THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

Economics 873

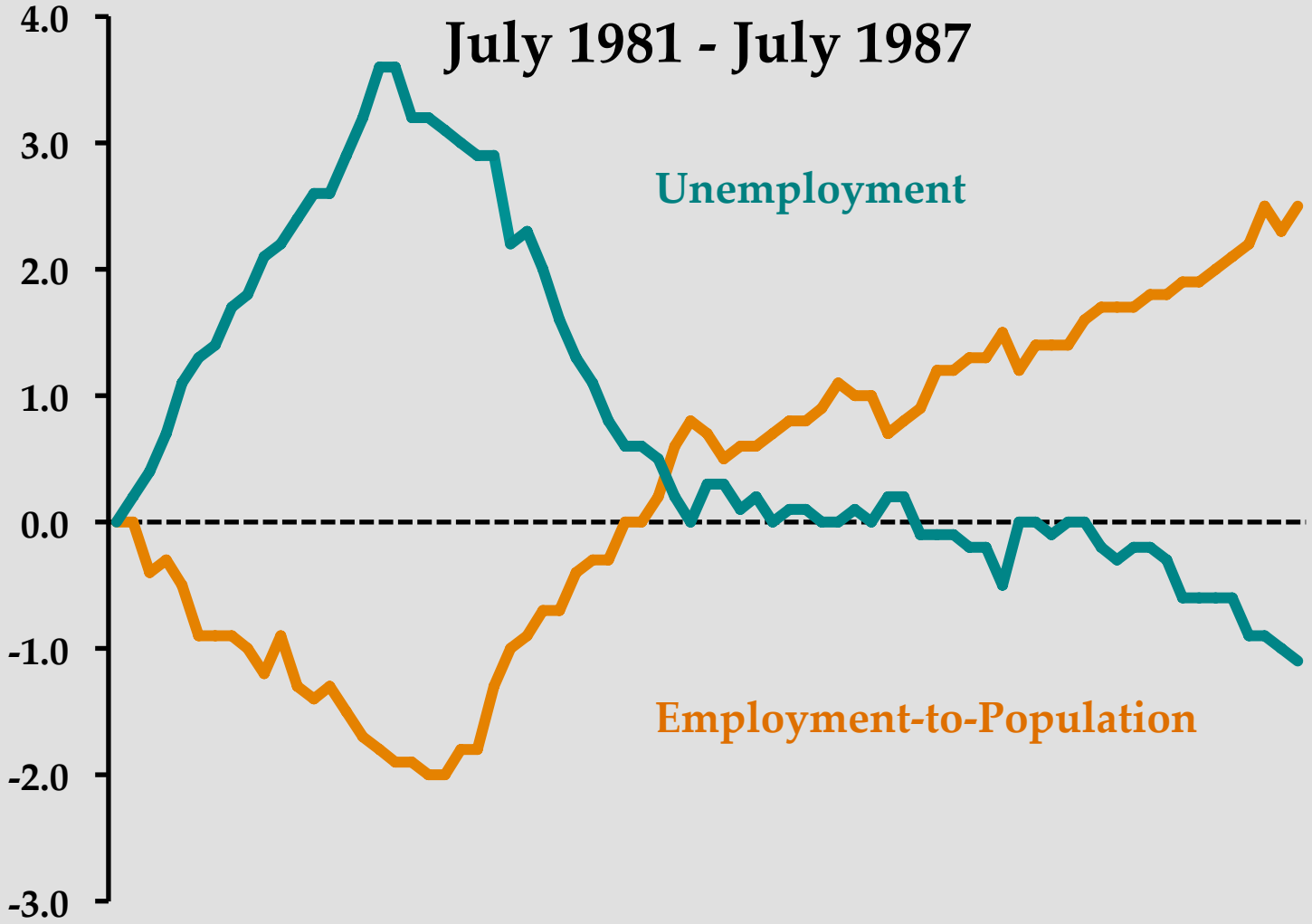
Using the American Community Survey to Explore the Employment-to-Population Ratio Puzzle of the Great Recession

