Assessing Correlation Between Macro and Regional Economic Indicators and the Gallup-Healthways Well-Being Index™

Brian Bankert, MA; Carter Coberley, Ph.D.; James Pope, MD; Aaron Wells, Ph.D.

ABSTRACT

The Gallup-Healthways Well-Being Index™ (WBI) debuted in the U.S. on January 2, 2008 and since inception has been measuring the subjective well-being of respondents at the U.S. metropolitan statistical area (MSA), state, and national level during a time of exceptional economic distress compared to historical standards. The objective of this paper is to determine the correlation between the WBI and four measures of economic conditions that represent income, job security, consumer prices, and wealth. The analysis utilized publicly available economic data and WBI scores at MSA, state, and national levels to calculate correlation and cross-correlation statistics for cross-sectional and time series approaches, respectively.

In the cross-sectional analysis at the MSA and state levels, a positive correlation between the WBI and per capita personal income was observed compared with a negative correlation between the WBI and the unemployment rate. States and MSAs with higher per capita income had higher well-being while those with higher unemployment had lower well-being. In the time-series analysis at the national level, the Consumer Price Index (CPI) and the S&P 500 were positively correlated with WBI scores whereas the unemployment rate was negatively correlated. Of interest, the S&P 500 was a lagging indicator for the Life Evaluation Index (LEI) and Basic Access Index by one to two months; and the unemployment rate was a leading indicator for the composite WBI and LEI by three months.

Overall, the results corroborate existing research that implies economic activity has a relatively strong influence on well-being, but also suggests that certain elements of well-being may precede economic change. As such, well-being is an important overall indicator for regional and national prosperity, and may have future applications as a predictive indicator of economic growth.

Introduction

Background
The last contraction in economic activity in the U.S. started in December 2007 and ended in June 2009 (NBER Business Cycle Dating Committee September 2010). This recession in activity, termed the "Great Recession," was exceptionally deep and was characterized by a stock market crash in late 2008 and early 2009 and sharp, prolonged increases in unemployment (Martinez-Garcia and Koech 2010) across most areas of the U.S. Despite technically ending in June 2009, surveys indicate that U.S. citizens feel the "Great Recession" never ended (Rasmussen Reports 2011), which is due in part to national unemployment rates that remain near or above 9% and other economic indicators that are at worse levels compared to previous recessions. Hence, the Gallup-Healthways Well-Being Index™ (WBI), which debuted on January 2, 2008, has since inception been measuring well-being in the U.S. during a time of exceptional economic distress compared to historical standards.

The WBI is composed of six subcomponent indexes: the Life Evaluation Index (LEI), the Emotional Health Index (EHI), the Work Environment Index (WEI), the Physical Health Index (PHI), the Healthy Behavior Index (HBI), and the Basic Access Index (BAI). A complete description of the sub-indices has been previously published in other reports (http://www.well-beingindex.com/methodology.asp). Some of the domains may be more or less influenced by economic activity. For example, out of the six domains, the BAI might be expected to be most influenced by economic activity as it contains questions that pertain to a respondent's ability to afford food, shelter, and health care as well as whether they have access to health care and a safe place to exercise.

This paper adds to the existing research on the relationship between well-being and economic variables. The majority of existing research focuses on macroeconomic variables, notably per capita income across countries, and consistently finds correlation with well-being measures (Blanchflower and Oswald 2004; Deaton 2008; Easterlin 1974; Hagerty and Veenhoven 2003; Stevenson and Wolfers 2008). In addition to income, existing research examines unemployment, inflation, and financial assets and their relationship with well-being (Di Tella, MacCulloch, and Oswald 2001; Falk and Jager 2011; Gandelman and Hernandez-Murillo 2009; Sherraden 1991; Winkelmann and Winkelmann 1998). The results from this research indicate that increases in unfavorable indicators like unemployment and inflation and decreases in favorable indicators like financial assets correlate with lower well-being. The major differences between the approaches of existing research and this paper are the use of

the more holistic WBI (with its six indices) as the measure of well-being. In comparison, the majority of existing research relies on a single question pertaining to the level of happiness or life satisfaction as the well-being measure. Additionally, we measure both well-being and economic variables at a sub-national level, particularly by U.S. metropolitan statistical area and state.

Methodology

Data

Description of the economic and WBI data used in this analysis can be found in the appendix. A complete description of the WBI indices has been previously published in other reports (http://www.well-beingindex.com/methodology.asp).

