productivity and output; and safety for each of these five NAICS codes. The focus is on recent trends in these areas. The Kentucky Cabinet for Economic Development (2008) provides detailed information on the state's aluminum industry, with a focus on the current status of the industry (as of 2008).

Figure 1 illustrates the presence of these industries in Kentucky. Each of the five sectors has multiple plants in Kentucky. Most of the plants are located near limited-access roadways (i.e. interstates and parkways), and several are located near the Ohio River. Louisville, Owensboro, and Henderson have multiple plants located in or near the city. In contrast, Lexington has only one secondary smelter, and the Kentucky suburbs of Cincinnati have no plants in these five sectors.

Figure 1: Aluminum Plant Locations in Kentucky



Source: Authors' calculations.

II. Employment and Compensation

Figure 2 shows recent trends in employment for Kentucky's aluminum industry using data from the U.S. Bureau of Labor Statistics (BLS). Although die-cast foundries were the sector with the largest employment in 2001, with nearly 4,000 employees in 2001, employment dropped to just above 2,000 employees in 2007. This decline in employment is matched with a decline in the number of establishments, which declined from 9 in 2001 to 5 in 2007.

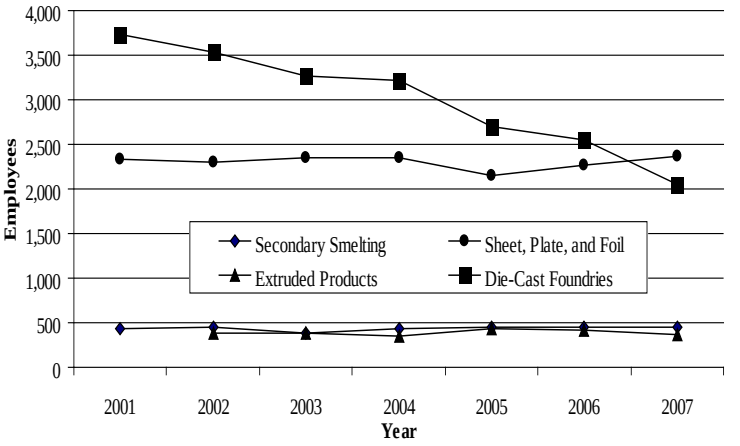
The sheet, plate, and foil sector has had relatively constant employment over the period, ranging from 2,200 to 2,400. However, the number of establishments has declined from 9 to 6 over the period. Employment is much smaller in the secondary smelting and extruded products classifications, where employment in each sector has hovered around 400 employees over the time period. The number of establishments has also remained relatively constant in each classification.

Looking at all four sectors together, we see that employment has declined from over 6,600 employees in 2002 to approximately 5,200 employees in 2007, a decline of more than 27 percent. As Figure 2 illustrates, this decline is being driven by the decreased employment in die cast foundries; in other sectors, employment was relatively constant.

Unfortunately, monthly data on employment in these sectors is not available, either for Kentucky or the nation as a whole. At this time, we cannot measure the extent of the effects of the current economic downturn on employment in these sectors of Kentucky's aluminum industry. However, the Bureau of Labor Statistics has shown that manufacturing employment for durable goods, which is likely correlated with employment in the Kentucky aluminum industry, has declined in August and September of 2008, in Kentucky as well as nationally.

Next, we look at average annual pay in each sector of Kentucky's aluminum industry. Figure 3 looks at trends in average pay by sector. Average pay varied across the four aluminum sectors, although it was relatively constant over the period. Average pay in sheet, plate, and foil grew substantially

Figure 2: Employment in Kentucky Aluminum Industry



Source: Quarterly Census of Wages and Employment, U.S. Bureau of Labor Statistics