Robert Ackerman

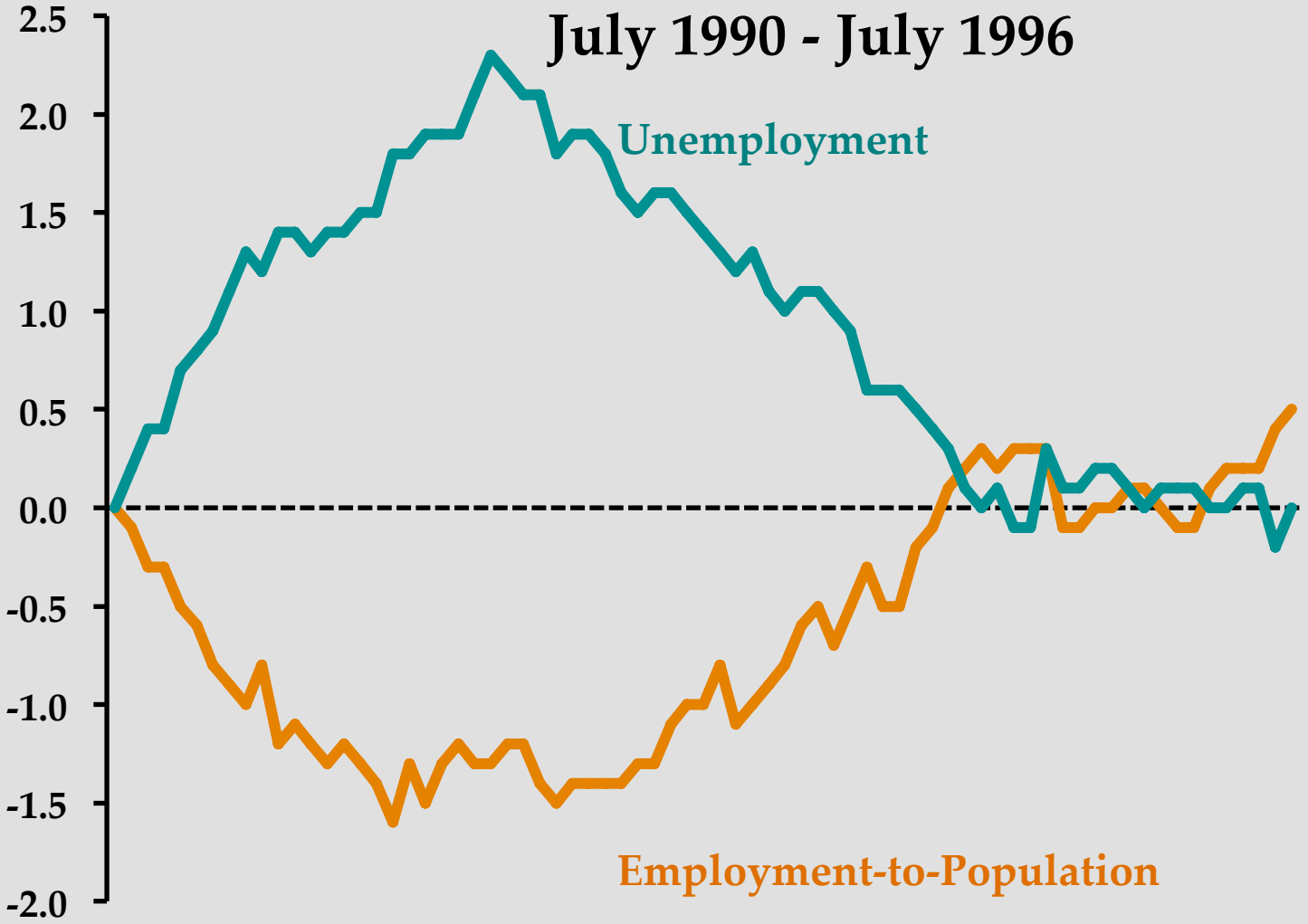
April 16, 2014

THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

During the recoveries that followed previous recessions two labor market indicators, the the unemployment rate and employment-to-population ratios, moved together telling the same story about the improving state of the labor market

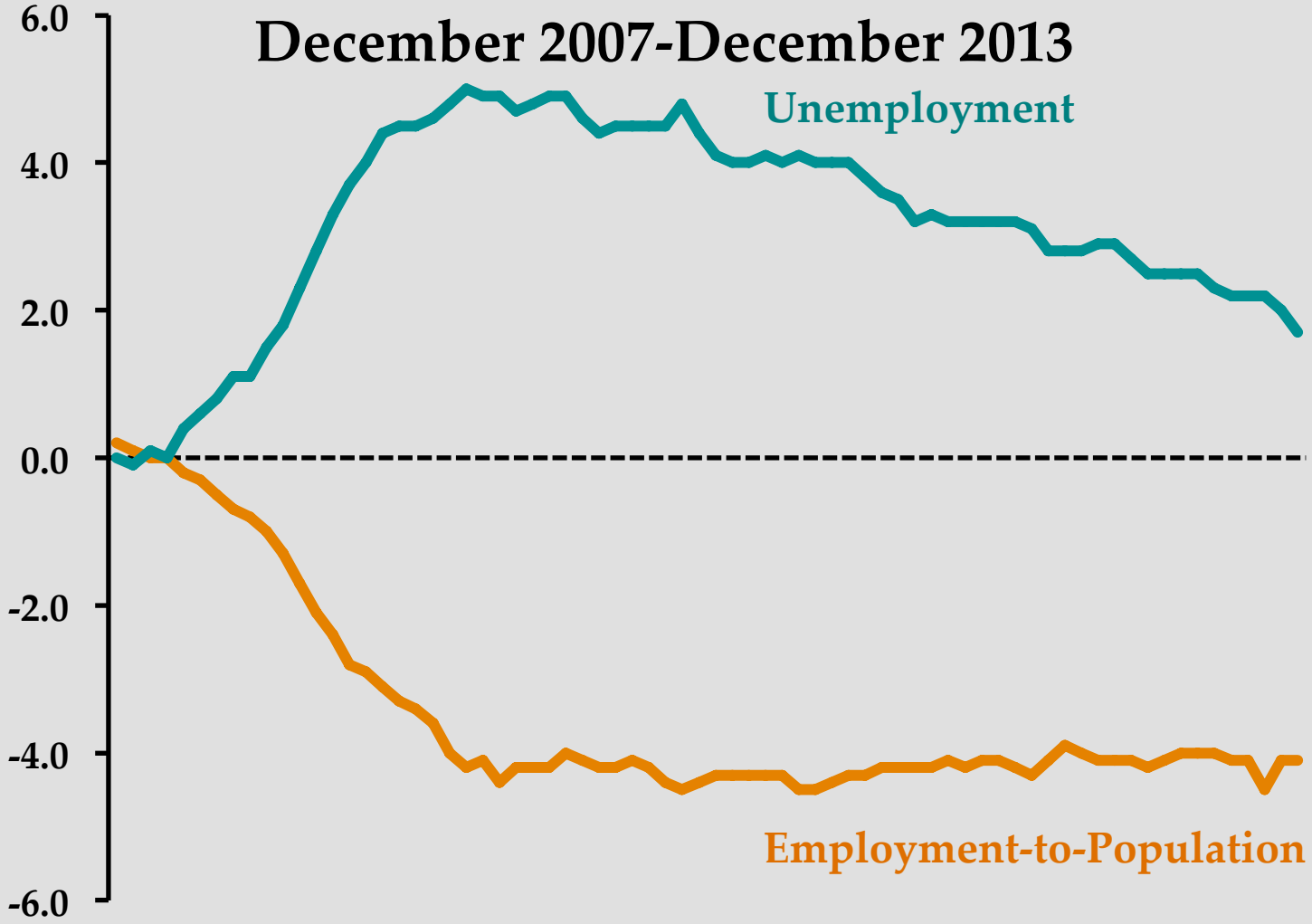


Source: U.S. Bureau of Labor Statistics, *Current Population Survey*.