Cross-Sectional Analysis

A cross-section of U.S. states and metropolitan statistical areas (MSAs) was used to calculate annual scores for the composite WBI. Each of the six WBI sub-indices or domains were tested for statistically significant correlation with per capita income and the unemployment rate using Pearson's correlation coefficient (Rho). Correlation coefficients with p-values less than 0.05 correspond to significance at the 95% level; coefficients with p-values greater than 0.05 were denoted not significant (NS). The Consumer Price Index (CPI) and the S&P 500 Index (S&P 500) are by their construction not available at the state and MSA level and hence could not be tested for correlation for the cross-sectional analysis.

Time Series Analysis

National-level, monthly scores of the composite WBI and all six indices were tested for cross-correlation with the CPI, the S&P 500, the unemployment rate, and per capita personal income. Cross-correlations demonstrate correlations over time between time series for a common period and correlations across time lags. A lag is a difference in period, which is measured in months in this case. Positive, negative, and zero lags indicate the WBI score may be a leading, lagging, or coincident indicator, respectively, of a selected economic indicator. For example, if the BAI has a significant cross-correlation coefficient at lag 3 with the CPI, then this means that the BAI is a leading indicator of consumer prices, and movements in the BAI in the current month will precede movements in consumer prices three months later.

For more explanation on leading, lagging, and coincident indicators, please see the call out section on the next page.

Each variable used in the time series analysis was differenced because many series failed the Phillips-Perron unit root tests for stationarity, a requirement of time series to produce valid cross-correlation coefficients. Cross-correlations that exceeded two standard errors were deemed significant and lags greater than six months were not examined.

Results

Cross-Sectional Analysis

Table 1 demonstrates that at the U.S. state level during both 2008 and 2009 per capita income was positively correlated with the composite WBI, PHI, HBI and BAI indices. The unemployment rate was negatively correlated with the composite WBI, EHI, and WEI indices in 2008 and the composite WBI, LEI, EHI, WEI, PHI, and BAI indices in 2009. Similar results were seen at the U.S. MSA level with slight differences for certain indices, mostly in 2008 (Table 1).

Table 1: Significant Correlation Coefficients at the State and MSA Levels (State, MSA) for 2008 and 2009

Economic Variables	Composite WBI	LEI	EHI	WEI	PHI	HBI	BAI
Per Capita Personal Income, 2008	0.42, 0.45	NS*, 0.30	NS*, 0.24	NS*, NS*	0.58, 0.50	0.43, 0.39	0.55, 0.40
Per Capita Personal Income, 2009	0.40, 0.41	0.36, 0.32	NS*, 0.15	NS*, NS*	0.47, 0.46	0.37, 0.35	0.56, 0.45
Avg Annual Unemployment Rate, 2008	-0.39, -0.28	NS*, -0.30	-0.44, -0.24	-0.35, NS*	NS*, -0.20	NS*, NS*	NS*, -0.33
Avg Annual Unemployment Rate, 2009	-0.45, -0.30	-0.32, -0.35	-0.52, -0.27	-0.30, NS*	-0.37, -0.21	NS*, NS*	-0.40, -0.37

NS denotes Not Significant.

Time Series Analysis

Table 2 summarizes the significant cross-correlation results, with WBI indices and lags that did not have significant cross-correlations omitted. The results suggest that the CPI and the S&P 500 were positively correlated with WBI scores whereas the unemployment rate was negatively correlated. Specifically, over time the CPI was a coincident indicator for the PHI and HBI domains and a lagging indicator for the BAI by two to three months; the S&P 500 was a lagging indicator for the LEI and BAI by one to two months; and the unemployment rate was a leading indicator for the composite WBI and LEI by three months. Per capita personal income was not significantly correlated for any of the WBI scores.

Table 2: Significant Cross-Correlations Between Macroeconomic Indicators and WBI Subcomponent Domains

Lag	Macroeconomic Indicator	Composite WBI	LEI	PHI	HBI	BAI
0	Consumer Price Index (CPI)	NS*	NS*	0.49	0.55	NS*
2	CPI	NS*	NS*	NS*	NS*	0.47
3	CPI	NS*	NS*	NS*	NS*	0.48
1	S&P 500 Index (S&P)	NS*	0.49	NS*	NS*	NS*
2	S&P	NS*	NS*	NS*	NS*	0.49
-3	Unemployment Rate (UR)	-0.55	-0.51	NS*	NS*	NS*

NS denotes Not Significant.