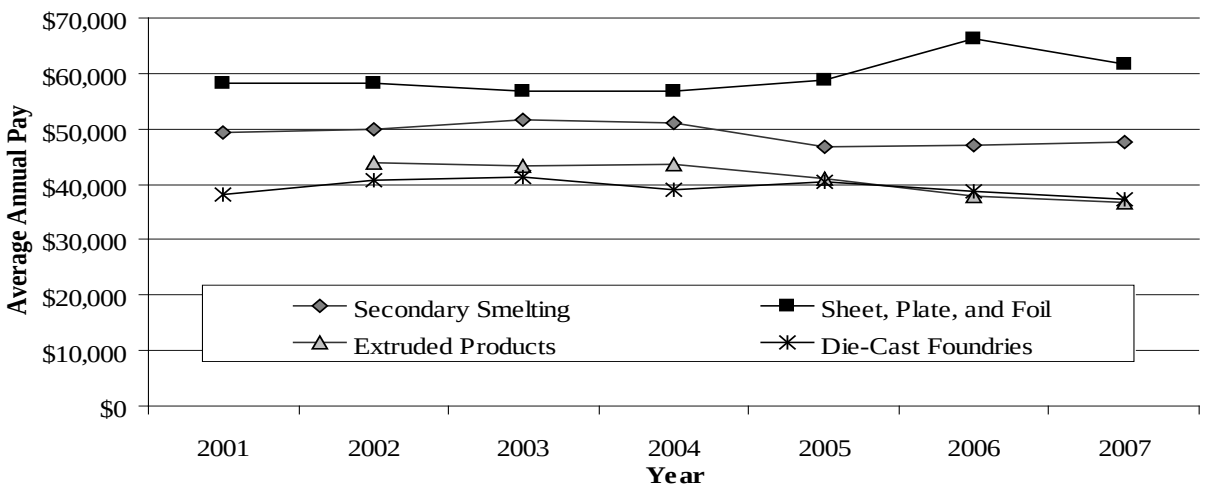
between 2005 and 2006 but was otherwise around $60,000 per worker (in 2006 dollars). Secondary smelting pay hovered around $50,000 per worker, with a slight decline between 2004 and 2005. Die-cast foundries and extrusions had the lowest average pay, less than $40,000 per worker by 2006. Both sectors had declines in average pay toward the end of the period.

In terms of average annual pay, workers in Kentucky's aluminum industry compare favorably with average annual pay for all private workers in Kentucky or nationally. The average annual pay for all private-sector workers in Kentucky was approximately $35,000 in 2007. Thus, workers in Kentucky's aluminum industry have higher annual pay than the state average. The national average was around $43,000 in 2007, which is below each sector except die-cast foundries.

III. Productivity and Output

We now turn to productivity and output statistics for Kentucky's aluminum industry. Figure 4 contains productivity information for the United States as a whole, as the Bureau of Labor Statistics (BLS) – our source for productivity data – does not publish state-level productivity statistics. The figure contains output per worker on a scale where the

Figure 3: Average Annual Pay for Workers in Kentucky Aluminum Industry



Source: Quarterly Census of Wages and Employment, U.S. Bureau of Labor Statistics

1997 level is equal to 100. Thus, the statistics can be interpreted in terms of increases or decreases compared to 1997 levels. The BLS reports data for sectors of the aluminum industry, "Alumina and Aluminum Production and Processing" and "Nonferrous metal foundries". In terms of the NAICS codes, the production and processing category includes primary and secondary smelting; sheet, plate, and foil, and extrusions. The foundries category includes aluminum foundries, both die-cast and non-die-cast, as well as other nonferrous metals such as brass, bronze, and copper.

The figure illustrates that productivity in the production and processing sector has increased dramatically starting in 2001. In 2006, output per worker was 50 percent greater than it was in 1997. For foundries, output per worker increased substantially between 2001 and 2002, followed by a minor increase between 2001 and 2006. Over the last decade, output per worker has increased 23 percent. In both sectors, productivity actually decreased between 1999 and 2001. Thus, one possible explanation for the lack of growth in employment has been the increase in productivity. Aluminum manufacturers can produce the same amount of output with fewer workers.

