Center for Economic & Business Research
Donald L. Harrison College of Business

SOUTHEAST MISSOURI BUSINESS INDICATORS

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C O N T E N T S

Research on Southeast Missouri

In this issue we present the results of research by the faculty and a student (Christian Raschke) in the Department of Economics & Finance at Southeast Missouri State University. Several important topics related to economic development are addressed in this research, which should be of interest to residents of the region.

The research was also presented at a special conference at the university on April 20 of this year.

Southeast Missouri Business Indicators

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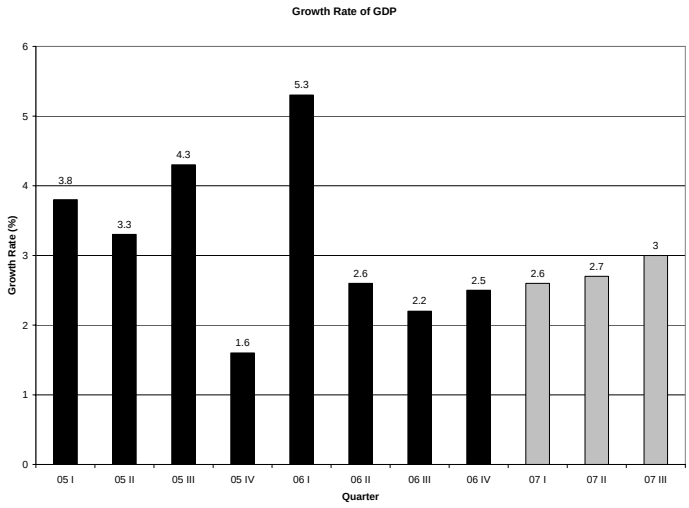
Economic Data Send Mixed Signals

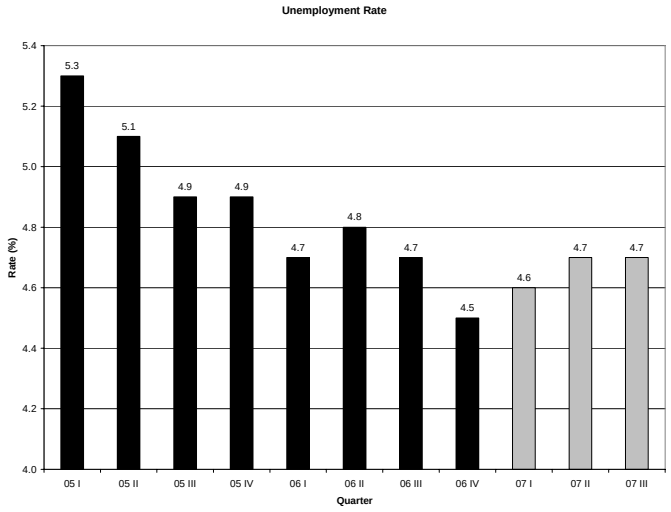
The state of the national economy is starting to present some concerns for forecasters. The downward revision in the growth rate of real Gross Domestic Product (GDP) in the fourth quarter, while not unexpected, was larger than forecast. The "first call" estimate in January for fourth quarter growth of GDP was 3.5%. The "preliminary" estimate for growth (average annual rate) in the first quarter was reported at 2.5% at the end of March. This was a substantial downward revision.

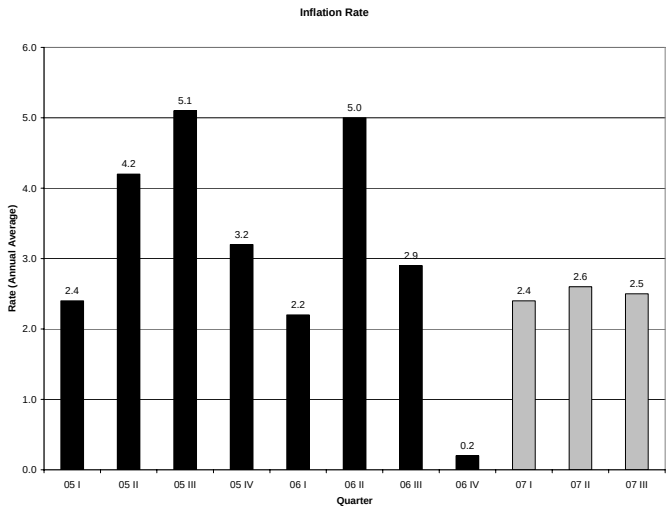
The signs of a slowing economy are making their presence felt, so much so, that even Alan Greenspan thinks a recession is possible by the end of 2007. This might be a bit too pessimistic, but there clearly are reasons to be concerned.

Likely the biggest cause for concern is the state of the housing market. It is clear that there is a significant surplus inventory of homes at the present, which means that new home construction is likely to continue to slow. It is estimated that the slowdown in the housing market is costing the economy as much as one percentage point of growth. Most likely, the figure is even bigger today.

Consumer spending, while slowing, has held up pretty well. As the "housing ATM" has been turned off (rising home values causing people to refinance and taking cash out or using their increased home equity to finance other purchases), the consumer has been forced to reign in spending a bit. Up to now, rapid corporate investment in capital goods has picked up much of the slack from slowing consumer spending. However, as profit rates begin to slow,







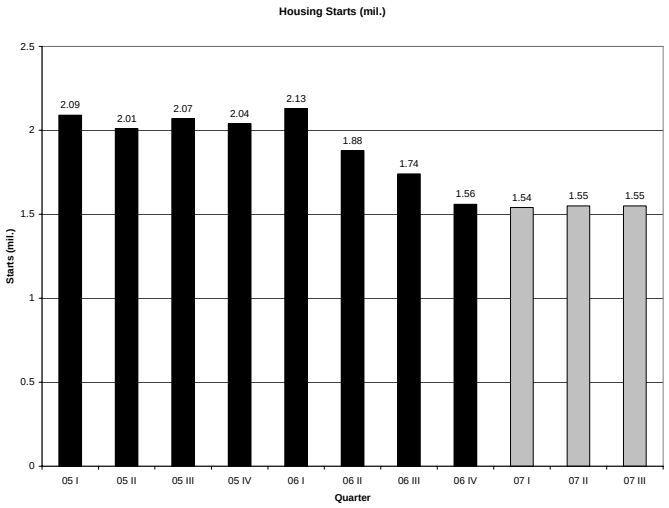
investment spending will follow.

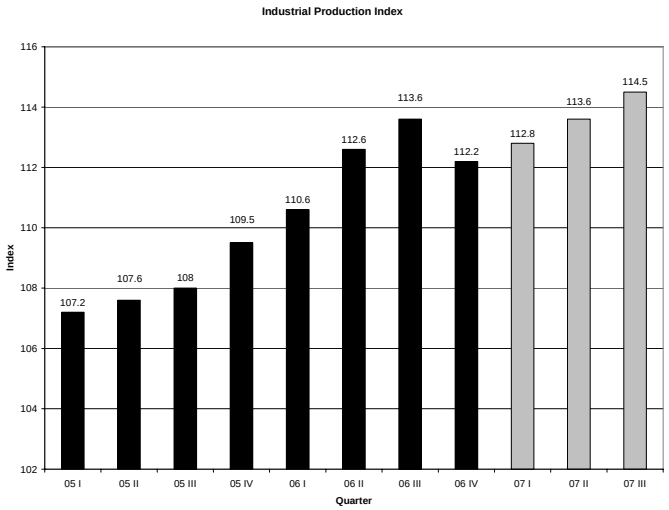
So does all this mean that a recession is certain in the near future? Not necessarily. Unemployment is still low as is inflation. The economy appears to have adjusted to higher energy prices without serious problems. Industrial production has held up well and the foreign sector has been a bright spot as exports have actually increased a bit relative to imports.

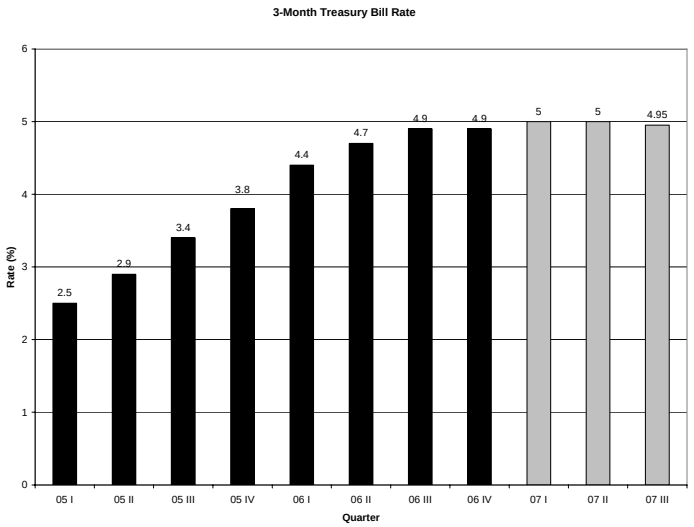
The federal government, flush with increased tax revenues, finds its deficit shrinking to more comfortable levels. Long term, there remain potentially serious problems as the Baby Boomer generation starts to retire and places its huge demands on the federal government for Social Security and Medicare benefits. Congress seems unwilling to even address this looming problem at the moment, let alone try to mitigate its effects.