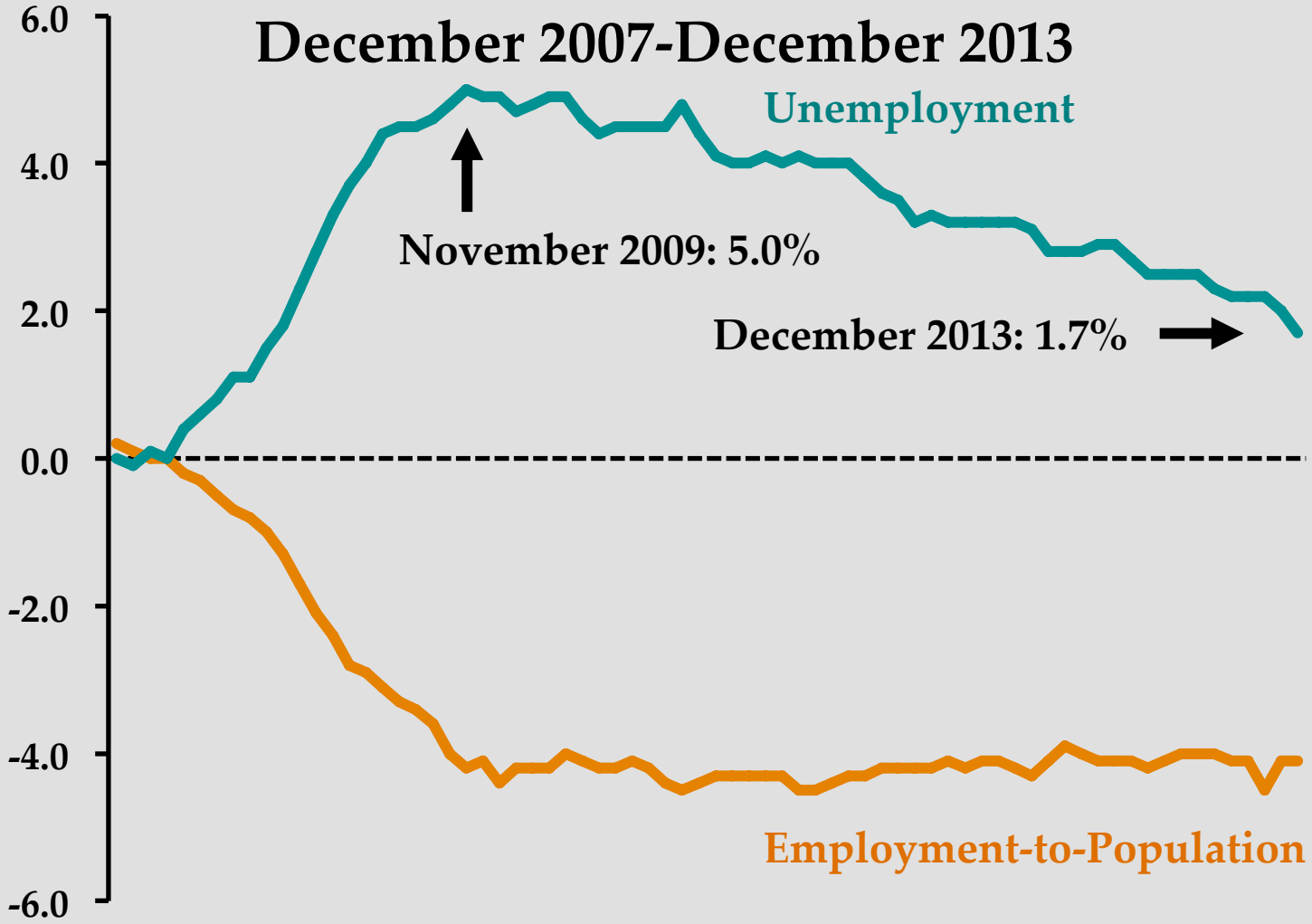


Source: U.S. Bureau of Labor Statistics, *Current Population Survey*.