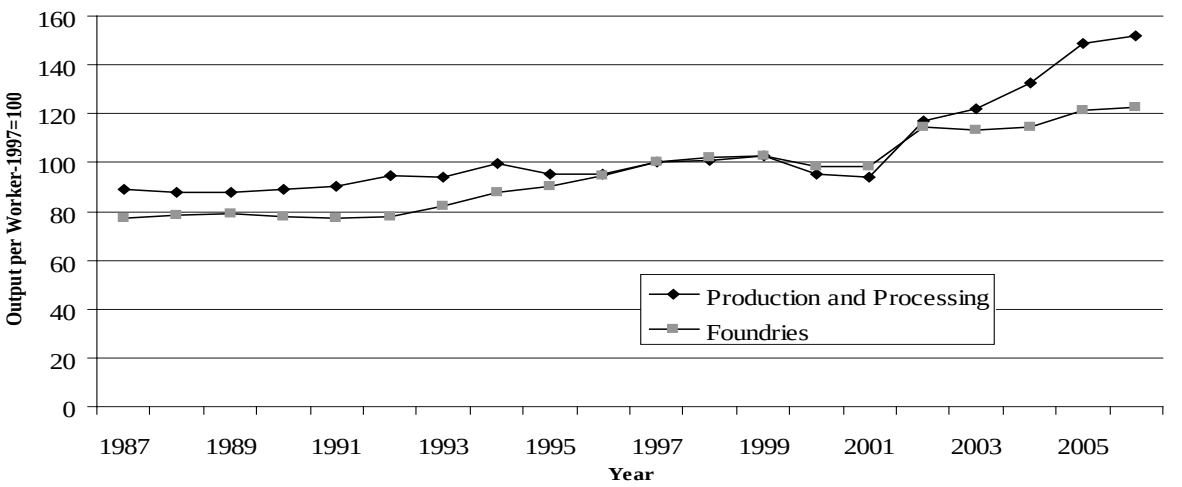
Next we study trends in output. Again, output data are not available at the state level, so we look at national trends. Specifically, Figure 5 contains information on value of shipments (in 2006 dollars) using data from the Census Bureau. The data contain five categories of aluminum production. The NAICS code for extrusions is combined with the NAICS code for other aluminum rolling and drawing, although extrusions makes up nearly 90 percent of this combined category during the time period when both categories are reported separately (1997 to 2001). The Census Bureau combines die-cast and non-die-cast foundries into a single foundries category.

Figure 5 illustrates that the value of shipments has declined for most aluminum sectors since 1988, at least at the national level. Sheet, plate, and foil shipments have increased in value since 2003; by 2006 the value had reached the levels of the late 1990s. The value of castings shipments peaked in 1996, declined substantially in 1997, and declined since 2002. Extrusions have remained relatively constant over the time period, with a value between 5 and 8 billion dollars. Secondary production of aluminum, largely from scrap, has increased from 4.5 billion dollars in 2003 to 7.0 billion dollars in 2006 for an increase of more than 50 percent from 2003 levels. In contrast, primary production has decreased by half over the period, from 12 billion dollars in 1988 to 6 billion dollars in 2006.

IV. Safety

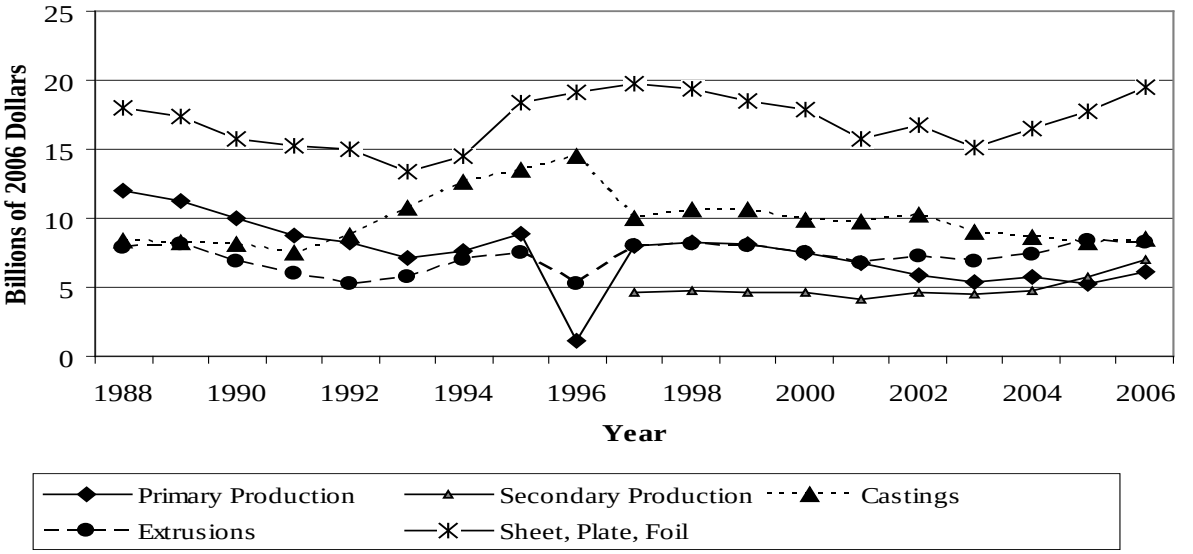
The U.S. Bureau of Labor Statistics recently began producing safety statistics as the state level. Therefore, we briefly consider the safety of the