For the moment, interest rates seem to have reached a plateau as the Federal Reserve System is content for now to adopt a wait-and-see attitude. The three-month Treasury Bill Rate will likely remain in the 5% range for most of the year, unless the Fed decides it needs to reduce inflationary pressures. The Fed's statements would seem to indicate that if any change in rates occurs, it will be an increase.

Given all these factors, southeast Missouri is likely to have a solid year, though employment growth will be modest (1% or so) and unemployment is likely to remain above the national average (5.5% or so). Retail sales are unlikely to grow as fast this year as in the past couple of years, so look for about a 3% increase at best.







Southeast Missouri Summary

	2005 III	2005 IV	2006 I	2006 II	2006 III	2006 IV
Bollinger						
Employment	5,496	5,616	5,561	5,656	5,520	5,620
Change (%)	-1.3	2.2	-1.0	1.7	-2.4	1.8
Unemployment (%)	5.4	5.6	6.0	4.9	5.2	5.6
Personal Income	255,842	260,261	265,630	267,433	270,671	
Change (%)	4.5	4.0	6.1	5.5	5.8	
Retail Sales	16,148	13,538	14,962	15,286	15,833	
Last 4 Quarters	58,652	58,390	59,493	59,934	59,619	
Butler						
Employment	20,235	20,452	20,578	21,122	20,946	21,130
Change (%)	-0.8	1.1	0.6	2.6	-0.8	0.9
Unemployment (%)	5.0	5.0	5.3	4.7	5.1	6.1
Personal Income	1,100,441	1,122,001	1,149,064	1,160,702	1,178,441	
Change (%)	5.8	6.3	7.3	6.7	7.1	
Retail Sales	140,974	133,723	139,029	145,907	143,724	
Last 4 Quarters	548,893	551,272	553,845	559,633	562,383	
Cape Girardeau						
Employment	36,084	36,876	36,508	37,136	36,238	36,901
Change (%)	-1.3	2.2	-1.0	1.7	-2.4	1.8
Unemployment (%)	4.2	4.0	4.3	4.1	4.1	4.0
Personal Income	2,054,156	2,088,983	2,131,188	2,144,462	2,167,883	
Change (%)	4.2	3.7	5.7	5.2	5.5	
Retail Sales	305,440	292,154	320,848	310,405	301,354	
Last 4 Quarters	1,179,346	1,191,487	1,207,225	1,228,847	1,224,761	
Carter						
Employment	2,721	2,729	2,626	2,807	2,814	2.868
Change (%)	0.1	0.3	-3.7	6.9	0.2	1.9
Unemployment (%)	5.6	5.9	6.4	5.3	5.9	6.5
Personal Income	127,009	129,230	131,942	132,936	134,795	
Change (%)	4.8	4.3	6.4	5.8	6.1	
Retail Sales	11,638	9,124	9,677	10,334	11,908	
Last 4 Quarters	38,898	39,067	39,622	40,773	41,043	
Crawford						
Employment	11,004	10,817	10,695	11,203	11,135	11,043
Change (%)	-0.3	-1.7	-1.1	4.7	-0.6	-0.8
Unemployment (%)	5.5	5.7	6.5	5.5	5.5	6.4
Personal Income	612,328	625,169	640,488	647,699	659,087	
Change (%)	6.3	6.0	8.0	7.3	7.6	
Retail Sales	53,981	45,643	45,456	49,153	53,260	
Last 4 Quarters	189,386	189,165	192,334	194,143	193,422	

(Note: Personal Income & Retail Sales are in thousands of dollars.)

	2005 III	2005 IV	2006 I	2006 II	2006 III	2006 IV
Dent						
Employment	5,807	5,797	5,718	5,991	5,854	5,942
Change (%)	-1.9	-0.2	-1.4	4.8	-2.3	1.5
Unemployment (%)	6.2	6.1	6.6	5.8	6.2	6.4
Personal Income	331,958	337,557	344,389	346,985	351,623	
Change (%)	4.6	4.2	6.2	5.6	5.9	
Retail Sales	37,030	34,514	34,469	39,208	40,090	
Last 4 Quarters	138,855	140,584	140,840	145,221	148,281	
Dunklin						
Employment	13,209	13,374	13,298	13,480	13,144	13,408
Change (%)	-1.9	1.2	-0.6	1.4	-2.5	2.0
Unemployment (%)	7.1	7.1	7.8	7.0	7.5	7.1
Personal Income	795,898	809,269	826,234	832,683	845,005	
Change (%)	4.8	4.3	6.4	5.8	6.2	
Retail Sales	NA	NA	NA	NA	NA	NA
Last 4 Quarters	NA	NA	NA	NA	NA	NA
Franklin						
Employment	50,653	50,367	50,151	50,935	51,106	50,974
Change (%)	0.6	-0.6	-0.4	1.6	0.3	-0.3
Unemployment (%)	5.4	4.8	5.8	4.8	5.1	5.2
Personal Income	2,845,035	2,891,909	2,949,098	2,968,959	3,006,921	
Change (%)	4.3	3.8	5.9	5.3	5.7	
Retail Sales	283,754	256,270	246,743	269,144	278,682	
Last 4 Quarters	1,043,237	1,053,371	1,049,430	1,055,911	1,050,839	
Gasconade						
Employment	7,181	7,222	7,118	7,320	7,287	7,405
Change (%)	-0.8	0.6	-1.4	2.8	-0.5	1.6
Unemployment (%)	5.3	5.0	6.3	5.5	5.9	5.1
Personal Income	396,117	402,936	410,999	413,968	419,460	
Change (%)	4.5	4.1	6.1	5.5	5.9	
Retail Sales	41,027	37,636	36,884	41,951	44,899	
Last 4 Quarters	152,633	152,987	154,049	157,498	161,370	
Iron						
Employment	4,426	4,412	4,425	4,586	4,478	4,504
Change (%)	-1.2	-0.3	0.3	3.6	-2.4	0.6
Unemployment (%)	6.7	6.8	6.7	5.3	5.7	6.0
Personal Income	224,605	228,208	232,713	234,184	237,189	
Change (%)	4.2	3.8	5.8	5.2	5.6	
Retail Sales	23,216	17,742	14,401	18,482	17,008	
Last 4 Quarters	82,131	84,090	76,116	73,841	67,633	

(Note: Personal Income & Retail Sales are in thousands of dollars.)

	2005 III	2005 IV	2006 I	2006 II	2006 III	2006 IV
Jefferson						
Employment	111,433	110,804	110,330	112,053	112,430	112,139
Change (%)	0.6	-0.6	-0.4	1.6	0.3	-0.3
Unemployment (%)	5.1	4.5	5.3	4.5	4.7	4.7
Personal Income	5,934,785	6,038,585	6,163,619	6,210,995	6,295,882	
Change (%)	4.7	4.2	6.3	5.7	9.1	
Retail Sales	542,096	490,097	493,157	538,034	533,085	
Last 4 Quarters	1,974,675	2,006,248	2,014,988	2,063,384	2,054,373	
Madison						
Employment	5,562	5,578	5,600	5,729	5,662	5,776
Change (%)	-1.4	0.3	0.4	2.3	-1.2	2.0
Unemployment (%)	6.0	5.8	5.9	5.1	5.2	5.3
Personal Income	257,878	263,485	270,194	273,341	278,178	
Change (%)	6.8	6.3	8.3	7.6	7.9	
Retail Sales	22,930	23,402	23,995	25,748	24,726	
Last 4 Quarters	84,679	88,156	91,943	96,075	97,871	
Mississippi						
Employment	5,330	5,471	5,317	5,493	5,246	5,321
Change (%)	-3.4	2.6	-2.8	3.3	-4.5	1.4
Unemployment (%)	7.0	6.5	6.8	6.1	6.8	6.9
Personal Income	288,870	291,239	292,205	293,518	293,312	
Change (%)	0.6	-0.1	1.2	1.2	1.5	
Retail Sales	23,732	19,030	20,017	21,348	24,241	
Last 4 Quarters	83,302	83,182	83,590	84,217	84,726	
New Madrid						
Employment	7,465	7,585	7,547	7,778	7,479	7,748
Change (%)	-4.4	1.6	-0.5	3.1	-3.9	3.6
Unemployment (%)	7.2	6.8	7.4	6.7	7.2	7.3
Personal Income	452,323	458,006	462,802	466,773	470,465	
Change (%)	4.5	3.5	4.4	3.9	4.0	
Retail Sales	73,415	69,648	76,125	74,164	73,891	
Last 4 Quarters	287,775	289,930	292,005	293,352	293,828	
Pemiscot						
Employment	6,912	6,965	6,933	7,062	6,899	7,126
Change (%)	-2.4	0.8	-0.5	1.9	-2.3	3.3
Unemployment (%)	7.9	7.8	8.2	7.2	7.7	7.0
Personal Income	446,745	454,617	461,065	465,787	469,625	
Change (%)	3.8	3.3	4.7	4.7	5.1	
Retail Sales	33,793	30,566	33,092	36,268	37,646	
Last 4 Quarters	126,280	127,268	128,883	133,719	137,572	

(Note: Personal Income & Retail Sales are in thousands of dollars.)