COINCIDENT, LEADING, AND LAGGING INDICATORS

In time series analyses, computing cross correlations is often a first step in determining what variables should be used in an explanatory model of a variable of interest. In comparison to cross sectional analyses which yield a single correlation coefficient, time series analyses between two series yield multiple correlation coefficients at each difference in time called lags. At each lag, which can be positive (1, 2, 3, etc.), zero (0), or negative (-1, -2, -3, etc.), the correlation coefficient can be either positive or negative in sign and must meet the threshold for statistical significance in order to be meaningful.

Given all this information, it can be quite confusing to make sense of the relationship between the two time series. The table below helps to illuminate this relationship, specifically related to coincident, leading or lagging definitions and correlation direction, by use of two example WBI and economic variables.. For example, the Composite WBI would be a negative coincident indicator for the Unemployment Rate if it had a negative correlation coefficient at lag 0. This means the Composite WBI series moves in the same month as the Unemployment Rate series and they move in opposite directions—when the Composite WBI increases in a given month, the Unemployment Rate decreases in that same month (note that causality is not implied). Alternatively, the Emotional Health Index would be a positive leading indicator for the S&P 500 if it had a positive correlation coefficient at lag -3. This means the Emotional Health Index series moves three months before the S&P 500 series and they move in the same direction—when the Emotional Health Index increases in a given month, the S&P 500 increases three months later.

Callout Table: Explaining Positive and Negative Coincident, Leading, and Lagging Indicators

Indicator Type (Lag)	Variable of Interest	Correlated Variable	Positive/Negative Correlation	Interpretation
Coincident (0)	Composite WBI (WBI)	Unemployment Rate (UR)	Negative (e.g., -0.55)	WBI moves in the same month as the UR; moves are in opposite directions
Leading (-1 or Less)	Composite WBI (WBI)	Unemployment Rate (UR)	Negative (e.g., -0.55)	WBI moves months before the UR moves; moves are in opposite directions
Lagging (+1 or More)	Composite WBI (WBI)	Unemployment Rate (UR)	Negative (e.g., -0.55)	WBI moves months after the UR moves; moves are in opposite directions
Coincident (0)	Emotional Health Index (EHI)	S&P 500 (S&P)	Positive (e.g., 0.49)	EHI moves in the same month as the S&P; moves are in the same direction
Leading (-1 or Less)	Emotional Health Index (EHI)	S&P 500 (S&P)	Positive (e.g., 0.49)	EHI moves months before the S&P moves; move are in the same direction
Lagging (+1 or More)	Emotional Health Index (EHI)	S&P 500 (S&P)	Positive (e.g., 0.49)	EHI moves months after the S&P moves; moves are in the same direction

Discussion

Economic activity has a significant relationship to well-being. In the cross-sectional analysis at the MSA and state levels, a positive correlation between the WBI and per capita personal income was observed compared with a negative correlation between the WBI and the unemployment rate. Cities and states with higher per capita income tend to have higher well-being while those with higher unemployment tend to have lower well-being.

The cross-sectional results of Table 1 suggest that higher levels of income are associated with higher levels of self-reported well-being, life satisfaction, physical health, healthy behavior, and basic access while higher levels of unemployment are associated with lower levels of self-reported well-being, life satisfaction, emotional health, work environment, physical health, and basic access. In 2008, the highest correlation coefficients for per capita income were recorded for the PHI domain, which implies that states and MSAs with higher per capita income tend to have better self-reported levels of physical health. For the unemployment rate, the coefficient at the state level with the greatest magnitude was recorded for the EHI domain whereas at the MSA level the highest coefficient was recorded for the BAI domain. These results imply that states and MSAs with higher unemployment rates tend to have lower self-reported emotional health and basic access to food, shelter, and health care, respectively.

Collectively, the results for the unemployment rate suggest that it had a greater effect in 2009 than 2008 in terms of more indices within the WBI being negatively impacted. This overall finding suggests that in 2009 the negative effect of the unemployment rate on well-being was pervasive for all measures of well-being, except healthy behavior. Given the acceleration of layoffs and unemployment in 2009 (Martinez-Garcia and Koech 2010), the result of a stronger and more prevalent significant negative correlation between unemployment and WBI scores is noteworthy and potentially corroborative evidence of the relationship between macroeconomic conditions, individual well-being and societal well-being. The coefficient magnitudes for the unemployment rate increased for all subcomponent domains except the WEI and the HBI, the latter of which had no significant correlation in either 2008 or 2009.