Figure 4: Productivity in U.S. Aluminum Industry



Source: U.S. Bureau of Labor Statistics

Figure 5: Value of Shipments for U.S. Aluminum Industry



Source: U.S. Bureau of Labor Statistics

aluminum industry in Kentucky. Table 1 contains the illness and injury rate per 10,000 full time workers. Again, the BLS has two categories of interest: "Alumina and Aluminum Production and Processing" and "Nonferrous metal foundries". In addition, we report the illness and injury rate for all Kentucky jobs as a reference point. The table shows that aluminum production in Kentucky has a much lower illness and injury rate than the statewide average for all jobs; however, the rate has been rather volatile over the period. It was at 155.7 illnesses and injuries in 2003, compared with 35.6 in 2004. By 2006, the rate had increased to 85.6. In contrast, the statewide rate was between 150 and 200 for all four years.

In contrast, foundries had a much higher illness and injury rate, both compared to aluminum production and compared to the statewide average for all jobs. The rate for foundries was at 550.2 for 2004, which translates into a rate of 5.5 percent. In other words, an average of 5.5 percent of foundries workers in Kentucky had an illness or injury in 2004.[2] The illness and injury rate had fallen by half to 283.1 illnesses / injuries per 10,000 full time workers by 2006.

The right half of the table contains the same statistics for the U.S. rather than for just Kentucky. The illness and injury rate for aluminum production is lower in Kentucky than in the U.S. from 2004 to 2006; in fact, the rate in Kentucky is half the U.S. average rate. From this statistic, however, we cannot tell why the rate is lower. For example,

Table 1: Injury and Illness Rate per 10,000 Full Time Workers in Kentucky and U.S.

	Kentucky			U.S.		
Year	Aluminum	Foundries	All	Aluminum	Foundries	All
2003	155.7		191	149.1	260.3	150
2004	35.6	550.2	183.9	115.7	282.4	141.3
2005	74.8	416.9	178	171.1	289.5	135.7
2006	85.6	283.1	150	155.4	253.2	127.8

Source: Survey of Occupational Injuries and Illnesses, U.S. Census Bureau

Table 2: Median Days Lost for Kentucky and U.S. Workers

	Kentucky			U.S.		
Year	Aluminum	Foundries	All	Aluminum	Foundries	All
2003	14		6	12	7	8
2004	11	4	7	16	9	7
2005	7	4	7	7	5	7
2006	30	2	8	8	7	7

Source: Survey of Occupational Injuries and Illnesses, U.S. Census Bureau

Kentucky aluminum producers may specialize in the production of types of aluminum that have lower illness and injury rates, such as sheet, plate, and foil. Another possibility is that Kentucky factories have the same production mix as the U.S. average but for some reason have fewer illnesses and injuries due to better equipment, more safety-conscious employees, luck, etc. Kentucky foundries had higher illness and injury rates than the national average in 2004 and 2005, but Kentucky rate is slightly lower in 2006. Finally, when we look at all jobs, we see that Kentucky has a higher illness and injury rate than the national average, and this difference has persisted in every year from 2003 to 2006. At the national level, illness and injury rates have declined every year for each of the categories reported in the table.

Although the illness and injury rate tells us about the likelihood of a worker becoming ill or injured, it says nothing about the severity of the ailment. Table 2 contains the median number of days missed for the same set of industries and locations as in Table 1. Aluminum production in Kentucky has a high and volatile number of median days lost, ranging from seven days in 2005 to 30 days in 2006. With the exception of 2005, these numbers are much higher than the average of all jobs, either in Kentucky or in the U.S. The numbers are also a lot higher than for the U.S. average for aluminum production. Thus, even though the aluminum production jobs had fewer illnesses or accidents than the rest of the nation or than the average Kentucky job, the duration of illness or injury is much longer for Kentucky aluminum production. Thus, the overall effect on total number of days away from work is unclear: fewer workers are away from work but, once away, they miss more days of work.

In Table 2, we see that foundries have lower median days lost in comparison to aluminum production or to the average Kentucky job. The median number of days missed is between two and four days. This number is lower than for aluminum production or for the average in Kentucky or for the national averages for foundries, aluminum production, or all jobs. Again, however, the total days missed is unclear, since foundries have more absences of shorter duration. Hopefully, the BLS will provide such information in the future.

V. Conclusion

Kentucky's aluminum industry has shown mixed signals in the last few years. Employment has held relatively constant except for a dramatic decline in die-cast foundries. Average annual pay has been relatively constant, when measured in real terms, except for a huge decrease for foundries other than die-cast. At the national level, productivity has increased substantially since 2001. On the other hand, the value of shipments has decreased for most segments of the aluminum industry.

