Regional Differences in Consumer Confidence, Consumption, and Employment: 2001-2014

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Abstract

This paper examines the relationship between consumer confidence, household consumption, and nonfarm employment in nine regions of the United States from before, during, and after the Great Recession. Using pooled OLS and fixed effects modeling, I find regional differences in how well consumption and employment can predict confidence. In other words, consumer confidence responds differently to changes in employment and consumption depending on geographic location. These results suggest, for example, that effective fiscal policy in California may not be as effective if ported to New York.

I. Introduction

On March 25, 2009, the animated television series *South Park* aired an episode called "Margaritaville." The episode's second scene is a faux news segment, where South Park citizens voice their economic concerns:

> "It's just crazy, you know? […] It's like all the money just vanished."
>
> "We've got no money to pay our mortgage now. We could very easily lose our house!"
>
> "First the money started going, and now everyone's getting laid off work!"

During the 2008 financial crisis, millions of Americans shared the pain felt by South Park's residents. Many economists have called that crisis one of the worst economic slowdowns to hamper the United States in nearly a century. Its effects on the American economy were staggering: the unemployment rate doubled from 5 percent to 10 percent between January 2008 and October 2009; in that same period, household consumption fell by 2.2 percent, the US lost almost 8.4 million nonfarm jobs, and real GDP shrunk by 2.4 percent. According to the National Bureau of Economic Research (NBER), this recession lasted eighteen months, making it the longest recession since World War II. As the US economy contracted for a year and a half, many compared this crisis to the Great Depression seven decades prior. More and more people dubbed the 2008 crisis the "Great Recession," and it seems that name has stuck.

While the Great Recession affected Americans all over the country, some states were hit harder than others. From December 2007 to December 2009, 48 states saw a drop in employment. However, while the number of jobs in South Dakota contracted by just 1.86 percent, Nevada lost almost 13 percent of its jobs in the same period. Moreover, two states (Alaska and North Dakota) actually had more jobs at the end of the Great Recession than they did at the beginning.

The same holds true for household spending. While consumption dipped during the Great Recession as expected, it didn't fall uniformly across the United States. For example, consumption in New England took less of a hit than did consumption in the West between 2007 and 2009. In addition, the Great Recession affected different types of consumption in different ways. For example, Americans cut back on buying durable goods more than they lowered spending on services.

Something called consumer confidence sits at the intersection of consumption and employment. Consumer confidence refers to the perception and expectations that ordinary Americans have of the American economy. There exists mutual causation between confidence, employment, and consumption. Whether Americans are employed and how much money they spend reflects and determines their confidence in the economy. The opposite also holds true: the confidence that Americans have in their economy affects their spending behavior, which in turn can affect firms' decisions to hire.

In this paper, I examine the former direction of causation (i.e., how consumption and employment affects consumer confidence). I divide the past thirteen years into three periods: December 2001 to December 2007 (before the Recession), December 2007 to December 2009 (the Great Recession), and December 2009 to December 2014 (after the Recession). First, I investigate how the Great Recession affected Americans' confidence in their economy. That is, I look at how confidence changes in the three periods, focusing on the two periods of growth before and after the Great Recession. Second, I examine how consumption and employment predict and affect consumer confidence in different regions of the United States. Specifically, I search for regional differences in the relationship between consumption, employment, and consumer confidence.

II. Data

Employment

The United States Bureau of Labor Statistics (BLS) tracks a variety of employment statistics across the country. The BLS derives its most popular statistics (like the unemployment rate) from two sources: the Current Population Survey (CPS) and the Current Establishment Statistics (CES) program. The CPS, based on personal interviews of about 60,000 households, is commonly known as the "household" survey and informs statistics like the unemployment rate and the size of the labor force. The CES, better known as the "establishment" or "payroll" survey, uses payroll data from about 400,000 nonfarm businesses to calculate figures like wages and nonfarm employment (McKelvey, 2008).

The relevant data for this analysis comes from the State and Metro Area Employment series (SAE) within the CES program. In particular, the SAE series provides monthly statistics on total nonfarm employment in all fifty states and in the District of Columbia. The series includes the number of nonfarm jobs (in millions) in each state every month. In addition to using the statistics as they came, total nonfarm employment statistics were also calculated for nine regions of the United States. These regions correspond to the nine divisions created by the US Census Bureau. Figure 1 shows these regions and divisions. The Bureau divides the country into four regions: Northeast, Midwest, South, and West. These regions are then subdivided into divisions. The Northeast, Midwest, and West regions each contain two divisions and the South region has three, making a total of nine divisions.

Table 1 summarizes regional changes in employment for the three time periods in question (Tables 2 through 4 provide state-level detail for each time period). Because the tables lay out employment (and not unemployment), a positive percent change means that the number

of jobs grew in the period and a negative percent change means that the number of jobs shrank in the period.

The employment data from before, during, and after the Great Recession paint very different pictures depending on the region, division, or state. From December 2001 (the end of the 2001 recession) to December 2007 (the start of the Great Recession), the Midwest region saw a 1.26 percent increase in the number of nonfarm jobs. In that same period, the West region saw its total nonfarm employment spike by 9.77 percent. Of the twelve states whose nonfarm employment jumped by more than 10 percent during these six years, ten of them belong to the West region. On the other end of the spectrum, only two states ended 2007 with fewer citizens employed than they had at the end of 2001. Both states (Michigan and Ohio) are part of the Midwest region.