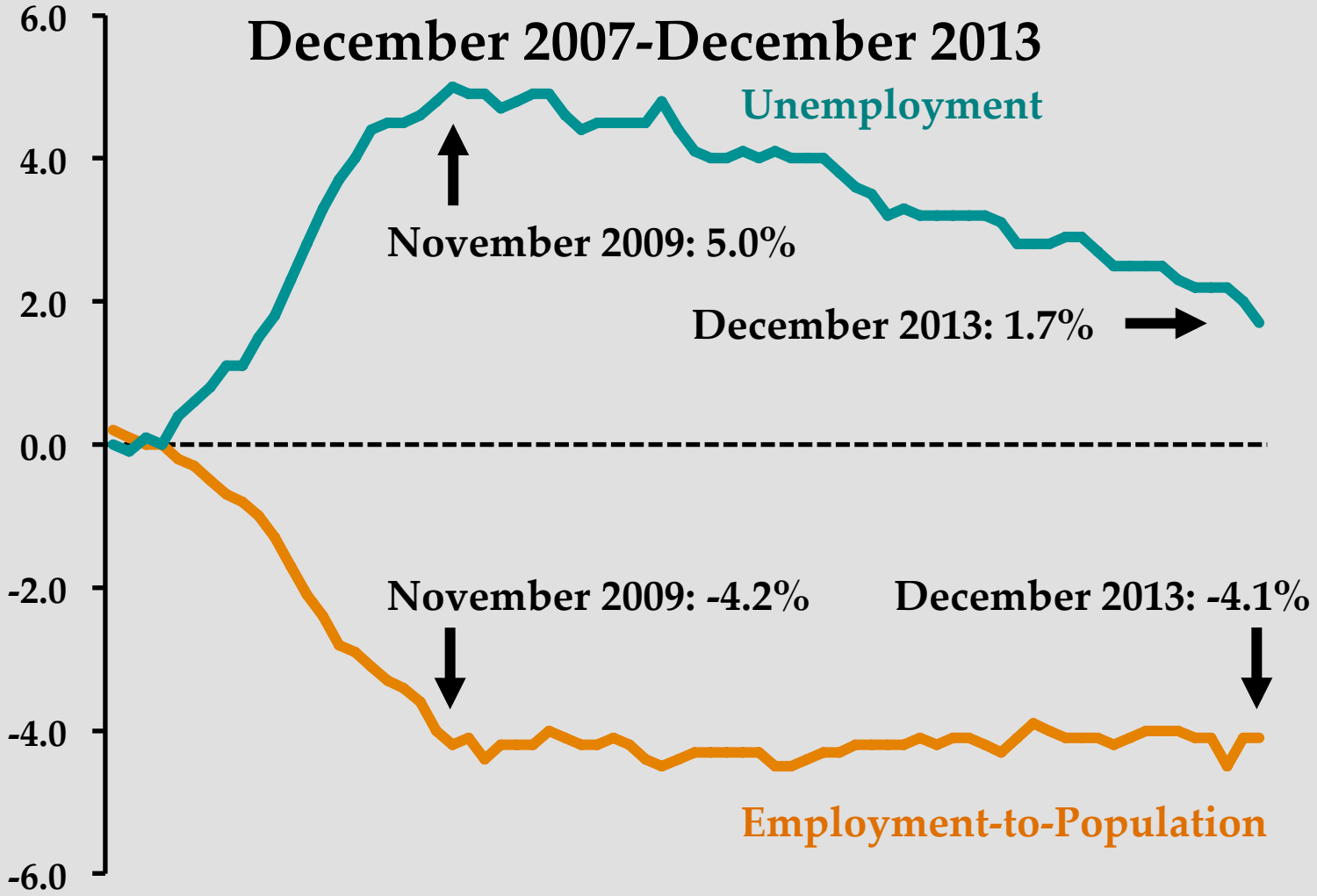
Source: U.S. Bureau of Labor Statistics, *Current Population Survey*.



Source: U.S. Bureau of Labor Statistics, *Current Population Survey*.



Source: U.S. Bureau of Labor Statistics, *Current Population Survey*.



Source: U.S. Bureau of Labor Statistics, *Current Population Survey*.

Previous Work

"A Mis-Leading Labor Market Indicator", Samuel Kapon and Joseph Tracy, The Federal Reserve Bank of New York, February 2014

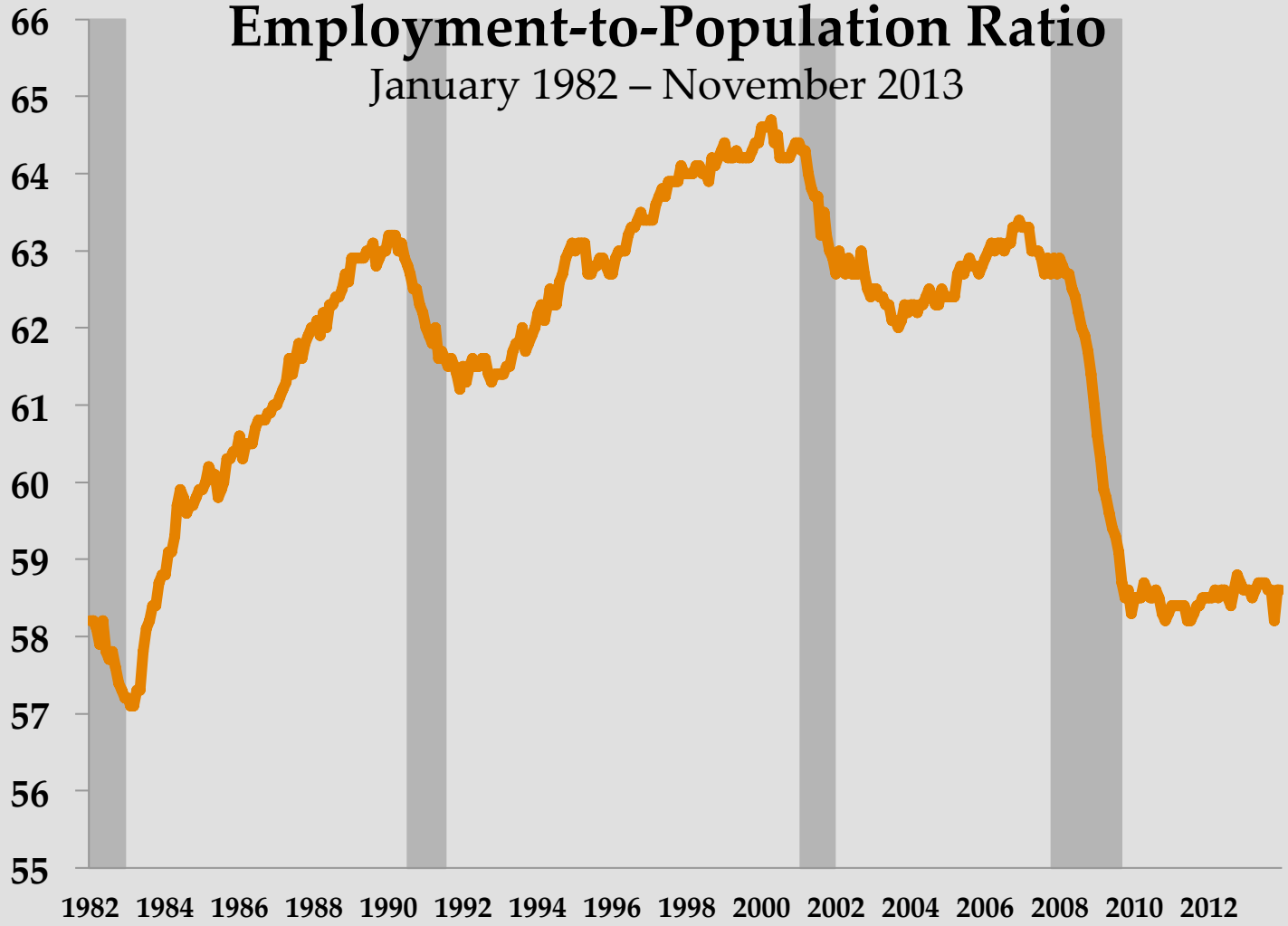
"Reconciling Contrasting Signals in the Labor Market: The Role of Participation", Stefania Albanesi, Ayşegül Şahin, and Joshua Abel, The Federal Reserve Bank of New York, March 2012