The data on safety in Kentucky's aluminum industry is unclear. Although primary production has fewer illnesses and injuries compared to the national average, the median number of days missed is higher. Conversely, Kentucky's foundries have a higher number of worker injuries and illness, but the median number of days missed per incident is lower.

With the recent economic downturn, the near future for Kentucky's aluminum industry is concerning. Kentucky's manufacturing employment in general has declined substantially in recent months. Troubles in the automotive industry will affect Kentucky, as the state is heavily vested in building automobiles and providing parts for automobiles, including aluminum-based parts. The size and length of the downturn in Kentucky's aluminum industry is unclear, but it clearly depends on the national economy and the manufacturing component of it in particular.

VI. References

Kentucky Cabinet for Economic Development (2008), "Profile of Kentucky's Aluminum Industry"

Sanford, Kenneth, and Kenneth Troske (2007), "Why Is Kentucky So Poor? A Look at the Factors Affecting Cross-State Differences in Income," 2007 Kentucky Annual Report," 1-10.

(Endnotes)

1 In the summer of 2008, Kentucky had two primary aluminum smelters: Alcan's facility in Robards and Century Aluminum's facility in Hawesville.

2 This rate assumes that each worker is injured at most one time per year.

KAM Business Manufacturing Confidence Survey

Anna Laura Stewart

The Kentucky Business Manufacturing confidence survey is produced annually through the joint efforts of the Kentucky Association of Manufacturers and the Center for Business and Economic Research. The survey asks businesses to report on their actual performance over the past year and to make predictions for the next year in areas such as employment, sales, profits, capital expenditures and industrial production. Among other findings, the 2008 survey shows the lowest levels of performance and expectation for the future in the history of this survey. This is consistent with the downturn in the U.S. economy. Last year's report showed an expected downturn in the economy, the first downturn in many years. But even the projected downturn did not predict the current decline. Problems affecting the overall growth of the state and national economy include the tightening of the credit market and a fall in consumer confidence. Given the current volatility of the economy, it is difficult to predict the economic environment for manufacturers and whether their expectations will coincide with the reality of the economy in 2009.

Introduction

This annually released report on business confidence in the manufacturing sector is the sixth in an on-going partnership between the Kentucky Association of Manufacturers (KAM) and the University of Kentucky's Center for Business and Economic Research (CBER). This study focuses on several performance indicators such as sales, employment and profit. This year the outlook for all of these measures are at their lowest levels since CBER began producing the business confidence survey. No more than a third of respondents expect to experience growth in any of the above measures and two-thirds of respondents expect either no change or a decline. A continuing downward trend is expected for the manufacturing sector in Kentucky.

Data for this report represents the results compiled from the 2008 KAM Business Confidence Survey along with data from earlier reports based on previous years' surveys. The survey was administered in October and November of 2008. Surveys were sent to 2,085 Kentucky-based manufacturing establishments with at least 15 full-time employees. Businesses were asked to answer questions about their experience in the previous year and their expectations for the next year. This year, over 25% of surveys (545) were returned. While this is a substantial number of surveys it should be kept in mind that the results of these surveys are for a subset of all manufacturing firms and findings may not apply to all of them.

Our 25% response rate is a significant increase from last year's survey where we obtained a response rate of 18%. Also, the absolute number of surveys increased from 317 to 545. Firms that returned the surveys employ over 56,666 workers, which is approximately 23% of all manufacturing workers in Kentucky. Ninety-two counties were represented in returned surveys, 77% of all Kentucky counties. The mean and median size of survey respondents in 2008 were 105 and 50 employees respectively. The largest firm had over 6,000 employees. The difference in the mean and median implies that there are a few large firms interspersed among the majority of establishments throughout the state – thus the typical responding firm has about 50 employees.[1] Responding firms reported sales of over 10.5 billion dollars. Figure 1 shows the location of responding firms by Area Development District (ADD). As expected most respondents are located in more densely populated areas; the most notable concentration of these firms occurs in the "urban triangle" of Lexington, Louisville, and the Cincinnati Metropolitan Statistical Area. These areas are represented by the KIPDA, Northern Kentucky, and Bluegrass ADDs in Figure 1. Responding

1 Data on employment and sales are from the Selectory® database compiled by Dun and Bradstreet.

Figure 1: Business Location by Area Development District

establishments are also primarily located near I-64, I-71 and I-75, but a number of establishments are also located along I-24, I-65, Bluegrass Parkway and the Western Kentucky Parkway. Thirty-six percent of respondents are members of the Kentucky Association of Manufacturers.