The Great Recession itself, however, seemed to signal a reversal in fortune. While all nine divisions suffered job losses, the two divisions in the West region were hit hardest. Nevada and Arizona, the two biggest job gainers before the Recession, had the largest percent losses in jobs during the Recession period (12.87 percent and 11.11 percent, respectively). However, not every state or region was hit as hard. In fact, the majority of states had job losses of less than 5.5 percent. Alaska, North Dakota, and the District of Columbia even ended the Great Recession with more jobs than they had when the Great Recession started. With few exceptions, states that gained big before the Great Recession were the ones that lost big when the Recession hit; those who gained modestly before the Recession lost modestly during the Recession.

The same trend continues in the five years of growth after the Great Recession (December 2009 to December 2014). The West region once again led the country in jobs growth, with three of the five biggest job gains coming from states in the West. However, not all regions

experienced the wild swings that the West did over the three periods. For example, the number of nonfarm jobs in the Northeast was much more stable over the thirteen years compared to the figure in the West. In the six years leading up to the Recession, the Northeast added just over 700,000 jobs, a 2.81 percent increase; in the same period, the West added over 2.75 million jobs, a 9.77 percent increase. During the Great Recession, the Northeast lost 4.08 percent of its jobs while the West lost 7.94 percent. And after the Recession, the Northeast's job total grew by 5.79 percent and the West's increased by 11.01 percent.

Consumption

Data on consumption was retrieved from the US Bureau of Economic Analysis (BEA). The relevant data for this analysis was the BEA's Personal Consumption Expenditure (PCE) series. The PCE series contains yearly, state-level statistics on various categories of consumption. The three main consumption categories are durable goods, nondurable goods, and services; each main category is broken down into subcategories (e.g., motor vehicles and parts in durables; clothing and footwear in nondurables; housing and utilities in services). The data are recorded in millions of current dollars, not adjusted for inflation.

An often-used barometer for an economy's health is the consumption of durable goods. Durable goods are goods that have long lifespans, such as cars, refrigerators, and sofas. In contrast, nondurable goods like food and gasoline are typically consumed shortly after purchase. When deciding whether or not to purchase a durable good (like a new car), consumers weigh their financial situation more heavily than they would when deciding whether or not to purchase a nondurable good (like a gallon of gasoline). In other words, a new couch can wait if money is tight, but milk and eggs can't. At the same time, nondurables and services consumption are still useful to gauge consumers' feelings about the economy in the more immediate future.

Table 5 summarizes the percent change in durables, nondurables, services, and overall household spending across the nine divisions, over the three time periods in question. Unsurprisingly, durables consumption fell the most during the Great Recession; this is consistent with what theory predicts. What's surprising about the Great Recession, however, is the change in nondurables consumption. In the six years leading up to the Great Recession, nondurables consumption ballooned across the country. For example, nondurables consumption in the Mountain division grew by a whopping 56.21 percent.

Once the Recession hit, however, this growth came to a standstill. The average inflation rate in the "during Recession" period was 2.8 percent (US Bureau of Labor Statistics). Only in one division did growth in nondurables consumption outpace inflation, and that doesn't even take into account population growth over these two years. The precipitous drop in nondurables consumption captures how devastating the Great Recession was for ordinary Americans—economic conditions were so dire that Americans were even cutting back on food and clothes. According to research by Petev and Pistaferri (2012), the Great Recession saw a drop in nondurables spending unmatched by any recession since the 1970s.

As with employment, though, the drop in consumption wasn't uniform across all fifty states. Patterns similar to those found in the employment data appear in the consumption data. Divisions that had larger rises in consumption before the Great Recession were the ones that had steeper drops in consumption during the Recession itself (examples include the South Atlantic and Mountain divisions).

However, there are certain areas of the US whose consumption rose and fell more moderately. The degree to which consumption changed over time in a particular region closely mirrors the degree to which the number of jobs changed over time. As mentioned previously, the

number of jobs in the Northeast region was relatively stable from December 2001 to December 2014. The same can be said of consumption in the Northeast region. To clarify, this doesn't mean that consumption in the Northeast didn't change. Rather, this means that consumption in the Northeast was less volatile than consumption in other regions.

Consumer Confidence

Each month, The Nielsen Company mails out a five-question survey to households across the country (see Table 6 for the questions). Each of the five questions has three possible responses: positive, negative, and neutral; in Table 6, choice (a) is the positive response, choice (b) is the neutral response, and choice (c) is the negative response. A group known as The Conference Board randomly selects about three thousand responses and calculates the Consumer Confidence Index (CCI) using the random sample. A well-respected measure of American consumer confidence, the CCI also contains two sub-indices: the Present Situations Index and the Expectations Index.

To calculate each Index, The Conference Board first calculates "relative" values for each of the five questions. This is done by calculating the proportion of positive responses to non-neutral responses for each question (i.e., dividing the number of positive responses by the sum of positive and negative responses). Using the year 1985 as a benchmark, the index value for each question in calculated. The CCI is the average of all five questions' index values, whereas the Present Situations Index is the average of the first two questions' index values and the Expectations Index is the average of the latter three questions' index values. This is because Questions 1 and 2 gauge respondents' feelings about current economic conditions while Questions 3, 4, and 5 ask about the economy "six months hence." As a point of reference, each Index's value in 1985 is scaled to 100.

The Conference Board generously provided historical CCI data for this analysis. I was given access to the CCI, the Present Situations Index, and the Expectations Index dating back to 1996. In addition, The Conference Board also provided CCI, Present Situations Index, and Expectations Index data for nine regions of the United States, dating back to 2000. The nine regions correspond to the nine divisions created and used by the US Census Bureau. With the figures, I calculate three-month moving averages for all three indices in all nine regions. I define a moving average for a given month as the arithmetic mean of the values for the given month, for one month prior, and for two months prior. For example, the CCI moving average (*CCI3*) for June 2008 is the arithmetic mean of the CCI values in April 2008, May 2008, and June 2008. The Expectations Index moving average (*EI3*) for February 2002 is the arithmetic mean of the Expectations Index values in February 2002, January 2002, and December 2001.