	2005 III	2005 IV	2006 I	2006 II	2006 III	2006 IV
Perry						
Employment	9,993	9,901	9,745	9,949	9,951	10,019
Change (%)	2.2	-0.9	-1.6	2.1	0	0.7
Unemployment (%)	3.8	3.6	3.8	3.5	3.6	3.4
Personal Income	464,128	473,210	481,849	489,422	497,585	
Change (%)	6.4	5.7	7.1	6.9	7.2	
Retail Sales	58,490	53,273	54,765	58,208	59,035	
Last 4 Quarters	222,921	223,732	223,967	224,736	225,281	
Reynolds						
Employment	2,524	2,474	2,455	2,681	2,524	2,454
Change (%)	-2.9	-2.0	-0.8	9.2	-5.9	-2.8
Unemployment (%)	6.3	7.3	7.4	5.5	6.1	7.2
Personal Income	142,506	144,988	147,250	149,136	151,214	
Change (%)	4.8	4.3	5.8	5.8	6.1	
Retail Sales	NA	NA	NA	NA	NA	NA
Last 4 Quarters	NA	NA	NA	NA	NA	NA
Ripley						
Employment	5,892	6,115	6,133	6,314	6,076	6,272
Change (%)	-3.5	3.8	0.3	2.9	-3.8	3.2
Unemployment (%)	6.0	5.5	5.9	5.1	5.9	6.5
Personal Income	276,061	281,184	285,745	289,643	293,917	
Change (%)	5.2	4.7	6.2	6.1	6.5	
Retail Sales	NA	NA	NA	NA	NA	NA
Last 4 Quarters	NA	NA	NA	NA	NA	NA
Scott						
Employment	18,862	18,986	18,833	19,406	18,869	19,115
Change (%)	-2.0	0.7	-0.8	3.0	-2.8	1.3
Unemployment (%)	5.6	5.2	5.5	5.1	5.6	5.7
Personal Income	1,044,374	1,062,030	1,077,513	1,090,981	1,103,993	
Change (%)	4.4	4.0	5.5	5.4	5.7	
Retail Sales	90,290	77,322	76,789	84,278	91,367	
Last 4 Quarters	325,661	327,954	324,486	328,680	329,757	
Ste. Genevieve						
Employment	8,617	8,565	8,437	8,707	8,682	8,636
Change (%)	-0.2	-0.6	-1.5	3.2	-0.3	-0.5
Unemployment (%)	5.0	5.0	5.4	4.8	5.0	5.0
Personal Income	449,568	456,147	461,503	466,385	471,595	
Change (%)	3.9	3.4	4.7	4.6	4.9	
Retail Sales	42,764	32,684	36,171	39,791	43,037	
Last 4 Quarters	149,237	148,643	148,329	151,410	151,683	

(Note: Personal Income & Retail Sales are in thousands of dollars.)

	2005 III	2005 IV	2006 I	2006 II	2006 III	2006 IV
St. Francois						
Employment	25,392	25,500	25,642	26,462	25,966	26,004
Change (%)	-0.9	0.4	0.6	3.2	-1.9	0.2
Unemployment (%)	6.0	6.0	6.4	5.4	5.6	5.8
Personal Income	1,384,496	1,409,365	1,434,837	1,458,061	1,477,906	
Change (%)	5.1	4.6	6.2	6.3	6.7	
Retail Sales	172,210	159,485	169,198	179,714	173,832	
Last 4 Quarters	660,567	663,756	667,862	680,607	682,229	
Stoddard						
Employment	14,581	14,994	14,900	15,183	14,878	15,316
Change (%)	-1.6	2.8	-0.6	5.3	-2.0	3.0
Unemployment (%)	5.4	5.3	5.9	1.9	5.5	5.8
Personal Income	774,204	790,241	807,724	822,629	837,775	
Change (%)	5.1	4.6	7.3	7.0	7.2	
Retail Sales	67,914	65,591	61,345	69,635		
Last 4 Quarters	238,401	252,804	257,183	264,485		
Washington						
Employment	9,405	9,352	9,311	9,457	9,489	9,464
Change (%)	0.6	-0.6	-0.4	1.6	0.3	-0.3
Unemployment (%)	8.0	8.2	9.2	7.1	6.9	8.7
Personal Income	471,830	479,317	486,127	491,357	497,504	
Change (%)	4.7	4.0	5.4	5.2	5.4	
Retail Sales	38,932	35,895	35,179	38,222	39,458	
Last 4 Quarters	142,343	144,518	145,262	148,228	148,754	
Wayne						
Employment	5,184	5,202	5,177	5,358	5,234	5,316
Change (%)	-1.7	0.3	-0.5	2.2	-1.0	1.6
Unemployment (%)	6.2	6.4	6.8	5.0	5.2	6.8
Personal Income	268,029	272,947	277,457	281,256	285,422	
Change (%)	5.2	4.7	6.2	6.1	6.5	
Retail Sales	24,329	21,089	20,436	22,853	23,897	
Last 4 Quarters	88,223	88,385	87,934	88,707	88,275	
Southeast Missouri						
Employment	393,968	395,154	393,038	401,868	397,906	400,501
Change (%)	-0.5	0.3	-0.5	2.2	-1.0	0.7
Unemployment (%)	5.5	5.2	5.8	5.0	5.2	5.4
Personal Income	21,399,186	21,770,884	22,191,635	22,399,025	22,695,448	
Change (%)	4.8	4.3	6.1	5.7	6.0	
Retail Sales	2,104,013	1,921,426	1,962,738	2,088,133	2,096,717	
Last 4 Quarters	7,816,244	7,904,989	7,939,386	8,073,361	8,069,014	

(Note: Personal Income & Retail sales are in thousands of dollars.)

Quality of Life in Southeast Missouri: A First Approach

Bruce R. Domazlicky

The measurement of the quality of life in a region is a subjective process. There are questions as to what to include in a quality-of-life measure, how to combine the various measures into a single index of quality, and the availability of timely data. This study is a simple attempt to devise a quality-of-life measure for rural counties in the state of Missouri, with an emphasis upon the 21 counties of southeast Missouri.

There are 81 nonmetropolitan counties in the state of Missouri. Some of them are quite small, with a population as little as six or seven thousand. Other counties are larger such as Cape Girardeau with almost 70,000 people. With such large differences in population, one might also expect large differences in the quality of life.

Given data availability, with a particular concern for the timeliness of the data that are available, seven measures of the quality of life were identified. The seven measures and their year of measurement are: per capita personal income (2004), the poverty rate (2004), the unemployment rate (2005), the growth in jobs in the county from 1994 to 2004, the growth in population in the county over the same period, the crime rate per 100,000 population (2006), and the population per physician (2006). The first three variables are economic variables and it should be apparent that per capita personal income (PCPI) and the poverty rate are highly correlated, but the poverty rate may offer additional indirect information about the distribution of income as well. The unemployment rate is a measure of opportunity in a county with the expectation that the lower a county's unemployment rate, the greater the opportunity.

Job growth and population are also expected to be highly correlated. These two variables measure the economic dynamism of a region. Assuming that growth is better than no growth (or decline), we look at the change in each of these from 1994 to 2004, the most recent ten-year period available. Note that job growth is not the number of employed people in a county, but rather is the total number of available jobs in a county, irrespective of who holds the jobs (county residents or commuters). A growing county offers more job opportunities for residents, contributes to a growing tax base for the provision of adequate public services, leads to a healthy housing market, and improves the retail choices of consumers.

The final two quality-of-life variables are noneconomic in nature. Where crime is high and citizens are concerned about their personal safety, the quality of life is unlikely to be perceived as very high. Since we are concerned with only rural counties, crime rates do not reach the levels that are found in major cities such as St. Louis, but there is significant variation among the rural counties in the study. The final variable in the study is the amount of population per physician. This variable is a rough measure of health care access. The greater the amount of population per physician in a county, the lower the presumed quality of health care due to more limited access.

The above seven variables have been identified as the most significant factors that affect the quality of life in

rural Missouri counties. The next step is to combine these into an index for each county in order to get a ranking of the quality of life. A simple approach was used. For each of the seven variables, the 81 counties were ranked from 1 to 81 according to the highest to lowest for per capita personal income, job growth and population growth. For the remaining four variables (poverty rate, unemployment rate, crime rate, population per physician), the counties were ranked from the lowest to the highest. The rankings were then summed for each county and then divided by seven to get the county's average rank. The counties' average ranks were themselves ranked (lowest number to highest number) to get the "grand rank" for each county.

Camden County ranked number one on the list and New Madrid County in the Bootheel ranked last (81). We can also identify the best and worst ranking for each of the seven variables (Table 1). Per capita income was highest in Cape Girardeau ($28,480) and lowest in Texas County ($17,779). The poverty rate was 9.9% in both Ralls and Ste. Genevieve Counties, while it was 26.2% in Pemiscot County. Unemployment was lowest in Nodaway County (3.6%) and highest in Taney County (9.0%). The number of jobs increased by 59.5% in Maries County from 1994-2004, while it fell by 17.7% in Reynolds County during the same period. Taney County, which has the highest rate of unemployment, also had the highest rate of population growth (30.0%) from 1994-2004. Atchison County saw its population fall by 8.8% during that time period. The crime rate was lowest in Putnam County (252 crimes per 100,000 population) and highest in Marion County (5,582 crimes per 100,000 population). Finally, Adair County had the lowest population per physician (196), while Oregon County had the highest (10,265).