Manufacturing establishments were asked to report on their performance over the past 12 months[2] and to speculate about their performance over the next 12 months. Respondents are asked about a number of different measures designed to capture their overall economic activity This report concentrates primarily on firm responses regarding employment, sales, and, to a lesser extent, profits, capital expenditures and productivity in their industry. For each economic measure, firms responded by indicating whether they experienced either a/an "decrease," "no change," or "increase." Likewise, the respondents chose from the same three options to express their expectations for their firms' performance over the next year.

The next section provides a general discussion about the economic environment of Kentucky's manufacturing sector in 2008. The report continues by examining the recent downward trend in economic factors affecting the industry. The section to follow further details firm performance in 2008 and compares this to information about firms' 2007 performance. Subsequent are sections discussing firm expectations for performance in 2009. We conclude with a brief summary of the economic trends of Kentucky's manufacturing industry and commentary on likely influential factors affecting the sector's current performance and future prospects.

2008 Statewide Performance

Last year's business confidence survey showed concern about the economy. This year's survey of manufacturers shows that they were right to be concerned and that the outlook for next year continues to be bleak. It should be kept in mind that this is a survey of business confidence and is reflecting the opinions of leaders of manufacturing firms.

In this report we focus on three areas of business performance that are of particular interest. These are sales, employment and profit. In the 2007 report a plurality of firms experienced an increase in all these measures. This year decreases predominated in all three areas. Also, for all three areas a significant downward trend is expected to continue in the

2 Establishments were surveyed in October, so the previous year should be treated as September 2007 to 2008 and the next year from September 2008 to 2009 .

Table 1: Firm Performance in 2008

	Decrease	No Change	Increase
Employment	48%	32%	20%
Sales	55%	14%	31%
Profits	58%	14%	28%
Capital Expenditures	33%	40%	26%
Industry Production	60%	22%	18%

manufacturing industry in Kentucky. Table 1 reports the performance of each of the surveyed areas during 2008 for the Kentucky manufacturing sector.

new percentage. This percentage is then multiplied by 100. Index numbers below 50 suggest a decline of the measure, such as employment and sales over the period; while values greater than 50 suggest improvements in the measure (an index value equal to 50 implies neither growth nor decline on net.)

Sales

Table 3 shows diffusion index for sales values across the Area Development Districts for 2007 and 2008. Thirteen out of 15 ADDs had values below 50 points.

Big Sandy, Buffalo Trace and Kentucky River ADDs are among districts with the least density of firms resulting in less significant declines or insufficient data to calculate a value. Similarly, the Gateway ADD is a relatively less dense manufacturing region. So, while this District shows

Table 2: Firm Performance 2007-2008 Comparison

	Decrease			No Change			Increase		
	2007	2008	Change	2007	2008	Change	2007	2008	Change
Employment	32%	48%	16%	29%	32%	3%	39%	20%	-19%
Sales	35%	55%	20%	15%	14%	-1%	50%	31%	-19%
Profits	40%	58%	18%	20%	14%	-6%	41%	28%	-13%
Capital Expenditures	17%	33%	16%	40%	40%	0%	43%	26%	-17%
Industry Production	40%	60%	60%	24%	22%	-2%	36%	18%	-18%

To illustrate the changes from the previous year, Table 2 compares firm performance in 2008 to the previous year. This table shows that for every measure of economic performance significantly fewer firms expect an increase while significantly more firms expect to see a decrease in the measure.

Another way to compare performance over time is through a diffusion index. This type of index is used when "No Change" is a possible choice in addition to "Increase" and "Decrease." If "Increase" and "Decrease" are the only options then a change in one implies a change in the other. If "No Change" is an option, however, a change in one does not necessarily mean a change in the other. A diffusion index allows a more direct comparison of increases and decreases when "No Change" is a choice by equally dividing the "No Change" responses and adding one half to "Increase" responses and one half to "Decrease" responses. "Increases" and "Decrease" responses are then divided by the total number of responses to arrive at a

Table 3: Sales Index by Area Development Districts for 2007 and 2008

ADD District	2008 Index	2007 Index	Change
Barren River	38	71	-33
Big Sandy	N/A	N/A	
Bluegrass	35	65	-30
Buffalo Trace	36	50	-14
Cumberland Valley	36	61	-25
FIVCO	50	88	-38
Gateway	23	25	-2
Green River	38	88	-50
Kentucky River	33	N/A	
KIPDA	40	77	-37
Lake Cumberland	31	50	-19
Lincoln Trail	24	65	-41
Northern Kentucky	44	85	-41
Pennyrile	42	71	-29
Purchase	40	75	-35