For the time-series analysis at the national level, the CPI and the S&P 500 were positively correlated with WBI scores whereas the unemployment rate was negatively correlated. Specifically, over time the CPI was a coincident indicator for the PHI and the HBI and a lagging indicator for the BAI by about three months; the S&P 500 was a lagging indicator for the LEI and BAI by one to two months; and the unemployment rate was a leading indicator for the composite WBI and LEI by three months. Per capita personal income was not significantly correlated with any of the WBI scores.

Although one might expect well-being would be negatively correlated with the CPI (or an upward change in prices,

alternatively, inflation), incremental increases of inflation signal steady economic growth. In addition, increases in prices can have beneficial effects if the item being purchased is deemed to create costs to society like cigarettes and alcohol. It is possible, then, that positive coincident cross-correlation coefficients for the CPI with the PHI and HBI indices could be signaling that as consumer prices rise, individuals are becoming more confident in their financial standing such that their purchases of goods and services are increasing which in turn is leading to additional spending on items not essential to daily functioning, such as gym memberships and healthier foods. And as basic access increases, demand in the economy increases, increasing prices 2 to 3 months later as evident in the positive cross-correlation coefficients for the BAI at lags 2 and 3. For the unemployment rate, the results are understandable – as individuals lose their jobs, they experience a decrease in life satisfaction and overall well-being once the reality of not having a job outweighs the reduction in job stress several months after the loss.

For the LEI and BAI indices, the positive cross-correlation coefficients at lag one and lag two, respectively, for the S&P 500 Index was an interesting finding. This result implies that as life satisfaction and basic access increase, the S&P 500 Index tends to increase one to two months later. Rising stock prices following rising life satisfaction and basic access can be explained by the need for investors to feel good about their current and future lives and their current ability to meet basic needs before they invest for the future.

Previous research suggests strong relationships between well-being and per capita income (Deaton 2008; Hagerty and Veenhoven 2003; Stevenson and Wolfers 2008), unemployment (Di Tella, MacCulloch, and Oswald 2001; Gandelman and Hernandez-Murillo 2009), and inflation (Di Tella, MacCulloch, and Oswald 2001; Gandelman and Hernandez-Murillo 2009). Our results corroborate previous findings that economic activity influences well-being. While no correlation coefficients in this analysis surpassed the threshold of 0.70, the correlation coefficients listed in the study were all statistically significant and considered low to moderate correlations.

The primary limitation of this study is the number of economic data variables chosen for analysis. The majority of the data collected for the study was obtained from U.S. federal data agencies, such as the Bureau of Labor Statistics. While these agencies have numerous economic variables from which to choose, not all data variables are released on the same schedule and obtaining data on a subnational basis is difficult and can result in non-uniform data depending upon how it was captured. Therefore, we chose to focus on four types of easily-obtained economic variables: income, unemployment, stock market levels, and consumer prices. The variables that we chose were representative of a wide category of economic activity; in addition, they had broad coverage in the literature.

Other limitations included the time period used for analysis, which influences the mathematics behind calculating cross-correlation statistics for time series variables. The 2008 to 2009 time period was an extremely volatile economic period that contained an economic "crash" in late 2008 and early 2009, which allowed for an interesting time series analysis but also affected time series variables differently in pre- and post-crash periods. If two variables track closely for a period of time within the total examined period but then diverge from each other after a certain point in time, then the cross-correlation coefficient will not be as high in magnitude across the entire period, which can result in the coefficient being not statistically significant.

The potential dichotomy of time series behavior in pre-crash and post-crash time periods mentioned above led to an abbreviated time series analysis from January 2008 to February 2009. During this time, analyses showed the S&P 500 Index to be positively cross-correlated with the EHI domain at time lag -1, meaning the EHI was a positive lagging indicator. The cross-correlation coefficient of the EHI with the S&P 500 Index was 0.74, which was much higher than the cross-correlations measured for the longer time period and produced a coefficient of determination of approximately 0.55. This result implies that the effect on emotional health of changes in the stock market is stronger during a stock market downturn but not as strong over a period that includes a decline and a rebound in the stock market, which is very interesting as it corresponds with theories in both behavioral economics and psychology.