The performance of southeast Missouri counties is shown in Table 2. Cape Girardeau (3), Perry (4) and Ste. Genevieve (8) Counties all rank in the top ten of rural counties in Missouri. For Cape Girardeau, only the relatively high crime rate keeps it from the top ranking. Ste. Genevieve does well except for the relatively slow growth of jobs. Perry has very high rankings except in the areas of population growth and physicians, where its rankings are near the middle of the pack.

On the other end, nine southeast Missouri counties rank 70 or worse (out of 81). Three Bootheel counties (Mississippi, New Madrid, and Pemiscot) occupy three of the bottom four rankings. These counties are marked by high poverty rates, negative population growth, and high unemployment rates. A fourth Bootheel county (Dunklin) also suffers from high poverty and unemployment rates and slow population growth.
Ozark counties such as Carter, Dent, Iron, Reynolds and Wayne also fare poorly in the quality-of-life measures. These counties also have high poverty and unemployment rates and low per capita income.

Many of the remaining counties in southeast Missouri rank somewhere near the middle of the pack. Scott (46) and Stoddard (48), for example, are two Bootheel counties that, despite low rankings in some individual categories, manage to be ranked near the middle overall. Butler County, despite relatively high poverty and crime rates, still manages to reach thirtieth on the quality-of-life rankings. St. Francois,

given its proximity to the St. Louis metropolitan area, exhibits perhaps the most dichotomous rankings. Job growth and population growth are impressive (ranking of 6 in both areas), but unemployment, poverty, and crime are high, while per capita income is relatively low. One would have to predict that if the current population and job trends continue in the county, St. Francois will move up the rankings in some of the other areas over time.

From the evidence presented in this paper, we see that southeast Missouri includes some of the top counties as measured by the quality-of-life index developed in this paper, as well quite a few of the bottom counties. The implication for public policy is that paybacks to economic development efforts in southeast Missouri potentially could be very large.

Table 1. Highest and Lowest Rankings for the Seven Variables

Variable	Highest County	Value	Lowest County	Value
PCPI	Cape Girardeau	$28,480	Texas	$17,779
Poverty Rate	Ralls Ste. Genevieve	9.9%	Pemiscot	26.2%
Unemployment Rate	Nodaway	3.6%	Taney	9.0%
Job Growth	Maries	59.5%	Reynolds	-17.7%
Population Growth	Taney	30.0%	Atchison	-8.8%
Crime rate	Putnam	252	Marion	5,582
Population per Physician	Adair	196	Oregon	10,265

(See Table 2 for Sources of Variables Used in the Study)

Table 2. Southeast Missouri Counties, Rankings in the Seven Areas

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
County	PCPI	Poverty	UR	JOBS	POP	Crime	Physician	Rank
Bollinger	71	37.5	58.5	11	17	15	74	44
Butler	6	68	34.5	12	53	76	3	30
Cape	1	14.5	7	25	26	74	2	3
Carter	59	74	67	42	49	35	79	75
Crawford	21	53	58.5	15	10	69	75	50
Dent	66	60	68.5	69	33	41	41	70
Dunklin	35	80	74.5	40	65	70	14	71
Gasco	25	3	45.5	38	29	48	34	11
Iron	60	69	74.5	70	74	38	28	77
Madison	72	59	63.5	35	34	42	29	64
Mississ	54	79	71	31	70	53	70	80
NewMad	30	75	74.5	75	79	17	78	81
Pemiscot	39	81	79.5	45	77	72	23	78
Perry	23	5	3.5	14	41	21	46	4
Reynolds	64	64	77	81	57	5	57	76
Ripley	74	77	58.5	17	35	62	51	68
Ste Gen	31	1.5	41.5	60	16	24.5	31	8
St Fran	52	52	68.5	6	6	52	9	23
Scott	18	54	53.5	37	51	65	11	46
Stoddard	29	55	53.5	30	55	13	60	48
Wayne	73	76	70	62	47	14	54.5	73
SEMO average	43.0	54.2	57.3	38.8	44.0	43.2	41.4	51.4

(1) Per Capita Personal Income, 2004 (Source: Bureau of Economic Analysis (BEA))
(2) Poverty Rate, 2004 (Source: Bureau of the Census)
(3) Unemployment Rate, 2005 (Source: Missouri Department of Economic Development)
(4) Percentage Change in Jobs, 1994-2004 (Source: Computation from BEA Data)
(5) Percentage Change in Population, 1994-2004 (Source: Computation from Census Data)
(6) Crime Rate per 100,000 Population, 2006 (Source: Computation from Missouri Highway Patrol)
(7) Population per Physician, 2006 (Source: Missouri Department of Public Health)
(8) "Grand Rank" of seven categories among all 81 rural Missouri counties

High School Noncompletion in Southeast Missouri: Update and Extension

Willie Redmond
Bruce R. Domazlicky

High school noncompletion continues to be a significant problem in southeast Missouri. While 81.4% of the population 25 or older in the state of Missouri in 2000 had completed high school, the comparable figure for the 24-county region of southeast Missouri was 73.0%. Fourteen of the region's twenty-four counties had completion rates less than 70%. This was a considerable improvement over 1990 when only two of the counties had rates exceeding 70%. (See Table 1.)

In this study we are interested in determining the effect of high school noncompletion in southeast Missouri on personal income in the region. To that end, we use a statistical technique called regression analysis to assess the impact of high school noncompletion on per capita personal income in both 1990 and 2000.

In our study we use per capita income in a county as the variable to be explained. We try to explain its level in a county with three variables related to the education levels of the population 25 years or older: 1) the percent with no high school diploma, 2) the percent with some college, but no degree, and 3) the percent with at least a bachelor's degree. In addition, we use several demographic variables that might affect income in a region: the percent of the population that is dependent (and, therefore, not likely to be in the workforce): those over 64 and those under 18, and the percent of the workforce that is female. The latter variable is included since women frequently earn less than men. Finally, we use two variables to account for the metropolitan counties in Missouri: one for St. Louis and Kansas, and one for other metropolitan areas.

Our statistical sample consists of all 114 counties in Missouri plus the independent city of St. Louis. We look at 1989 income and 1999 income in separate regressions. We also converted all monetary variables to 1999 dollars so the results from the two years could be compared directly. The statistical results are generally good and indicate that there is a considerable "penalty" for not completing high school. In 1989, a county lost $77.60 of per capita income for each percentage point increase in its high school noncompletion rate. The corresponding loss in 1999 was $$73.40. The fact that the two numbers are very similar lends credence to the veracity of our model. We also found that there is a considerable "reward" for finishing college. In 1989, per capita income in a county increased by $235.86 for every percentage point increase the percentage of its population with at least a bachelor's degree. The corresponding figure in 1999 was $225.58. Once again, the similarity of the numbers helps to establish the validity of our approach.

In order to determine the contribution of high school noncompletion to relatively lower per capita income in the region, we take the difference in high school noncompletion rates between a county in the region and the state and multiply that difference by the "penalty" for noncompletion from our statistical results. The losses in per capita income are presented in Table 2. For example, for the entire region, there was a difference of 11.6 percentage points in its noncompletion rate relative to the state. If we multiply this figure by

$77.60, we get the loss of per capita income due to high school noncompletion. We do this for both years and for all 24 counties. We estimate that in 1989, per capita income was about $900 less in the region due to high school noncompletion. The loss in per capita income had fallen to $619 by 1999. Columns A and D present the basic data for 1989 and 1999. Columns B and C are attempts to estimate how much of the improvement is due to better completion rates and how much might be due to other factors. In column B, we use the lower penalty rate for noncompletion from the 1999 ($73.40) study and the noncompletion rates from 1989. We get a per capita income loss of $851. So a relatively small portion of the improvement is due to the smaller measured penalty in 2000. If we use the penalty rate from 1989 ($77.60) and the noncompletion rates from 2000, we get a per capita income loss of $654. Clearly, most of decline in the per capita income loss is due to a high noncompletion rate relative to the state in 1999 as compared to 1989.

We also considered the total loss in personal income due to high school noncompletion. These results are presented in Table 3. We find that in 1989 (column A), the total loss due to high school noncompletion was $655.7 million, while the loss declined to $494.9 million in 1999. However, population also increased in the 24-county region during this period. If we adjust for the higher population in 2000, the total loss due to noncompletion would be $450.6 million, or 31.2% less. Therefore, looking at both per capita income and total personal income, we find that, due to higher relative rates of high school noncompletion in southeast Missouri, the declines in each income measure are close to one-third less in 1999 as compared to 1989.