Table 4: Employment Index by Area Development Districts for 2007 and 2008

ADD District	2008 Index	2007 Index	Change
Barren River	50	50	0
Big Sandy	N/A	N/A	
Bluegrass	32	61	-29
Buffalo Trace	33	67	-34
Cumberland Valley	35	61	-26
FIVCO	33	63	-30
Gateway	14	50	-36
Green River	40	79	-39
Kentucky River	N/A	N/A	
KIPDA	42	67	-25
Lake Cumberland	33	50	-17
Lincoln Trail	21	68	-47
Northern Kentucky	34	58	-24
Pennyrile	42	67	-25
Purchase	41	54	-13

an index of 23, this is only a slight decline from the previous year. In districts with larger concentrations of manufacturing firms, such as the ADDs in Central and Northern Kentucky, the value of the diffusion index more likely reflects the average trend of the typical manufacturing establishment in the region.

Employment

Table 4 shows the distribution of employment index values across the Area Development Districts using both the 2007 and 2008 data.

Twelve of the ADDs reported a decrease in employment (index value under 50). One district, Barren River ADD, had an index of 50 indicating no change in employment over this period. Since the Barren River District has relatively less of a manufacturing establishment density, however, it is less likely to reflect the actual trends in the region than ADDs with higher levels of manufacturing. The decrease in employment from 2007 to 2008 is less severe compared to sales. This is in part because a decline had already occurred in the employment index in 2007.

Two other performance areas are also particularly illustrative, profits and industry production. In 2008, only 28% of respondents reported an increase in profits. This is compared to 40.9% in 2007. Similarly, respondents reporting an increase in production in the industry dropped to 18% in 2008 from 35.9% in 2007.

Historical Data

Figure 2 shows the performance of Kentucky manufacturers for the past 10 years using the diffusion index. Note that the survey samples for the years 1999 to 2002 and 2005 to 2006 include both KAM and non-KAM members. However, the samples surveyed from 2003 to 2004 include only KAM members.

Indicators for 2008 for sales and employment are at their lowest levels since CBER began producing the business confidence survey. This indicates the size of the economic downturn. Reports of a decline in both sales and employment are consistent with the downturn in the national economy. In Figure 2, both indices dropped precipitously over the past year. Similar to last year, the sales index remains slightly above the employment index.

Firm Expectations for 2009

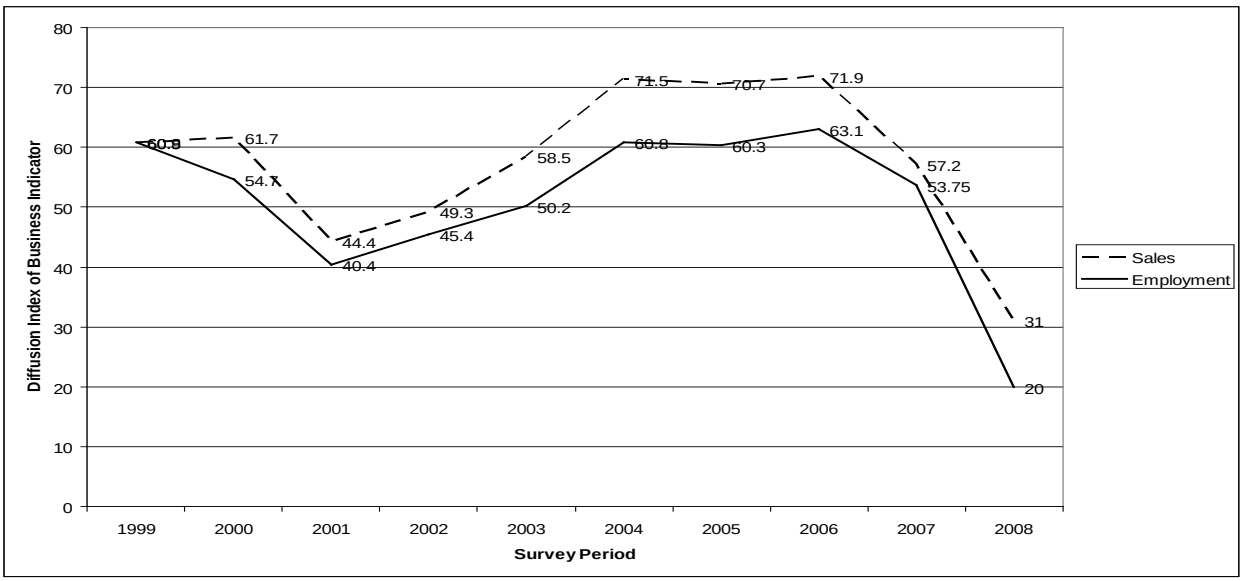
In this section we examine the firms' expectations for 2009. In 2007 we noted a decline in optimism compared to previous years of the survey. This year expectations have dropped even further. Last year still saw an expectation of an increase in sales for this year. Something that, as noted above, did not occur.