"Explaining the decline in the U.S. labor force participation rate", Daniel Aaronson, Jonathan Davis and Luojia Hu, The Federal Reserve Bank of Chicago, March 2012

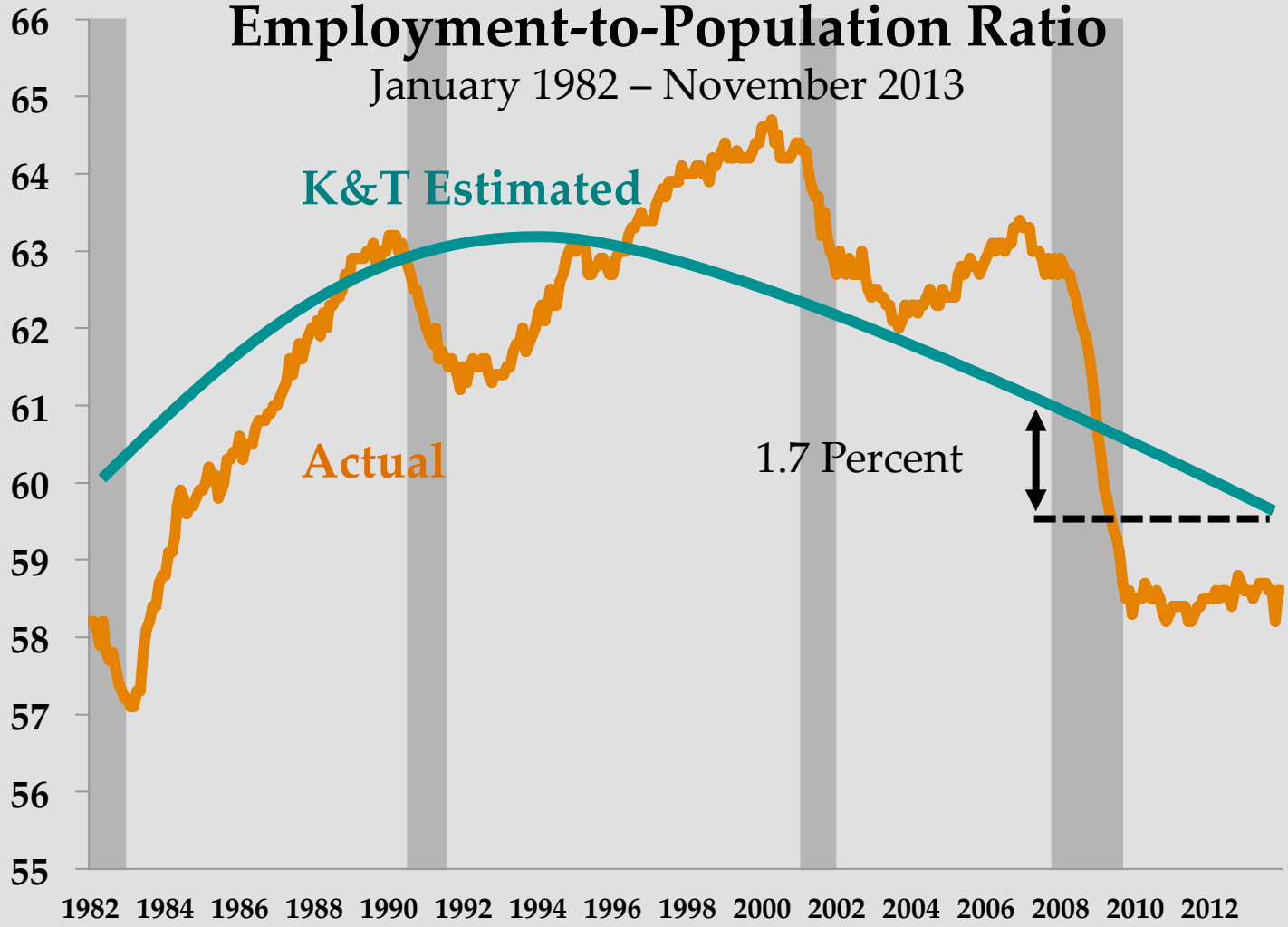
THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

Previous Work

Kapon and Tracy use the monthly CPS data to construct a "demographically adjusted" Employment-to-population ratio. In doing so they generate 280 cohorts based on decade of birth, sex, race/ethnicity, and educational attainment level. They then use these cohorts to generate an estimated Employment-to-population ratio that reflects underlying demographic changes ignoring business cycle changes.