Table 1. 24-County Service Region

	PCPI 1989	PCPI 1999	HS Degree1989	HS Degree 1999
Bollinger	11,765	13,641	52.7	70.7
Butler	12,092	15,721	56.8	70.6
Cape	15,905	18,593	74.4	81.1
Carter	10,036	13,349	56.0	66.6
Crawford	12,473	14,825	58.6	69.4
Dent	12,136	14,463	53.9	66.3
Dunklin	12,130	13,561	51.2	63.7
Franklin	15,593	19,705	67.5	77.7
Gasconade	14,475	17,319	61.1	74.0
Iron	11,060	14,227	56.3	65.2
Jefferson	16,426	19,435	71.6	79.4
Madison	11,501	13,215	54.4	68.6
Mississippi	12,018	13,038	49.2	61.2
NewMadrid	12,138	14,204	52.0	63.6
Pemiscot	10,357	12,968	49.5	58.2
Perry	13,933	16,554	56.4	71.1
Reynolds	11,644	13,065	53.1	65.2
Ripley	9,801	12,889	48.5	62.2
Scott	12,504	15,620	62.8	72.9
SteGen	14,477	17,283	62.5	73.8
StFrancois	12,878	15,273	62.4	72.3
Stoddard	12,957	14,656	55.9	66.9
Washington	10,278	12,934	50.8	62.5
Wayne	10,278	13,434	48.9	59.7
SEMO	13,882	16,778	62.3	73.0

Table 2 - Income Loss Relative to State … Per Capita

	(A)	(B)	(C)	**(D)**
Bollinger	**$1,645**	*$1,556*	*$ 823*	**$ 778**
Butler	**1,327**	*1,255*	*838*	**793**
Cape Girardeau	**(39)**	*(37)*	*16*	**15**
Carter	**1,389**	*1,314*	*1,141*	**1,079**
Crawford	**1,187**	*1,123*	*924*	**874**
Dent	**1,552**	*1,468*	*1,164*	**1,101**
Dunklin	**1,762**	*1,666*	*1,366*	**1,292**
Franklin	**497**	*470*	*279*	**264**
Gasconade	**993**	*940*	*567*	**536**
Iron	**1,366**	*1,292*	*1,249*	**1,182**
Jefferson	**178**	*169*	*147*	**139**
Madison	**1,513**	*1,431*	*986*	**932**
Mississippi	**1,917**	*1,813*	*1,568*	**1,483**
New Madrid	**1,700**	*1,608*	*1,374*	**1,299**
Pemiscot	**1,894**	*1,791*	*1,793*	**1,696**
Perry	**1,358**	*1,285*	*784*	**741**
Reynolds	**1,614**	*1,527*	*1,249*	**1,182**
Ripley	**1,971**	*1,864*	*1,490*	**1,409**
St. Francois	**861**	*815*	*691*	**653**
Ste. Genevieve	**885**	*837*	*582*	**551**
Scott	**892**	*844*	*652*	**617**
Stoddard	**1,397**	*1,321*	*1,118*	**1,057**
Washington	**1,793**	*1,696*	*1,459*	**1,380**
Wayne	**1,940**	*1,835*	*1,676*	**1,586**
Service Region	**$ 900**	*$ 851*	*$ 654*	**$ 619**

Table 5 – - Income Loss Relative to State … Total

	(X)	*(Y)*	(Z)
	Table 4 – Column A (1990:Population)	*Table 4 – Column D (1990:Population)*	Table 4 – Column D (2000:Population)
Bollinger	$17,470,666	*$ 8,262,573*	$ 9,359,685
Butler	51,442,952	*30,731,897*	32,398,308
Cape Girardeau	(2,391,516)	*904,834*	1,008,482
Carter	7,661,054	*5,950,982*	6,410,659
Crawford	22,765,201	*16,747,996*	19,919,747
Dent	21,266,888	*15,086,936*	16,435,753
Dunklin	58,331,246	*42,778,337*	42,833,890
Franklin	40,033,279	*21,299,996*	24,789,260
Gasconade	13,912,785	*7,505,209*	8,221,114
Iron	14,650,095	*12,676,212*	12,641,939
Jefferson	30,589,893	*23,902,293*	27,628,780
Madison	16,838,472	*10,373,078*	11,000,478
Mississippi	27,683,072	*21,414,332*	19,909,309
New Madrid	35,568,195	*27,191,102*	25,673,556
Pemiscot	41,508,799	*37,170,479*	33,992,820
Perry	22,609,455	*12,342,674*	13,442,898
Reynolds	10,752,087	*7,872,110*	7,905,201
Ripley	24,251,283	*17,339,560*	19,039,268
St. Francois	42,126,691	*31,949,216*	36,350,531
Ste. Genevieve	14,187,895	*8,828,973*	9,822,694
Scott	35,141,429	*24,279,330*	24,924,296
Stoddard	40,363,163	*30,542,952*	31,399,148
Washington	36,534,750	*28,124,697*	32,215,060
Wayne	22,394,877	*18,301,988*	21,022,790
Service Region	$655,714,317	*$450,603,119*	$494,858,666

Why Are High School Noncompletion Rates So High in Southeast Missouri?

Christian Raschke
Diane Primont
Bruce Domazlicky

Among rural counties in Missouri, the average high school noncompletion rate of adults 25 or older is 22.4%. The comparable figure for rural counties in southeast Missouri is 32.3%. The study by Redmond and Domazlicky details the huge cost of high school noncompletion to southeast Missouri. While the cost has declined from 1989 to 1999, it was still quite high (almost $500 million in 1999). Given this high cost, it would be useful to identify factors that might contribute to a larger high school noncompletion rate. That is the major focus of this study.

There are potentially many factors that go into individual decisions to not finish high school. For any one individual, there could be a combination of factors that lead the individual to decide to drop out of high school and enter the labor force. After reviewing economic theory and looking at previous literature, we identified five variables for which data are available that we could put into our economic model.

Three of the variables relate to the economic conditions of a region. Employment in the labor force can be viewed as the opportunity cost of remaining in high school. That is, students who remain in high school after the legal age at which they are allowed to drop out (typically 16) are sacrificing the opportunity to be in the labor force and earning an income. Of course, for most students this is a short term sacrifice that is made in order to improve their own "human capital" as a way to have better earnings prospects when they do enter the labor force.

The first economic variable is employment growth in a county from 1990 to 2000. The theory is that faster employment growth increases the number of job opportunities, thereby encouraging some students to leave high school and enter the labor force. The other two economic variables are the percent of total jobs in a county in the agricultural sector and in the manufacturing sector. The former is included since we are studying rural counties where agricultural employment plays a big role in the economy. Manufacturing employment is included because jobs in that sector are typically well-paying and may increase the incentive for students to leave high school since they can earn an above average wage without the need for a high school diploma.

Two demographic variables are included in our model. One is the poverty rate in a county. The higher the poverty rate, the greater may be the need to drop out of high school and support one's family. However, there is possibly a question of causality for this variable since counties that have low rates of education may have higher rates of poverty. A second demographic variable is the percent of children in a county living with just one parent. This variable would be particularly relevant for young, single parents who drop out of school in order to support their family.

We use a statistical technique known as least-squares regression to determine the significance of these five variables in "explaining" differences in high school noncompletion rates among the 81 rural counties in Missouri. We find three to have a significant effect on noncompletion rates: the poverty rate,

the percent of children in single parent families and the percent of jobs in the manufacturing sector. We did not find agricultural employment or employment growth in a county to be important. The latter variable may also suffer from causality issues since employment growth may be expected to be low in counties where education rates are low (noncompletion rates are high).

As noted above, the three significant variables in our study were the poverty rate, the percent of children in single parent families and the percent of jobs in the manufacturing sector. In all three cases, increases in these three variables increase the high school noncompletion rate.

The county average percent of children in single-parent families in southeast Missouri was 27.1% in 2000 as compared to 21.2% for the other rural counties. The poverty rate was also higher in southeast Missouri (18.0% versus 15.2%), as was the percent of jobs in the manufacturing sector (16.5% versus 12.1%). Therefore, all three variables that we found to be significant in our study contribute to a high school noncompletion rate that is higher than in other rural counties in Missouri.

What policy implications can be derived from this study? Clearly, some sort of intervention strategies to help single parents to finish high school (or obtain their GED) would be useful. This is clearly a group that is at risk for not completing high school. Something as simple as the provision of day care could pay significant dividends.

Perhaps there is not much a county can do about its poverty rate until its education level improves. There is a type of "chicken and egg" problem with respect to this variable as low poverty rates lead to larger high school noncompletion rates, but high noncompletion rates contribute to greater poverty in a region. This is a challenging cycle for a county to break out of.

The manufacturing variable, perhaps, leads to the most confounding of choices for the economic developer. Attracting industry to a region has to be viewed as a positive event; however, to the extent that the existence of well-paying manufacturing jobs encourages students to decide to drop out of high school and enter the labor force, such jobs do have a potential downside for a region. The effect of this variable may be mitigated over time as many manufacturers now require at least a high school education of their line employees. To the extent that this information is conveyed to students, its contribution to high school noncompletion may weaken over time.

Is Housing A Bubble Market?

Michael Devaney

Asset bubbles are most often blamed on easy credit. It is argued that central banks can initiate an asset bubble by lowering interest rates below the market determined rate of interest.
The 1980s commercial real estate bubble in the U.S. was fed by a sharp increase in lending by savings & loans and commercial banks. Many have described U.S. housing as a "bubble market."

Figure 1 is a graph showing the median price of new home sales since 1963 as reported by the Census Bureau. The GDP price deflator indicates that inflation over this period averaged 3.6% per year which would result in a real rate less than half the 6.1% nominal price increase. The rise in price would also be reduced by a quality adjustment since the median new house in 2006 is more extravagant than the 1963 new house. From 2000-2006 the growth rate in median new home prices for the U.S. increased to 7% per year. The 1% increase above the long run average would not seem to qualify as a national housing market bubble.