One of the bedrock theories of behavioral economics posits people feel financial losses more strongly than they feel financial gains (Kahneman and Tversky 1979; Hastie and Dawes 2001). In psychology, the concept of hedonic adaptation (Frederick and Lowenstein 1999) states that people overestimate how positive or negative a future event actually affects their lives, thereby underestimating their ability to adapt to both positive and negative circumstances when they eventually occur. A possible reason for why a higher magnitude of correlation was seen for the abbreviated time period (which included the stock market crash) is that the negative event of financial losses not only affected people as it was occurring but also affected the longer-term outlook of their personal financial security. Over time the effect of those losses dissipated, especially when the stock market began to rebound. Hedonic adaptation could also be a reason why the correlation coefficients between well-being and economic variables were not higher in general.

The link between well-being and economic activity implies that policymakers should also track measures of well-being as opposed to just economic statistics when considering the "performance" of their area. Cases in point are the uprisings in Egypt and Tunisia, where the well-being of the citizens of the two countries was declining while per capita income was rising (Gallup 2011). The decline in well-being could have signaled the ultimate outcome for the government and its citizens. While the results of this study show a significant relationship between well-being and economic measures, the results also demonstrate the importance of measuring aspects of people's lives that may be mutually exclusive or which may change on

different time horizons.

This research supports prior findings that substantiate linkages in the economy and people's well-being. Cities and states with higher per capita income tend to have higher well-being while those with higher unemployment tend to have lower well-being. These findings extend and further contribute to prior work by demonstrating time series relationships and identifying specific lagging and leading indicators of well-being and economic activity. While consumer prices were both a coincident and lagging indicator, stock prices were a lagging indicator, and the unemployment rate was a leading indicator. The comprehensive measure of well-being provided by the Gallup-Healthways Well-Being Index is critical to understanding the holistic picture of a region's economy, the health of its population, and the overall quality of life for the citizens in the area.

ABOUT HEALTHWAYS

For three decades, Healthways has been dedicated to improving the human condition. Each year, we learn more and do more for the millions of individuals who count on us to make a difference in their health and well-being. Healthways solutions deliver clear value. We are enhancing well-being, improving business performance and reducing healthcare costs. We have a long history of adapting to the customers we serve and honing our solutions for improved impact. Our approach is straightforward. Our solutions are complete, flexible, precise and personal.

ABOUT THE CENTER FOR HEALTH RESEARCH

The Center for Health Research performs advanced analytics with data collected from millions of participants over twenty-five years of Healthways programming. Currently, Healthways houses six times the volume of data contained in the Library of Congress. That depth and breadth of information allows the team to conduct a vast range of research, and it is used to advance their thinking in all levels of healthcare. For access to our Virtual Research Library, and the reports published by the team at the Healthways Center for Health Research, go to www.healthways.com/research.

Assessing Correlation Between Macro and Regional Economic Indicators and the Gallup-Healthways Well-Being Index

REFERENCES

1 Blanchflower, D. & Oswald, A. (2004). Well-being over time in Britain and the USA. Journal of Public Economics, 88(7-8), 1359-1386.

2 Cantril, H. (1965). The pattern of human concerns. New Brunswick, NJ: Rutgers University Press.

3 Deaton, A. (2008). Income, health, and well-being around the world: Evidence from the Gallup World Poll. Journal of Economic Perspectives, 22(2), 53-72.

4 Di Tella, R., MacCulloch, R., & Oswald, A. (2001). Preferences over inflation and unemployment: Evidence from surveys of happiness. American Economic Review, 91(1), 335-341.

5 Easterlin, R. (1974). Does economic growth improve the human lot? Some empirical evidence. In Paul A. David and Melvin W. Reder (Ed.), Nations and households in economic growth: Essays in honor of Moses Abramovitz (pp. 89-125). New York: Academic Press.

6 Easterlin, R. (1995). Will raising the incomes of all increase the happiness of all? Journal of Economic Behavior and Organization, 27(1), 35-47.

7 Falk, A. & Jager, S. (2011). Stock market returns and well-being. Unpublished working paper. IZA (Institute for the Study of Labor).

8 Frederick, S. & Lowenstein, G. (1999). Hedonic Adaptation. In D, Kahneman, E. Diener, and N. Schwartz (Ed.), Well-being: The foundations of hedonic psychology (pp. 302-329). New York: Russell Sage Foundation Press.