Figure 2 shows the three-month moving averages of the national CCI, Present Situations Index, and Expectations Index from December 2001 to December 2014. The American economy saw two periods of growth in these thirteen years: from December 2001 to December 2007, and from June 2009 to December 2014. From December 2007 to June 2009 was the Great Recession, according to the NBER. The two periods of growth saw rather different trends in consumer confidence, however. In the former period (December 2001 to December 2007), the Present Situations Index had consistently higher values than the CCI and Expectations Index did. This phenomenon is most striking around the start of 2007, where the Present Situations Index measures 30 to 40 points higher than the Expectations Index.

The opposite holds true, however, for the period of growth following the Great Recession. Whereas the Expectations Index starts to outpace the overall CCI, the Present Situations Index lags behind. While the Present Situations Index is often lower than the

Expectations Index immediately after a recession, the phenomenon was especially noticeable after the Great Recession. After the Great Recession, the Present Situations Index fell far below the Expectations Index and stayed there for an especially long time. However, the two Indices do converge with each other (and with the CCI) by the end of 2014.

One interesting phenomenon in these nationwide indices occurs around the year 2004. While the Expectations Index measures higher than the Present Situations Index in 2002 and 2003 (not surprising, since a recession had concluded at the end of 2001), the two indices converge upon in each other in 2004. From there, the Present Situations Index continues to rise, but the Expectations Index starts to fall; the two indices don't meet again until around the end of the Great Recession. While I do not explore this phenomenon specifically in this paper, it raises an interesting question on the side: *Did Americans see the Great Recession coming?*

With regional CCI data, I compare regional trends in confidence to trends in the composite, national index. Figure 3 shows the three-month moving averages for each region's CCI during the thirteen years in question; figure 4 shows the deviation from the national CCI average over the same period. While the regional CCIs tend to move together, it's clear that they aren't always in lockstep with each other or with the national average. In addition, some regions clock in consistently below the national average; others are usually above the national index.

The five-question survey that informs the CCI sits at the intersection of consumption and employment. That leads us to a few questions that a model can explore: *How well can changes in consumption and changes in employment predict consumer confidence in a given region? Is consumer confidence more closely related to employment or to consumption?*

III. Related Literature

As the American economy recovers from the Great Recession, economists across the country (and even the world) have been publishing papers and books on the subject. Not only do economists want to understand what caused a recession as extreme as the Great Recession, policymakers also hope to learn how to diagnose and treat a slowing economy.

The first focus of research is understanding what made the Great Recession different. De Nardi, French, and Benson (2012) approach the question from a consumption angle. They find that the Great Recession is unique in two ways. First, aggregate consumption suffered its most severe drop since World War II during the Great Recession. Second, recovery from the Great Recession has been especially weak. It took almost three years for consumption to reach pre-Recession levels; in the half century before the Great Recession, the longest the economy took to recover was just over one year (after the 1973-1975 recession). The authors did note, however, that the observed trends in consumption leading up to the Great Recession were not significantly different from consumption trends leading up to previous recessions.

Other researchers have tried to quantify the effects of the Great Recession on employment and unemployment. Rothstein (2011) notes that by September 2011, more than two years after the NBER-defined end of the Great Recession, the unemployment rate was still above nine percent and almost 45 percent of unemployed Americans had been out of work for over six months. Kroft, Lange, Notowidigdo, and Katz (2014) demonstrate that the Great Recession had a historically large impact on the long-term unemployment rate (a person out of work for 26 or more weeks is considered “long-term unemployed”). They show that while short-term and medium-term unemployment rates returned to pre-Recession levels around 2012, the long-term unemployment rate remained unusuallyhigh.

A number of economists have attempted to parse out regional effects of the Great Recession. Connaughton and Madsen (2012) examine how the Great Recession affected employment in various regions of the country. They identify areas of the country that lost the most jobs and the regions that best weathered the storm. In addition, the authors attempt to explain the observed regional differences by modeling change in employment as a function of demographic variables, such as percentage of population below the poverty level or percentage of population working in the manufacturing sector. Connaughton and Madsen perform their analysis on three time periods (2000-2007, 2007-2009, 2000-2009) and find that the poverty and manufacturing sector variables had significant impact on changes in number of jobs. To calculate differences in employment change between regions, the authors use indicator variables for all but one region and compare the regression coefficients on each indicator.

Many economists have also examined the role of consumer confidence in determining an economy's future. Some view consumer confidence as a harbinger of future economic performance. Acemoglu and Scott (1994) establish that consumer confidence can be a statistically powerful predictor of future consumption growth. Roger Farmer (2008) argues that the stock market crash of 2008 caused the Great Recession. Farmer explains his view in a recent interview with the *Los Angeles Times*, saying that the "major trigger [of the Great Recession] was the drop in confidence that led to the fall in the markets" (Peltz, 2016). He further states that the drop in confidence led to a "self-fulfilling" cycle of reduced consumer spending and layoffs. Farmer argues, in other words, that consumer confidence can be the cause of change in an economy.

Other economists have a more measured take on what consumer confidence can and cannot predict. Sydney Ludvigson (2004) acknowledges that popular measures of consumer

confidence (like the CCI) can predict growth in household consumption. However, she notes that measures of consumer confidence aren't the only statistics that have such predictive power. Ludvigson also questions the strength of evidence supporting the relationship between consumers' expectations and measures of consumer confidence.

IV. Model

I create one base model and run two different analyses with them: a pooled ordinary least squares (OLS) regression and a fixed effects (FE) regression. The model relies on the three economic variables discussed earlier (consumer confidence, employment, household consumption) as well as indicator variables for the three time periods.