Table 5 shows firm expectations for the coming year. All of the measures in the table show expected

Table 5: Firm Expectations for 2009 and Comparison with 2008 Expectations

	Expected Decrease			Expected No Change			Expected Increase		
	2009	2008	Change	2009	2008	Change	2009	2008	Change
Employment	38%	15%	23%	42%	45%	-3%	21%	41%	-20%
Sales	43%	17%	26%	23%	28%	-5%	34%	55%	-21%
Profits	44%	16%	28%	23%	33%	-10%	33%	51%	-18%
Capital Expenditures	35%	19%	16%	44%	45%	-1%	20%	36%	-16%
Industry Production	53%	24%	29%	27%	38%	-11%	20%	38%	-18%

Figure 2: Manufacturing Sector Performance in Selected Indicators



decrease in growth. The table also shows the percentages from 2008

As seen in Table 5, respondents are much more pessimistic. There has been a significant change in outlook for the near future. Although expectations were down in 2007, there was still some question as to how widespread manufacturer's pessimistic predictions were. There is little room left for speculation, however, in the expectations of manufacturer's for 2009. No more than a third of respondents expect to experience growth in any of these measures while over two-thirds of respondents expect either no change or a decline in each of these measures. This is not unexpected given the recent downward trend in the economy.

This year the percentages of firms expecting to increase employment, sales, profits, capital expenditures and industry production fell significantly from last year's predicted values. For employment, this reduction was a decline of 20 percentage points, significantly greater than the previous years decline of 3.5 percentage points; for sales the decline was 21 percentage points; for profits the decline was 18 percentage points; for capital expenditures the decline was 16 percentage points; and in industrial production the decline was 18 percentage points. Similarly, the percentage of firms expecting a decrease in employment, sales, profits, capital expenditures, and industry production rose from last year's expectations. The number of firms expecting a decrease in employment in 2009 rose from 15% for 2008 to 38% and those expecting a decrease in sales rose from 17% to 43%. Similarly, the number of firms expecting a decrease in profits in 2009 rose from 16% to 44%, in capital expenditures from 19% to 35% and in Industry production from 24% to 53%. For many of these categories, the number of firms expecting a decline more than doubled over the course of a year.

Additional Survey Questions

Additional questions were asked in this year's survey to gather more information on issues pertinent to manufacturers. The first question asked whether the company is planning to invest in capital in order to improve the efficiency of their production. In spite of the expected decrease in capital expenditures fifty-eight percent of respondents said that "yes" they were planning on making at least some capital investments to improve efficiency of production.

The strength of this response in these difficult economic times may come from a perception that the savings from efficient production techniques may outweigh the expenditures for the necessary capital.

The next questions related to the experience firms have with the impact of the policies of Kentucky State Government on their businesses. When asked if their business was being helped by Kentucky's State Government 80% of respondents answered no, 20% yes. When asked if their business was being hurt by Kentucky State Government 60% said no and 40% said yes. Given that the majority of

firms responded that Kentucky's State government neither helped or hurt their businesses may reflect a perception of manufacturing firms that their businesses are not largely impacted by Kentucky State Government Policies.

Conclusions

The results of the 2008 Kentucky Association of Manufacturers Business Confidence Survey show a sharp decline in business performance and expectations of future performance. Last year's report indicated that conditions were unlikely to improve in 2008 and this report has largely substantiated that prediction.

The sharp decline in expectations should not be surprising given the current economic downturn. Economic factors such as a tightening credit market and falling consumer confidence are likely affecting both manufacturing production and the expectations of manufacturers about future growth. The volatility of the current economic situation makes it difficult to say with any certainty whether manufacturer's expectations will come to fruition. It is unlikely, however, that a significant improvement in the economic environment will occur in the near future.

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