9 Gallup, Inc. & Healthways, Inc. (2009). Gallup-Healthways Well-Being Index: Methodology report for indexes. Resource document. Gallup-Healthways Well-Being Index. http://www.well-beingindex.com/methodology.asp. Accessed 1 May 2010.

10 Gallup, Inc. (2011). Gallup Social and Economic Analysis Surveys: Egyptians', Tunisians' Wellbeing Plummets Despite GDP Gains. Gallup Website. http://www.gallup.com/poll/145883/egyptians-tunisians-wellbeing-plummets-despite-gdp-gains.aspx. Accessed 1 January 2012.

11 Gandelman, N. & Hernandez-Murillo, R. (2009). The impact of inflation and unemployment on subjective personal and country evaluations. Federal Reserve Bank of St. Louis Review, 91(3), 107-126.

12 Hagerty, M. & Veenhoven, R. (2003). Wealth and happiness revisited--Growing wealth of nations does go with greater happiness. Social Indicators Research, 64, 1-27.

13 Hastie, R. & Dawes, R.M. (2001). Rational choice in an uncertain world: The psychology of judgment and decision making. Thousand Oaks, CA: Sage Publications.

14 Kahneman, D., Krueger, A., Schkade, D., Schwartz, N., & Stone, A. (2006). Would you be happier if you were richer? A focusing illusion. Science, 312(5782), 1908-1910.

15 Kahneman, D. & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. Econometrica, 47(2), 263-292.

16 Martinez-Garcia, E. & Koech, J. (2010). A historical look at the labor market during recessions. Federal Reserve Bank of Dallas Economic Letter, 5(1), 1-8.

17 National Bureau of Economic Research (2010). 2010 Business Cycle Dating Committee Report. Resource document. Business Cycle Dating Committee, National Bureau of Economic Research. http://www.nber.org/cycles/sept2010.html. Accessed on September 20, 2010.

18 Rasmussen Reports, Llc. (2011). Rasmussen Reports: August 9, 2011 Release, What double dip? Americans say the recession never ended. Resource document. http://www.rasmussenreports.com. Accessed 1 December 2011.

19 Sherraden, M. (1991). Assets and the poor: A new American welfare policy. New York: M.E. Sharpe.

20 Stevenson, B. & Wolfers, J. (2008). Economic growth and subjective well-being: Reassessing the Easterlin Paradox. Brookings Papers on Economic Activity, Spring.

21 Winkelmann, L. & Winkelmann, R. (1998). Why are the unemployed so unhappy?: Evidence from panel data. Econometrica, 65(257), 1-15.

Appendix

Cross-Sectional Data

For the cross-sectional analysis, annual WBI scores were obtained for all 50 states (the District of Columbia was not included) for both 2008 and 2009. The analysis of individual cities involved the application of metropolitan statistical area (MSA), which is a list of counties defined by the U.S. Office of Management and Budget that form a central urban area or urban cluster. Annual WBI scores were obtained for approximately 185 of the largest MSAs in the U.S.

The economic indicators selected for the cross-sectional analysis included per capita personal income and the unemployment rate. The Consumer Price Index (CPI) and the S&P 500 Index (S&P 500) are by their construction not available at the state and MSA level. Seasonally adjusted unemployment rate data by U.S. state and MSA were obtained from the Bureau of Labor Statistics (BLS). Aggregate personal income data by U.S. state and MSA were obtained from the Bureau of Economic Analysis (BEA) and converted to per capita using population data by U.S. state and MSA obtained from the Bureau of the Census.

Time Series Data

For the time series analysis, monthly WBI scores at the national level were obtained from January 2008 to December 2009 for a total of 24 months. Macroeconomic indicators selected for analysis included monthly values of per capita personal income, the unemployment rate, and the consumer price index (CPI), and end-of-the-month values of the S&P 500 Index. The S&P 500 Index is a measure of the stock market value of 500 of the largest publicly traded companies in the U.S. and is a widely reported and representative indicator of the overall U.S. stock market, which contains substantially more than just 500 stocks. Aggregate personal income data at the national level were obtained from the Bureau of Economic Analysis (BEA) and converted to per capita using population data obtained from the Bureau of the Census. Seasonally adjusted values of the unemployment rate and CPI were obtained from the BLS whereas the end-of-the-month S&P 500 Index data was obtained from Yahoo Finance and adjusted for dividend payments.