Because of the volatility of the monthly CCI measurements, I choose to use the three-month moving averages in lieu of using the CCI data as is[1]. As defined previously, the moving average *CCI3* for a given month is the mean of the CCI value from that given month, from the month prior, and from two months prior. In order to have regression coefficients that were neither too large nor too small, consumption and employment figures were scaled to millions of dollars and millions of jobs, respectively. This gives us *millemp* for millions of jobs, *milldur* for millions of dollars in durables consumption, *millnondur* for millions of dollars in nondurables consumption, and *millserv* for millions of dollars in services consumption (Table 7 contains summary statistics for these variables). Equation (1) below describes the basic idea and relationship underlying this analysis.

$$CCI3 = \beta_0 + \beta_1 millemp + \beta_2 milldur + \beta_3 millnondur + \beta_4 millserv + \varepsilon \quad (1)$$

[1] As a robustness check, I run both the pooled OLS and the fixed effects regressions using the CCI data as is (instead of the moving averages). Results from these regressions are not significantly different from the results obtained using the moving averages. Output from the regressions with and without using moving averages appears side-by-side in Appendix B.

Two issues arise from this specification, however. First, the CCI moving average depends on confidence in three different months, but *millemp* represents a region's employment in the specified month only. To rectify this problem, I add lagged measures of employment to the model. In addition to regressing consumer confidence on a given month's employment, I also regress on employment from one month prior and from two months prior.

The second issue arises from the BEA's consumption data. The BEA records household consumption at a yearly frequency, rather than monthly. For the purposes of this analysis, I've assigned the yearlong consumption value to all months of that year (e.g., the value of *milldur* for all twelve months in 2008 is equal to total durables consumption in 2008). However, it doesn't make sense that purchases in, say, May 2008 would retroactively affect confidence in March 2008. To that end, I've introduced a twelve-month lag in consumption variables. *CCI3* in January 2008 is regressed on consumption in (January) 2007, *CCI3* in March 2010 is regressed on consumption in (March) 2009, and so forth.

Equation (2) below modifies Equation (1) to introduce the appropriate lags and lagged regressors. The subscript *t* refers to any month within the December 2001 to December 2014 time period.

$$CCI3_t = \beta_0 + \beta_1 millemp_t + \beta_2 millemp_{t-1} + \beta_3 millemp_{t-2} + \beta_4 milldur_{t-12} + \beta_5 millnondur_{t-12} + \beta_6 millserv_{t-12} + \varepsilon \quad (2)$$

Lastly, I create indicator variables for the three time periods. Variable *period1* takes value 1 for months between December 2001 and December 2007 and takes value 0 elsewhere. Likewise, *period2* equals 1 for December 2007 to December 2009 and *period3* equals 1 for December 2009 to December 2014. However, I use only two of these indicators in the model to

avoid multicollinearity. Adding the latter two indicators to Equation (2) yields the model used for the pooled OLS regression (Equation (3) below).

$$CCI3_t = \beta_0 + \beta_1 millemp_t + \beta_2 millemp_{t-1} + \beta_3 millemp_{t-2} + \beta_4 milldur_{t-12} + \beta_5 millnondur_{t-12} + \beta_6 millserv_{t-12} + \beta_7 period2 + \beta_8 period3 + \varepsilon \quad (3)$$

The fixed effects model uses the same regressors as the pooled OLS model. The time variable remains the same (each month in the December 2001 to December 2014 period), and the panel variable *division* codes the nine divisions of the US. To clarify, this means that the fixed effects model takes into account division fixed effects, which the pooled OLS model does not consider.

V. Results

Pooled OLS

I run a pooled OLS regression on the entire dataset in order to establish a nationwide relationship between confidence, employment, and consumption. Results from this regression with heteroskedasticity-robust standard errors appear in column (1) of Table 8. I find that all but one regressor has a statistically significant, nonzero effect on consumer confidence. In addition, the regression yields a couple of unexpected results. First, the relationship between lagged employment and confidence isn't always positive. The regression coefficient on the $millemp_{t-2}$ variable is negative and significant at a 0.01 level. And while the regression coefficients on $millemp_t$ and $millemp_{t-1}$ are both positive, only the coefficient on the former is statistically significant. The data indicate a strong, negative relationship between consumer confidence in a given month and employment from two months prior, which is the opposite of what theory predicts.

Second, the pooled regression indicates significant, nonzero coefficients on nondurables and services consumption. This is also puzzling, given that nondurables and services consumption is generally more inelastic than is durables consumption—people need to eat, no matter how the economy is doing. Thus, we expect that nondurables and services consumption would not be a strong predictor of confidence, but the pooled regression indicates otherwise.

Because this model pools observations from all nine divisions, it's possible that regional differences caused omitted variable bias that skewed the results from the pooled OLS; this is the reasoning behind running the fixed effects regression. However, this doesn't mean the pooled OLS regression is meaningless. The nine divisions of the US are relatively homogeneous (they belong to the same country, after all) and the pooled OLS model has an R^2 value of 0.743. That said, the fixed effects regression may help reduce some bias present in the pooled regression.

Fixed Effects

Using the same model as the pooled OLS, I run a fixed effects regression with heteroskedasticity and autocorrelation consistent standard errors. I choose to use *division* as my panel variable in order to have division fixed effects in the model. Results from the fixed effects estimation are in column (2) of Table 8.

With the fixed effects regression, the regression coefficients on nondurables and services spending are no longer statistically significant. In addition, there is no longer statistically significant evidence that the constant term is nonzero. While the relationship between $millemp_{t-2}$ and consumer confidence is still significant and negative, we now observe positive, significant coefficients for the non-lagged and one-month lagged employment variables.