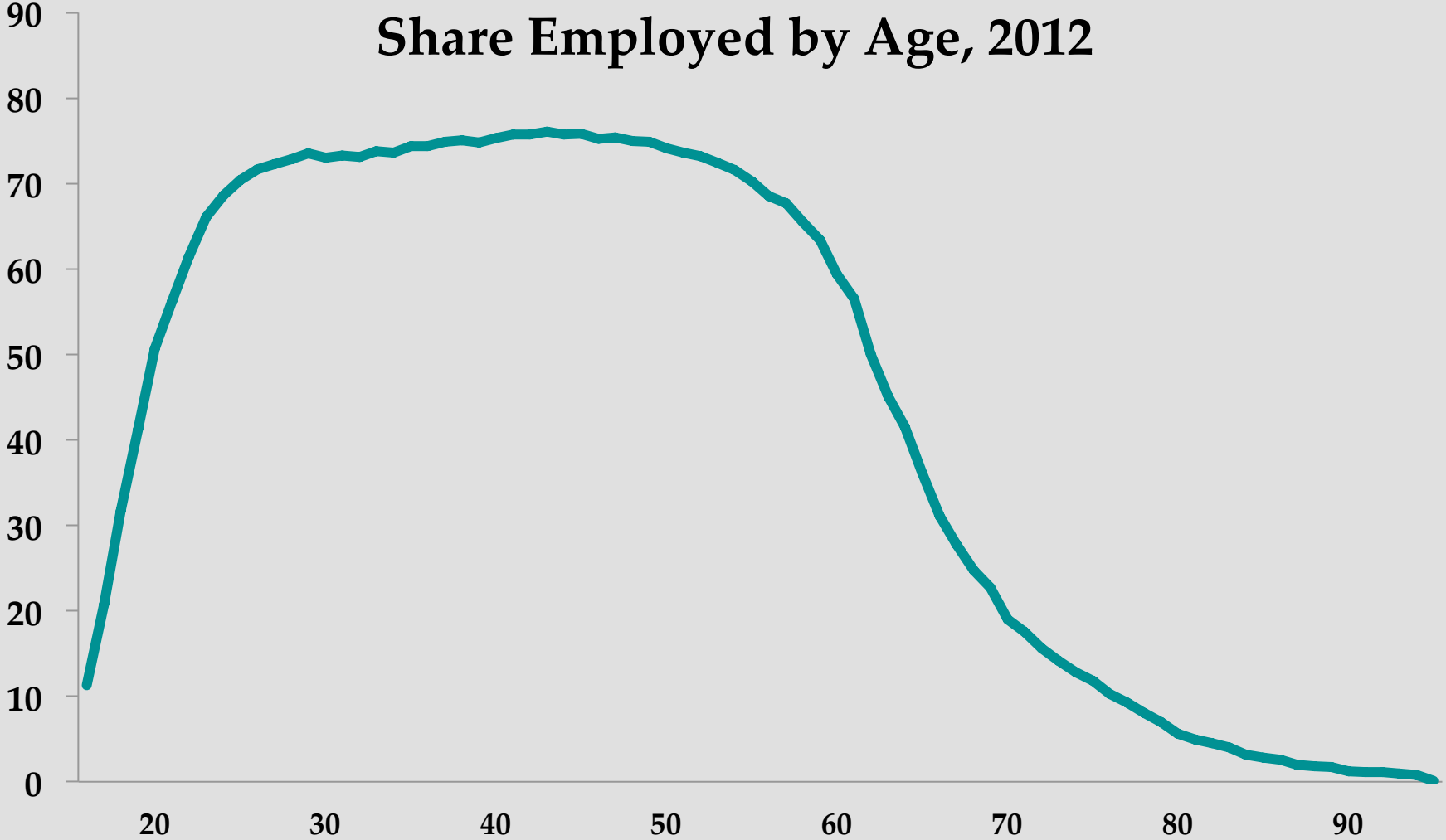


Source: U.S. Bureau of Labor Statistics, *Current Population Survey*.



Source: U.S. Bureau of Labor Statistics, *Current Population Survey*. Estimates from Kapon and Tracy, New York Federal Reserve February 2014

Share Employed by Age, 2012



Source: U.S. Department of Commerce, Census Bureau, American Community Survey 2012

THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

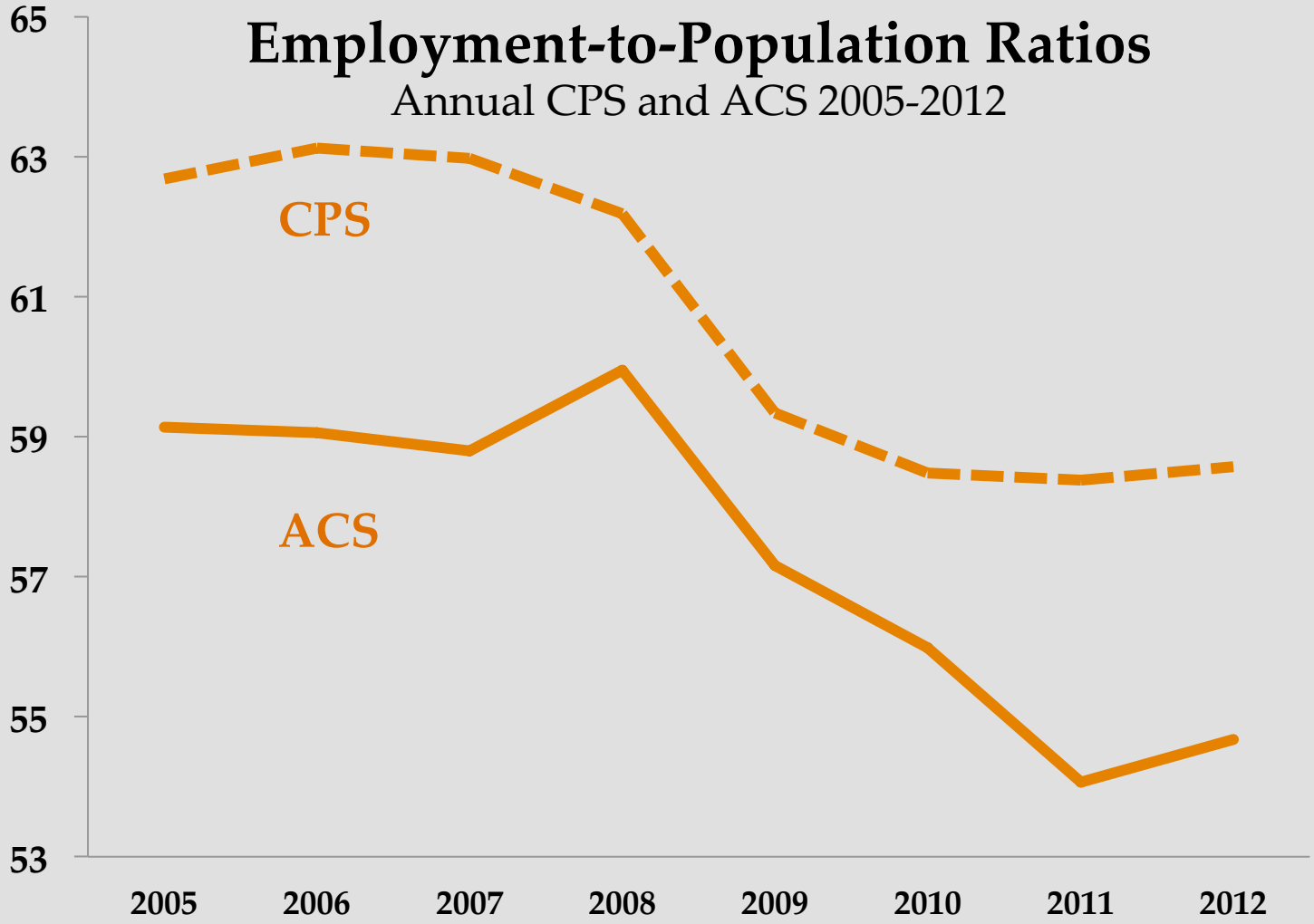
My Paper

- While the K & T use the CPS data to tell a convincing story, the CPS is noisy and others have employed similar techniques to obtain results that vary significantly
- Why not use the American Community Survey, a representative annual sample of about 3 million people to attack the question in a different way?

THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

The American Community Survey (ACS)

- Beginning in 2005 the ACS replaced the long form of the decennial Census.
- It is an annual survey of a representative sample of the U.S. population
- Each year contains around 3 million observations



Source: U.S. Bureau of Labor Statistics, *Current Population Survey*. and U.S. Department of Commerce, Census Bureau, *American Community Survey*

THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

My Paper

- Using the ACS data, I estimate OLS and Probit models of employment based on demographics.
- Next I follow Oaxaca (1973), Blinder (1973) , and Yun (2004) by decomposing the differences between 2008 and each subsequent year by endowment and coefficient effects to disentangle differences in demographics and differences in labor market conditions

THE UNIVERSITY *of* NORTH CAROLINA *at* CHAPEL HILL

Economics 873

Table 1: ACS Summary Statistics by Year

	2008	2009	2010	2011	2012
Demographics[a]					
Percent Male	48.5	48.5	48.6	48.8	48.7
Percent Female	51.5	51.5	51.4	51.2	51.3
Race/Ethnicity[a]					
Percent White	70.5	69.8	68.7	67.7	67.4
Percent Black	9.8	9.9	10.1	10.9	10.6
Percent Hispanic or Latino	12.7	13.2	13.6	13.7	14.0
Percent Asian or Pacific Islander	4.4	4.5	4.7	4.6	4.7
Percent Other Race	2.6	2.7	2.8	3.1	3.2
Mean Age[a]	39.3	39.5	39.7	40.3	40.5
Percent Married [b]	44.1	43.8	43.1	42.0	42.2
Mean Number of Children[b]	0.7	0.7	0.7	0.7	0.7
Employment					
Mean Annual Wages[c] ($)	42472	42934	42564	42171	43656
Employment-to-Population Ratio[d]	59.95	57.16	55.99	54.06	54.68
Unemployment Rate [d]	5.8	9.2	10.2	9.7	8.8
Educational Attainment[b]					
High School or Less	42.5	42.4	42.3	43.5	42.3
Some College	28.8	28.9	28.7	28.5	28.8
Bachelor's	17.8	17.7	17.9	17.1	17.8
Advanced Degree	10.9	11.0	11.1	10.9	11.2
Number of Observations	3,000,657	3,030,728	3,061,692	3,112,017	3,113,030

[a]Full sample. Note percentages might not sum to 100 due to rounding.

[b]Percent, ages 25 and over. [c]Employed, ages 16 and over. Note: Not adjusted for inflation.

[d]Percent, ages 16 and over. Values in parentheses are standard errors.

THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

Economics 873

Table 1: ACS Summary Statistics by Year

	2008	2009	2010	2011	2012
Mean Age[a]	39.3	39.5	39.7	40.3	40.5
Employment-to-Population Ratio[d]	59.95	57.16	55.99	54.06	54.68
Unemployment Rate [d]	5.8	9.2	10.2	9.7	8.8

THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

Simple Model

$$\text{Employed}_i = \beta_0 + \sum_{j=1}^{11} \beta_j I(X_j) \sum_{j=12}^{28} \beta_j I(\text{Age}_i) + \sum_{j=29}^{31} \beta_j I(\text{Region}_i) + \epsilon_i$$

Employed = {0,1} binary outcome
I(X) = demographic indicators (i.e. sex, race/ethnicity, married, kids, educational attainment)

I(Age) = age indicators (twenties, thirties,..., 60, 61, ..68, 69, seventies, eighties, nineties)

I(Region) = census region indicators (Midwest, South, West)