Figure 2 is bar chart of the U.S. and the four regions; Northeast, West, South, Midwest and Cape Girardeau County. In 2006, the $342,700 median price of an existing house in the West was more than two times the $167,800 median paid by a home buyer in the Midwest. In the Northeast the median price of $271,900 was 1.6 times the Midwest median. In Cape Girardeau County the median price of an existing house was $120,300. The large regional differential in housing prices with much higher housing prices on the east and west coasts is one reason that some observers have characterized the housing market as a "left and right coast bubble."

Figure 3 is a graph showing the ratio of the median price of new houses to median household income and is referred to as the affordability ratio while Figure 4 is a graph of the affordability ratio and the percentage of households that own their home. In recent years the affordability ratio has increased but this did not prevent ownership rates from rising. A ratio less than 3 is regarded as affordable while a ratio over 5 is regarded as severely unaffordable.

Housing is a localized market. When the affordability ratio is calculated using the local median price on existing homes and median household income for the local metropolitan area, the ratios vary from 2.0 to over 11. Cape Girardeau County has an affordability ratio of 3.0. Table 1 lists the least affordable and the most affordable metropolitan housing markets in the United States based on the local affordability ratio in 2006. Ten of the fourteen least affordable housing markets are located in California and Hawaii with two in Florida and one in New York. Most of the affordable metropolitan markets are in the Midwest. However, an indication of the localized nature of the housing market is evident from New York State. New York is the only state to have one of the least affordable housing market (New York City area) and two of the most affordable (Buffalo and Rochester).

The problem borrowers confront in markets with a high affordability ratio is evident when FHLMC mortgage guidelines on annual stabilized income are applied to median income households. The guideline says that

home buyers have 25% of annual stabilized income available to pay debt service, property taxes and insurance. When the guideline is implemented assuming a 10% down-payment, a mortgage rate of 6% over thirty years, annual hazard insurance and property taxes assumed to be 3 percent of the purchase price and an annual income equal to the 2006 median household income of $46,326, the maximum purchase price allowed by the guideline is $122,230. This is far below the 2006 median price of existing homes across the U.S. ($221,900) and substantially lower than the median in the most affordable Midwest market ($167,900) and Cape Girardeau County of $120,300.

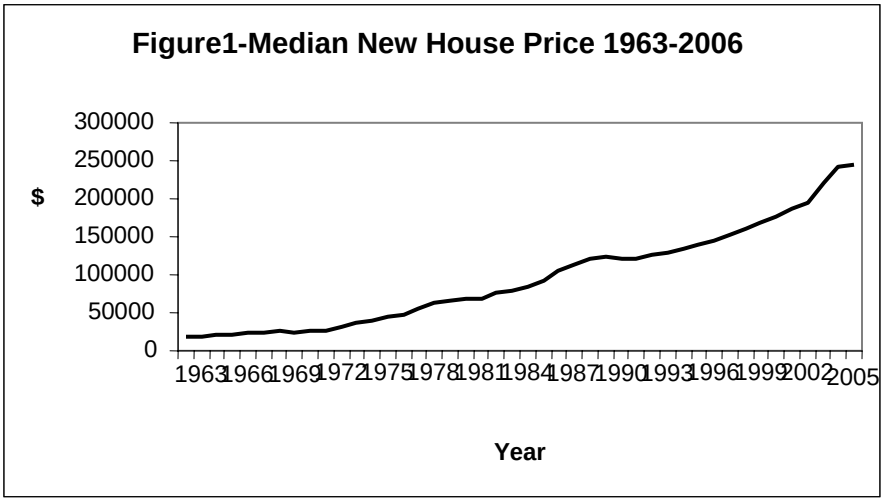
Median income buyers who are purchasing their second or third home can use the gain to pay down the loan-to-value ratio sufficient to meet FHLMC guidelines, of course, first time home buyers do not have this option. Many buyers who cannot meet prime mortgage guidelines have relied on non-traditional mortgage financing. Sub-prime lending with higher interest rates, fees and penalties is concentrated in census tracts that have a high proportion of low-income and minority households. The Consumer Federation of America (CFA) found that in 2005 about a third of women took out mortgages with interest rates over 7.66 percent (well above the average prime mortgage rate of 5.87 percent) compared with about a quarter of men. The head of the CFA stated that the high levels of sub-prime lending among women head of household compromises their ability to accrue home equity which is the largest asset in the portfolio of America households.

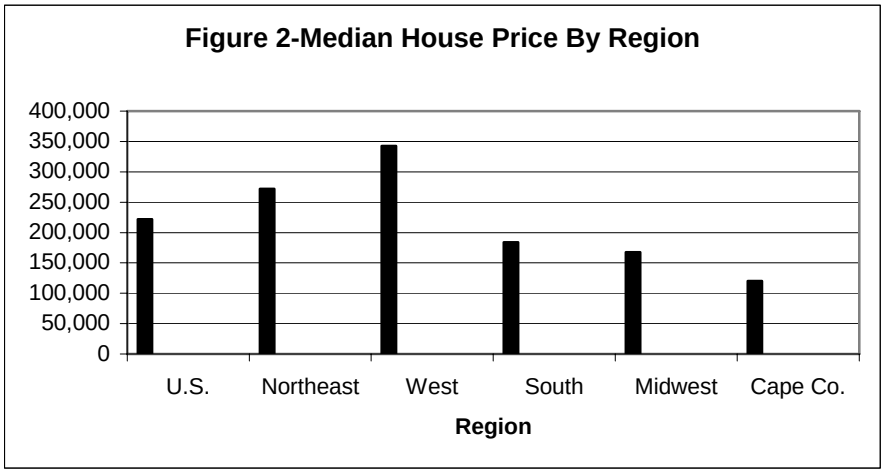
The growth in sub-prime lending represents an expansion in the supply of mortgage credit among households who do not meet prime market underwriting standards. As the percent of households who own their home continued to rise over the last ten years, along with the median housing price, stagnant household income suggests greater reliance on non-traditional mortgages. Following the increase in short term interest rates, many sub-prime loans have been adjusted upward causing a rise in delinquencies and foreclosure such that 25 sub-prime lenders filed for bankruptcy since late 2006.

In between sub-prime mortgages that are considered the greatest credit risk and prime loans that are the best credit risk resides a grey area of mortgage loans that are referred to in the industry as Alt-A mortgages. An Alt-A mortgage borrower typically has a higher credit score than a sub-prime borrower but may be unable to meet the guidelines established in the prime market. Although not nearly as high as sub-prime mortgages, the default rates on Alt-A loans have risen in recent months. Simon and Hagerty (2007) report that in 2006 sub-prime loans comprised approximately 24% of mortgage originations while Alt-A mortgages accounted for roughly 16%.

Easy credit cannot explain high median home prices in some of the most expensive metropolitan markets since prices in many of these markets have been increasing even during periods of tight credit. Evidence suggests that prices have been rising in these markets since 1970 because there has been a significant increase in the ability of existing homeowners to influence local development decisions and block new projects, especially cheaper large scale projects.

Both regulatory costs that restrict the supply of new housing in high valuation markets and the expansion of mortgage credit on the demand side appear to have contributed to the rise in median home prices.





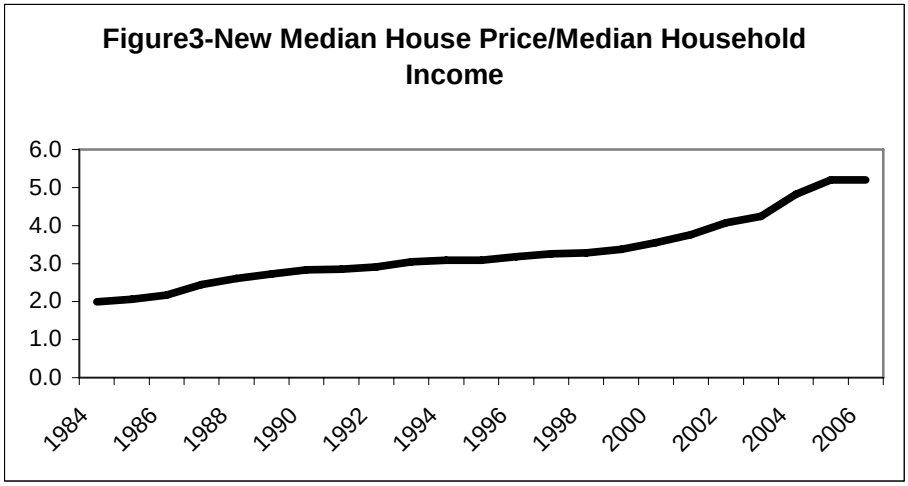


Figure3-New Median House Price/Median Household Income
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1984
1986
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1992
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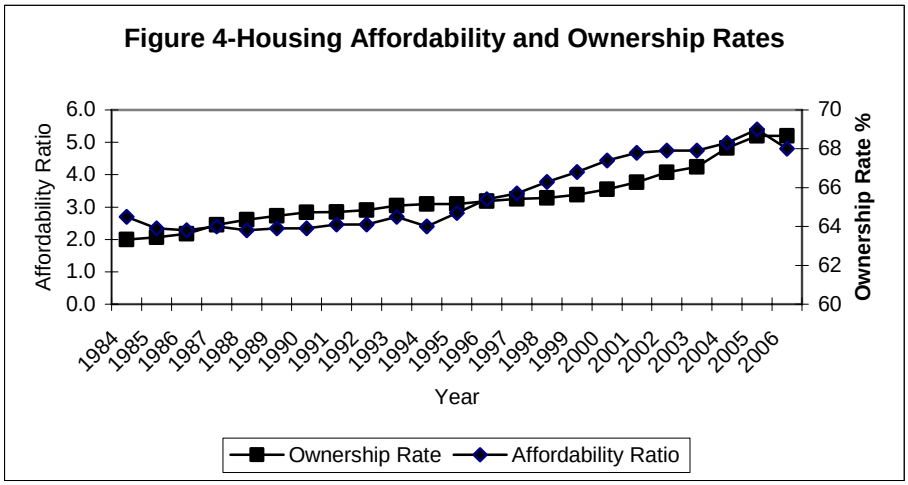