Coefficients on the time period indicator variables (*period2* and *period3*) are still negative and significant at a 0.01 significance level. The -30.91 coefficient on *period2* means

that the CCI measured, on average, almost 31 points lower during period 2 than it did during period 1. Likewise, the -27.95 coefficient on *period3* means that the CCI was, on average, almost 28 points lower during period 3 than during period 1. This is expected: period 2 represents the Great Recession, and period 3 is the five years immediately following the Great Recession.

The output from the fixed effects regression indicates that there are regional differences in the relationships between confidence, consumption, and employment. It is worth noting, however, an important factor that may have skewed the pooled model (and, to a lesser extent, the fixed effects model). The consumption and employment statistics used are nominal levels, not per capita figures. A more populated division is expected to have higher consumption and higher employment by virtue of having more people working and spending money. However, I attempt to correct for this by running division-specific OLS regressions.

Division-specific OLS

The last set of analyses I conduct involves running nine OLS regressions on the model defined in Equation (3) (one regression for each division). The output from the regressions appears in Table 9. The regression coefficients themselves aren't the focus here, though. As previously mentioned, the consumption and employment statistics from the BEA and BLS are measured in absolute terms (as opposed to per capita). This means, then, that more-populous divisions will tend to have higher absolute levels of consumption and higher absolute levels of employment; thus, comparing the regression coefficient on *millemp* between divisions with different populations doesn't reveal much. Thus, I focus instead on two other properties of the nine regressions: (1) the explanatory power that the model has in each division; (2) the elasticities of each regressor with respect to confidence in each division. Differences in these

properties can help pinpoint sources of regional differences in predictors of consumer confidence.

R^2 values are good points of comparison to determine a model's overall explanatory power. For these nine regressions, R^2 ranges from as low as 0.785 (West North Central) to as high as 0.932 (South Atlantic). Looking at specific regressors, we find that some are significant across the board. For example, $millemp_t$ is significant at the 0.01 level for all nine divisions; the two lags of employment are similarly uniform in their significance or lack thereof.

Consumption, on the other hand, is a strong predictor of confidence in some areas and a weaker predictor in other parts of the country. Durables consumption lagged by twelve months is significant at the 0.05 level in two of nine divisions; in the other seven, durables consumption is not even significant at the 0.10 level. Even more striking is nondurables consumption: significant at the 0.01 level in four divisions, significant at the 0.05 and 0.10 levels in one division each, and not significant at the 0.10 level in the remaining three divisions.

The regression coefficients on *period2* were all significant and negative; this was not surprising, given that period 2 coincides with the Great Recession. The coefficients on the *period3* indicator, however, are less uniformly significant. This suggests that the recovery of consumer confidence from the Great Recession took different paths in different parts of the country.

To further investigate this hypothesis, I perform a F-test for each region's regression with the same null hypothesis: $\beta_{period2} = \beta_{period3}$. Rejecting the null hypothesis suggests that for that region, consumer confidence on average was significantly different after the Great Recession compared to during the Great Recession. On the other hand, failing to reject the null implies that confidence didn't change significantly once the Recession was over.

The tests reveal divergent results: at a 0.05 significance level, I reject the null hypothesis in four of the nine divisions (New England, East North Central, West North Central, Mountain). In these four regions, average consumer confidence post-Recession was much higher than average consumer confidence during the Great Recession. For example, the average *CCI3* in the East North Central division was 37.89 during the Recession; after, it was 60.81. For the remaining five divisions, the changes in CCI averages from during the Recession to after were much more muted. This doesn't mean, however, that confidence was lower in these remaining five divisions. Some of these five divisions started the Recession high on the CCI and still ended 2014high, but their CCI changes weren't as large as the CCI changes in the four aforementioned divisions.

Moving on to elasticities: in a simple linear model ($Y = \alpha + \beta X$), the elasticity ϵ of the regression coefficient β equals the percent change in Y given a one percent change in X. Equation (4) below summarizes the calculation of elasticity ϵ.

$$\epsilon = \frac{\partial(\ln Y)}{\partial(\ln X)} = \frac{\partial Y/Y}{\partial X/X} = \frac{\partial Y}{\partial X} \times \frac{X}{Y} \qquad (4)$$

Table 10 lists the elasticities of regression coefficients in the division-by-division OLS regressions. These represent the responsiveness of the Consumer Confidence Index to changes in employment and consumption. Because the elasticities represent percent changes in confidence (as opposed to marginal effects), I can compare elasticity values across regions; percent changes take into account different population sizes in different divisions.

Unsurprisingly, confidence in different regions responds differently to changes in regressors. For example, a 1 percent rise in employment results in a 22.93 percent rise in CCI in New England but only a 17.34 percent rise in the East North Central division's CCI. It's clear

that confidence in some regions is more sensitive to employment in general: the elasticities of employment and its lags are particularly large (i.e., higher in magnitude) in the South Atlantic and East South Central divisions and noticeably small in the East North Central division.

The same is true for the consumption variables. Elasticities on coefficients for $milldur_{t-12}$ ranged from -0.00903 (New England) to 1.33 (West South Central). A one percent increase in durables consumption has negligible effect in New England but a similar, one percent consumption increase in the West South Central division leads to an even larger growth in the CCI there. Elasticities on coefficients for $millnondur_{t-12}$ and on $millserv_{t-12}$ also spanned a healthy range. For $millnondur_{t-12}$, coefficient elasticity ranged from 0.0454 (Pacific) to 3.048 (Mountain); for $millserv_{t-12}$, coefficient elasticity ranged from -0.534 (Pacific) to -4.271 (East North Central).

Because *period2* and *period3* are binary indicator variables, elasticities were not calculated for regression coefficients on those regressors.