OLS/Probit Results

Table 2: OLS and Probit Results

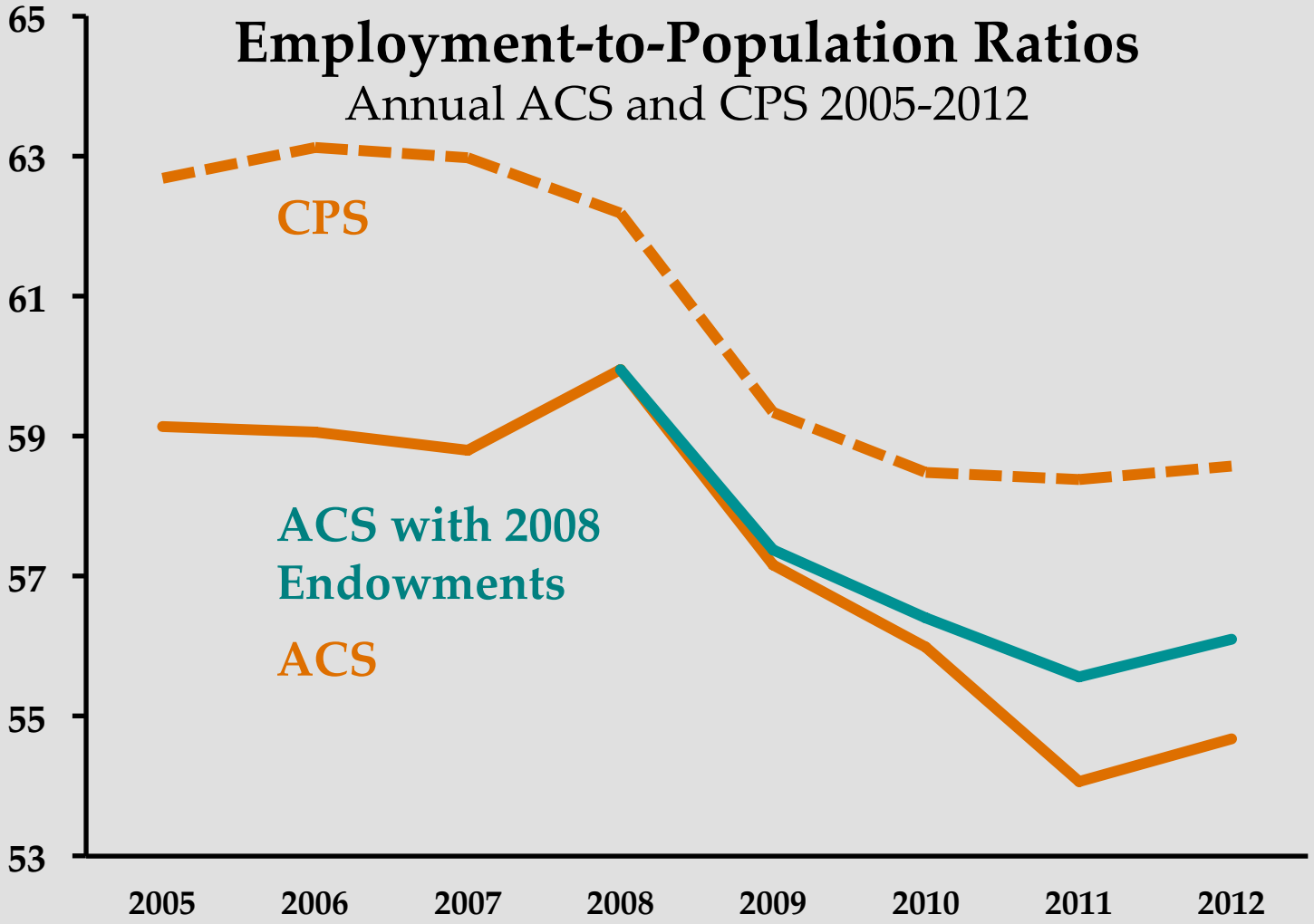
	OLS					Probit				
Variable	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Mean	59.95	57.16	55.99	54.06	54.68	60.04	57.24	56.06	54.14	54.77
Min	-14.24	-15.16	-16.19	-17.66	-17.63	0.20	0.15	0.16	0.12	0.12
Max	101.37	99.44	99.15	99.04	99.95	95.11	93.99	93.79	93.80	94.25
Correctly Classified	-	-	-	-	-	76.05	74.48	73.91	73.28	73.65
Sensitivity	-	-	-	-	-	88.99	88.10	87.77	86.11	86.30
Specificity	-	-	-	-	-	56.67	56.32	56.27	58.19	58.39

Decomposition Results

Table 3: OB Results

	OLS				Probit			
Variable	2009	2010	2011	2012	2009	2010	2011	2012
2008 Mean	59.95	59.95	59.95	59.95	60.04	60.04	60.04	60.04
	(0.032)	(0.032)	(0.032)	(0.032)	(0.031)	(0.031)	(0.031)	(0.031)
Mean	57.16	55.99	54.06	54.68	57.24	56.06	54.14	54.77
	(0.032)	(0.32)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Difference	2.79	3.96	5.90	5.27	2.80	3.98	5.90	5.27
	(0.045)	(0.045)	(0.045)	(0.045)	(0.044)	(0.044)	(0.044)	(0.044)
Endowments	0.21	0.41	1.50	1.42	0.21	0.42	1.51	1.45
	(0.024)	(0.24)	(0.024)	(0.024)	(0.023)	(0.023)	(0.023)	(0.023)
Coefficients	2.58	3.55	4.40	3.85	2.59	3.55	4.40	3.82
	(0.38)	(0.038)	(0.038)	(0.037)	(0.038)	(0.038)	(0.037)	(0.037)

Values in parentheses are robust standard errors.



Source: U.S. Bureau of Labor Statistics, *Current Population Survey*. and U.S. Department of Commerce, Census Bureau, *American Community Survey*