Figure 4-Housing Affordability and Ownership Rates
Affordability Ratio
Ownership Rate %
Year
Ownership Rate
Affordability Ratio

Table1-Home Affordability

LEAST AFFORDABLE	Ratio	MOST AFFORDABLE	Ratio
Los Angeles-Orange County CA	11.4	Fort Wayne, IN	2.0
San Diego, CA	10.5	Youngstown, OH	2.0
Honolulu, HI	10.3	Buffalo, NY	2.3
San Fransisco, CA	10.1	Dayton, OH	2.3
Ventura County, CA	9.4	Indianapolis, IN	2.3
Stockton, CA	8.6	Rochester, NY	2.3
San Jose, CA	8.4	Akron, OH	2.4
Riverside-San Bernardino, CA	7.9	Grand Rapids, MI	2.5
Miami-West Palm Beach, FL	7.6	Omaha, NE	2.5
Modesta, CA	7.6	Toledo, OH	2.5
Fresno, CA	7.2	Wichita, KS	2.6
New York City, NY-NJ,CT-PA	7.2	Des Moines, IA	2.6
Sacramento, CA	6.6	Huntsville, AL	2.6
Sarasota, FL	6.6	Pittsbburgh, PA	2.6
		Cape Girardeau County	**3.0**

*Source: *Third Annual Demographia International Housing Affordability Survey 2006*

Some Economics of Ethanol as an Alternative Fuel

Bill Weber

High oil prices in 2003 and 2004 renewed calls for the U.S. to become less dependent on foreign oil and to develop alternative fuel sources. The production of bio-fuels is seen as a viable alternative to foreign oil with the added benefit of reducing greenhouse gas emissions. Ethanol production, primarily from corn in the U.S., is the leading candidate among bio-fuels. Current production methods allow 2.5 gallons of ethanol to be produced from 1 bushel of corn. (Gardner 2003) Fuel ethanol accounts for 73% of use, followed by 17% for alcoholic beverages, and 10% in industrial use. In fuel, ethanol adds octane and oxygen content to gasoline. (Quear and Tyner 2006)

From 1980 to 2005 ethanol production increased from 175 million gallons to 4 billion gallons. (RFA 2007) During this period ethanol production fell only once, in 1996, as $5/bushel corn prices made ethanol production inefficient even with the $0.51/gallon subsidy. The federal renewable fuels standard will require 7.5 billion gallons of ethanol production by 2012. Brazil and the U.S. produce two thirds of world's ethanol, with Brazil producing ethanol from sugar cane and the U.S. producing ethanol from corn

Corn-based ethanol production has been subsidized in the U.S. since the Energy Act of 1978 provided an exemption of the federal excise tax on gasoline. Every energy bill since 1978 has included some sort of subsidy for ethanol. There are at least five sources of subsidy for ethanol producers. First, ethanol producers receive a $0.51/gallon tax credit, which helps reduce production costs and increases supply. Second, in 1990 Congress required oxygen additives to be used in gasoline as a way of reducing ozone and smog in urban areas. The primary oxygen additive was MTBE (Methyl tert-butyl ether). However, because MTBE frequently leaked out of gas storage tanks and contaminated groundwater the EPA recommended that all states phase out MTBE in 2000, effectively increasing the demand for ethanol. Third, various states and the federal government through the Renewable Fuels Act of 2005 have mandated private sector use of ethanol, creating more demand. Fourth, some states have mandated that official state vehicles burn E85 blended gasoline, increasing demand for ethanol. Finally, U.S. ethanol producers receive a subsidy via high tariffs on Brazil's ethanol exports. These tariffs keep ethanol prices high by limiting competition from foreign producers.

Subsidies cause over-production and over-consumption resulting in an efficiency loss or deadweight loss. The deadweight loss of a subsidy arises from money having a higher value in an alternative use, with the subsidy acting as an incentive to keep resources in the inefficient use. To think about the deadweight loss imagine a $5 all-you-can eat pizza buffet. If the typical customer eats five slices of pizza the average cost of pizza is $1 a slice, but at the margin, eating an extra slice has a zero price. Now, imagine a pizza parlor that sells pizza by the slice at $1 per slice. The customer can still buy five slices and spend $5, but the law of demand tells us that the typical customer will probably buy less than five slices

because the money has more value in an alternative use, say buying a soda.

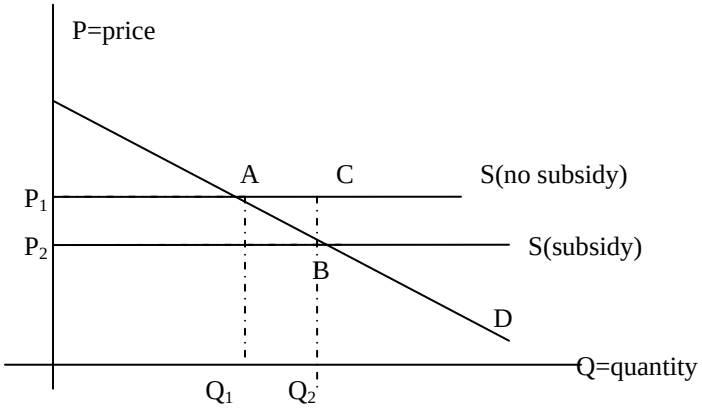
Figure 1 depicts the deadweight loss of the subsidy for ethanol. The non-subsidized equilibrium price and quantity of ethanol is P_1 and Q_1. A subsidy reduces production costs and shifts the supply curve down. The subsidized equilibrium quantity is Q_2. At Q_2 consumers place a marginal value of P_2 on the next unit of ethanol but the marginal cost of producing the next unit is P_3. The triangle ABC represents the deadweight loss of the subsidy. This deadweight loss (DWL) can be approximated by the formula:

$DWL = -\frac{1}{2}\frac{s}{P}\varepsilon_d (sQ)$ where s is the per unit subsidy of \$0.51/gallon, P is the equilibrium price of ethanol, $\varepsilon_d \leq 0$ is the price elasticity of demand, and Q is the equilibrium quantity of gasoline. (See Stiglitz 2000 for this derivation). From the formula we can note that higher subsidies, or more elastic demand, or a higher equilibrium quantity will cause the efficiency loss to be greater.

The value (sQ) in the deadweight loss formula represents the total subsidy given to ethanol producers. Currently this subsidy is approximately \$2 billion. Using the current ethanol price of P=\$2.30 the deadweight loss can be easily calculated given equilibrium quantity and the price elasticity of demand, ε_d. Table 1 below provides estimates of the deadweight loss for various elasticity estimates and quantities. I choose quantities corresponding to the 2006 quantity of Q=4.05 billion gallons of ethanol and the forecast quantity in 2012 of Q=7.5 billion gallons of ethanol.

The estimates of the deadweight loss from the \$0.51/gallon subsidy range from around \$100 million dollars to over \$800 million dollars. As demand tends to become more elastic in the long-run and as ethanol demand grows because of government mandates the deadweight loss will increase. If the other subsidies that ethanol receives are accounted for the deadweight loss would be even higher.

Figure 1. Deadweight Loss of a Subsidy



Proponents of ethanol have pointed out the reduced greenhouse gas emissions associated with ethanol blended into gasoline but have ignored other environmental effects. Increased ethanol demand will cause more corn to be planted with detrimental effects on water quality because of increased runoff into rivers and leaching into groundwater of fertilizers and pesticides into rivers and groundwater. Färe, Grosskopf, and Weber (2006) find that the water pollution costs associated with human risk-adjusted indexes of pesticides and fertilizers tends to be higher in the Corn Belt than in other states. Increases in corn production will surely increase water pollution costs.