VI. Conclusion

The Great Recession was one of the worst economic crises to hit the United States in half a century, but some areas were hit harder than others. On its face, this analysis suggests that regional differences do exist in the relationship between consumer confidence, household consumption, and nonfarm employment. The implications of the analysis are even more interesting, though. Take, for example, the significant coefficient on $millnondur_{t-12}$ in the Middle Atlantic division and the non-significant coefficient for the same variable in the Pacific division. That could imply that a New Yorker's consumption of nondurables affects his confidence in the economy more than a Californian's nondurables consumption would affect her confidence.

This opens doors for further research: namely, identifying the underlying causes for these regional differences. Demographics would be a good place to start; perhaps the age structures of

different regions play a role in these differences. Or, maybe the prevalence of different lines of work may be a key player: there are certainly more farmers in the Midwest than there are in the Northeast. Even the climate of different regions may be a factor in accounting for the differences in these heterogeneous regions.

The policy applications of this research are also crucial. In response to the Great Recession, President Obama signed into law the American Recovery and Reinvestment Act of 2009, a $787 billion spending bill. Much of the $787 billion came in increased government spending to maintain existing jobs and to create new work. Understanding how consumer confidence fluctuates in different areas of the country will allow policymakers to better tailor legislation in the future, whether it's to jumpstart a stalling economy or to drive growth in a thriving economy. Uniform fiscal policy across the nation may not be as effective as division-specific (or even state-specific) fiscal policy that targets each division's unique calculus of confidence.

Ultimately, this research has shown that these regional differences exist. The next step is to understand what causes these differences in order to effectively promote growth in consumer confidence and in the economy.

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Appendix A: Figures and Tables

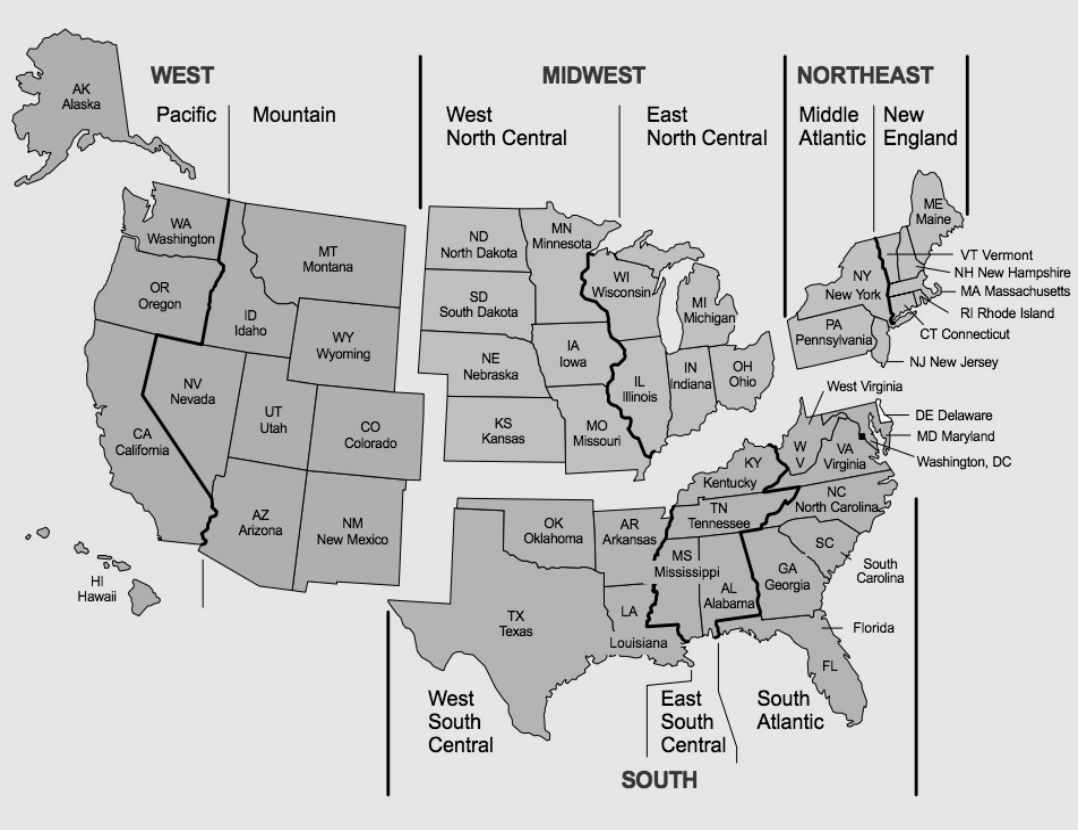

Figure 1. Map of the United States, showing Census Divisions and Regions
Source: US Census Bureau

Note: Divisions are numbered and coded as follows:

1. New England
2. Middle Atlantic
3. East North Central
4. West North Central
5. South Atlantic
6. East South Central
7. West South Central
8. Mountain
9. Pacific

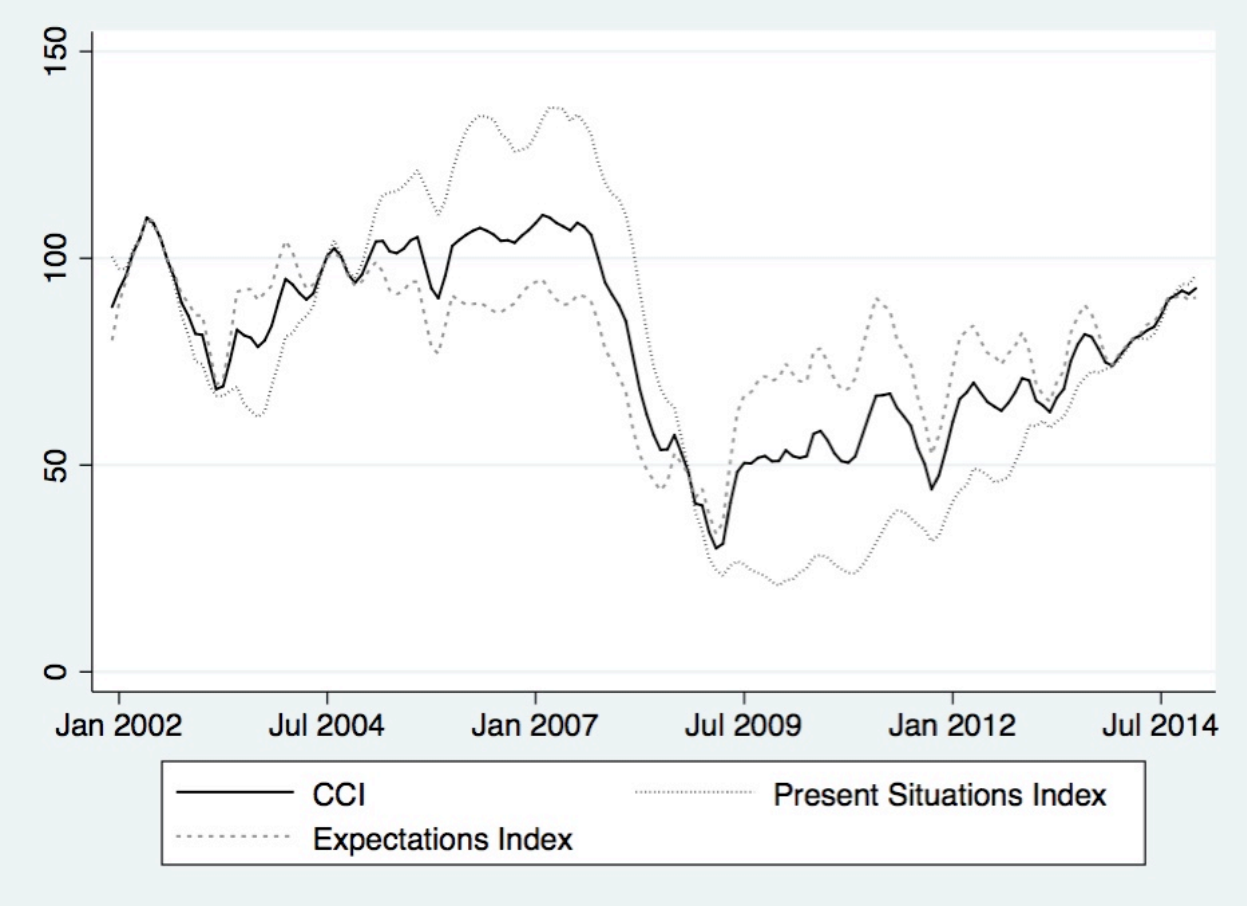

Figure 2. 3-Month Moving Averages of CCI & Sub-Indices, December 2001 to December 2014. *Source*: The Conference Board