Corn is the most heavily subsidized agricultural product and the ten states comprising the Corn Belt (North Dakota, South Dakota, Nebraska, Kansas, Missouri, Illinois, Ohio, Indiana, Iowa, and Minnesota) receive 83% of total corn subsidies. Higher corn prices resulting from increased ethanol demand are a kind of indirect subsidy. Figure 2 graphs the corn subsidies received by the twenty-four counties in Southeast Missouri, the Missouri average, and the U.S. average for the period 1995-2005. (Environmental Working Group)

Farmers in five counties in Southeast Missouri receive more than the U.S. average of $18 million, but most Southeast Missouri counties receive below average subsidies. Gardner (2003) finds that although farmers benefit from government mandated requirements for ethanol use relative to a zero subsidy regime, those same farmers benefit even more from deficiency payments and price supports than from requirements for ethanol use. The reason for their support stems from the fact that corn is an input used to generate livestock revenues. Deficiency payments make corn farmers better off and livestock producers no worse off. However, the benefits that corn farmers receive from higher corn prices via increased ethanol demand are partially offset by losses to livestock producers who must pay higher feed costs.

Economic theory predicts that the political process will tend to be economically efficient when the benefits of public spending are relatively proportional to the costs. The theory also predicts that when the benefits of public spending programs or subsidies are concentrated among a small group of individuals (ethanol producers) and the costs are widely distributed (all taxpayers and users of corn products) the political process will frequently cause inefficient programs to be adapted. Such a case seems to be true of the subsidies given to ethanol producers. Reduced dependence on foreign oil and a cleaner environment could be more easily achieved by taxing gasoline, rather than subsidizing bio-fuels.

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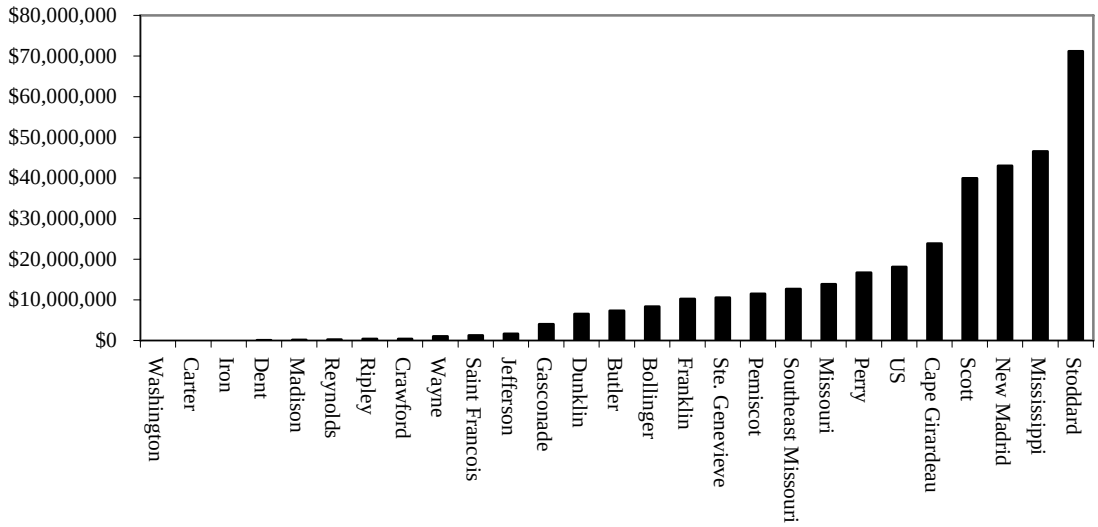
Table 1. Estimates of the Deadweight loss

Elasticity ε_d	P=$2.30, Q=4.05 billion	P=$2.30, Q=7.5 billion
-0.5	$114,501,000	$212,038,000
-1	$229,001,000	$424,076,000
-1.5	$343,502,000	$636,114,000
-2	$458,002,000	$848,152,000

Figure 2. Corn Subsidies, 1995-2005
Source: Environmental Working Group



Do Returns to Schooling Differ in Missouri's Metropolitan and Rural Counties?

Diane F. Primont
Rebecca Summary

Young college graduates are choosing to settle in large metropolitan areas rather than in rural areas. A 2003 report by the U.S. Census Bureau examined the migration patterns of young adults, aged 25-39, between 1995 and 2000. Approximately 53.8 percent of young, single, college educated people remained in the same residence (or same county) between 1995 and 2000, while 18 percent moved to a different county in the same state. In contrast, 74 percent of young, single, not college educated people remained in the same residence (or same county), while 12.7 percent moved to a different county in the same state.

Among young adults, metropolitan areas attracted a larger proportion of college educated people, while rural areas attracted a larger proportion of those not college educated. For example, both the Kansas City and St. Louis MSAs had net inmigration of young, single, college educated adults between 1995 and 2000.

We hypothesize that, on average, individuals in rural areas tend to obtain less education because the returns to educational investment are lower compared to other areas. Returns are likely lower because there is an insufficient quantity of highly educated workers to attract firms that require such workers.

In this paper, we estimate the rates of return to educational investment for the state of Missouri and its rural counties. Using least squares regression, we estimate an earnings function (a statistical model) in which earnings depend on schooling, work experience, and other variables suggested in the economics literature.

The earnings variable in the model is measured as the natural logarithm of real per capita income in the county in 2000. In 2000, real per capita income in Missouri was $15,819, but ranged from $8,077 to $23,221 across Missouri counties.

Economic theory suggests the two most important variables that explain earnings are educational attainment and experience. As an individual acquires more years of schooling, his or her skills increase. Since these skills are valued by employers, the individual is likely to earn higher wages. Therefore, other things equal, an increase in schooling will lead to an increase in income. Educational attainment is measured as the percentage of the county's population aged 25 and over with a high school degree or higher in 1990. An individual could also enhance his or her skills through work experience. More work experience yields more skills, resulting in higher wages. Work experience is measured as the median age of the county's population in 1990. We allow for a nonlinear relationship between income and work experience by including median age and median age squared in the earnings function. We expect that workers' incomes rise initially, but then become constant or fall slightly before retirement.

Other variables suggested in the economics literature include industry mix, agglomeration economies, infrastructure, educational quality, and social capital.

We include three measures of industry mix in our model. The first is the percentage of the county's employment in the non-farm private sector in 1990. We expect that counties with a larger proportion of non-farm private sector employment are likely to have higher income than the farm sector. The second variable is the percentage of the county's employment in the public sector in 1990. Again, we expect that counties with a larger proportion of public sector employment to have higher income than in the farm sector. The third measure of industry mix is the percentage of employment in high technology industries in 1990. We expect that high technology industries, which employ highly skilled workers, would pay higher wages than other industries, everything else the same.

Population density, measured as the number of persons per square mile in 1990, may affect income through agglomeration economies. Agglomeration economies may result from technological spillovers from one firm to another nearby and the resultant increases in productivity. We would expect that a larger population density would lead to more agglomeration economies and higher incomes. Infrastructure would also be likely to enhance productivity and increase incomes. Our measure of infrastructure is interstate highway access (a dummy variable equal to 1 if the county had interstate highway access in 1990, and 0 otherwise). We would expect an interstate highway access to increase income. Our measure of the quality of education is the pupil-teacher ratio for schools in the county in 1990. A lower pupil-teacher ratio is expected to increase school quality and income. Finally, we would expect that social capital would contribute to productive efficiency in the county. Social capital captures community involvement. We measure social capital by the percentage of registered voters who cast a ballot in the 1991 election, a non-Presidential election year. We would expect an increase in social capital to increase income in the county.

We estimate the model two times – for all counties in Missouri and for rural counties only. We find that, for all Missouri counties, educational attainment, work experience, percent employed in the non-farm private sector, and the percent employed in high technology industries significantly affect earnings and in the way we expected. For rural counties, educational attainment, work experience, and the percent employed in high technology industries significantly effect earnings and in the way we expected. Also, for rural counties, we find that population density has a significant effect on earnings. Rural counties with larger cities tend to have higher per capita incomes.

The estimated coefficient on educational attainment may be interpreted as the return to schooling. For all Missouri counties, the coefficient is 0.0127, while it is 0.0100 for rural counties only. These results suggest that, for the average Missouri county, a one percentage point increase in the adult population with a high school degree or higher would increase earnings by 1.28 percent, or from $12,117.2 to $12,272.3 *per person*. However, for the average rural county, a one percentage point increase in the adult population with a high school degree or higher would increase earnings by 1.01 percent, or from $11,548.8 to $11,665.4 *per person*.

Public policy implications arising from this study fall into two general categories. The first category involves policies designed to increase the number of high school graduates in *all* Missouri counties, since a one percentage point increase in the adult population with a high school degree or higher increases earnings by 1.28 percent. The second category of polices is designed to address the differential in returns to education between rural counties and the entire state.

Policies to address the differential in returns to education between rural counties and the entire state should focus on attracting high tech industries to rural areas. One policy that has been implemented is tax incentives at the state and local level. However, Matt Hull, program manager with the Corporation for Enterprise Development, finds high tech firms relatively immune to this strategy. Rather than focusing on costs, businesses in the "new economy" look for locations rich in talent and ideas. To attract talented employees, firms look for areas that are rich in cultural and physical amenities. These amenities include restaurants, pubs, museums, historic sites, universities, recreational opportunities such as rivers, lakes and parks and natural attributes such as appealing landscapes. Other attractive characteristics of rural areas include short commute times, low crime rates and reasonable housing prices.

Hull also finds that technology firms tend to cluster, and the development of new clusters can be difficult in the short run. He concludes that "only bold public private partnerships that include government, business and the non-profit sector can bring about change." Short term incentives that focus only on costs may divert a state or locality from taking the long term actions necessary to foster and develop innovative industries.