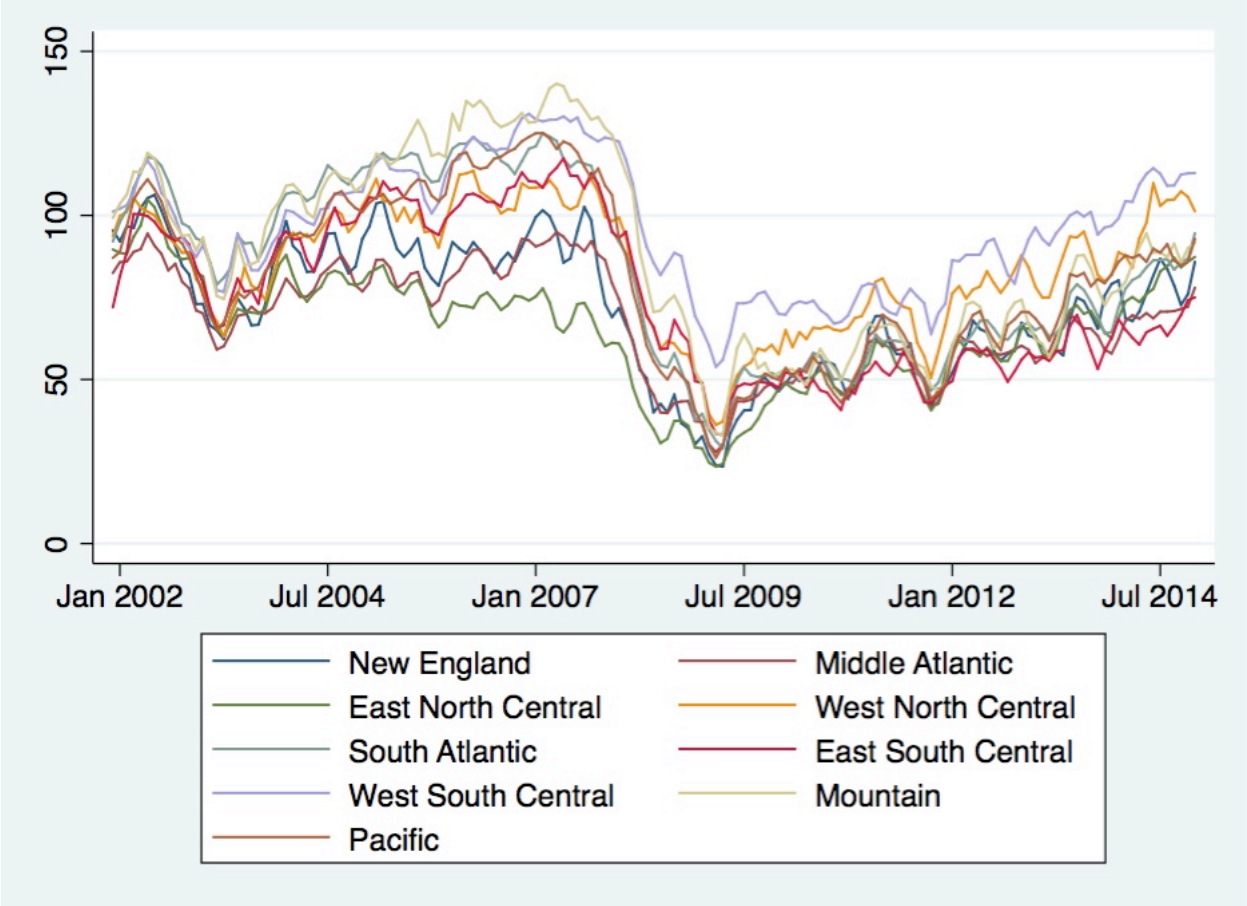

Figure 3. Regional CCI, December 2001 to December 2014.
Source: The Conference Board

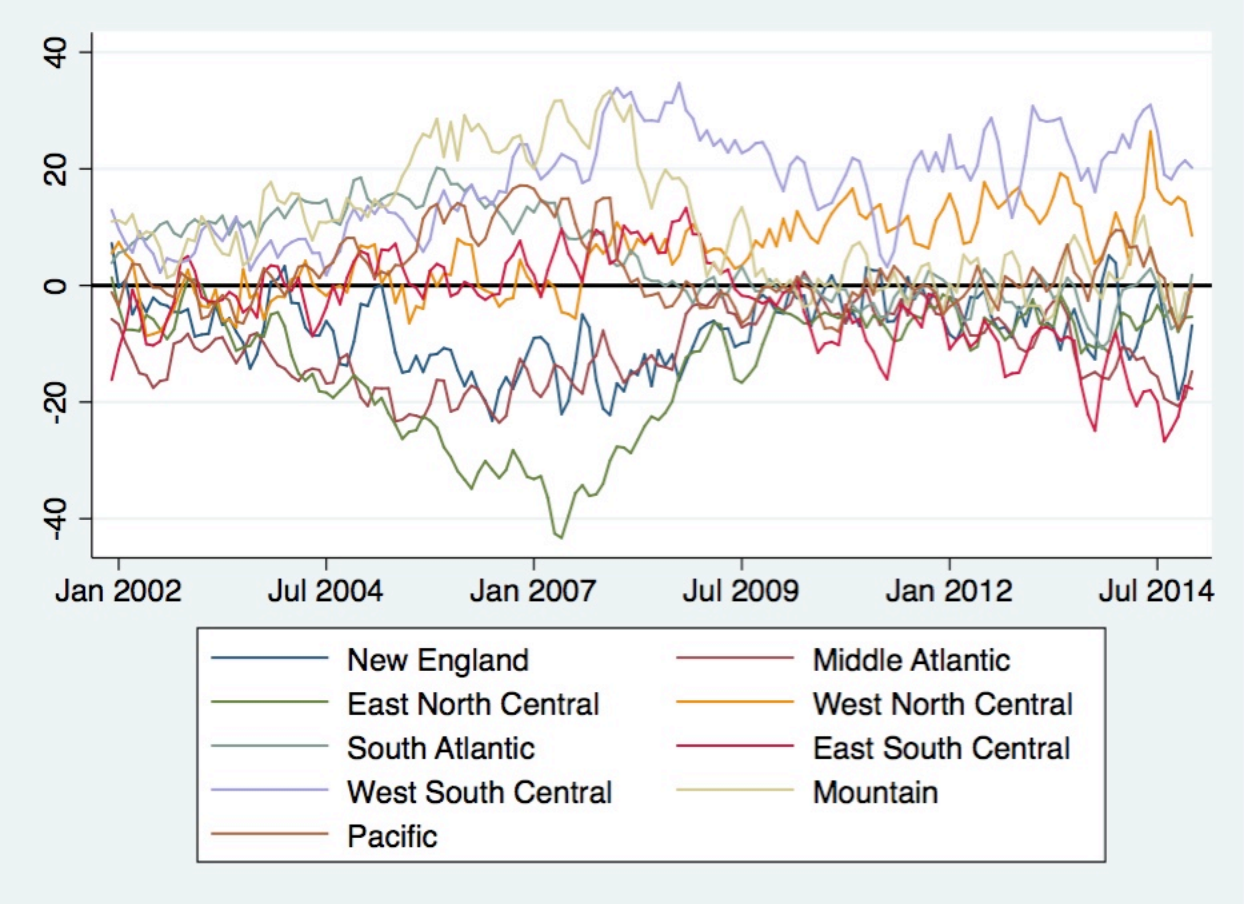

Figure 4. Regional CCI Deviations from Nationwide CCI, December 2001 to December 2014. *Source*: The Conference Board

Table 1. Regional change in total nonfarm employment, in thousands.

Time Period	Division/Region	Starting Total Nonfarm Employment	Change in Total Nonfarm Employment	Percent Change
Dec 2001 - Dec 2007	New England	6967.1	118	1.69%
	Middle Atlantic	18085.1	587	3.25%
	Northeast	**25052.2**	**705**	**2.81%**
	East North Central	21557.9	-33.4	-0.15%
	West North Central	9793.6	428.8	4.38%
	Midwest	**31351.5**	**395.4**	**1.26%**
	South Atlantic	24444.1	2065.5	8.45%
	East South Central	7448.0	390.7	5.25%
	West South Central	13984.5	1295.9	9.27%
	South	**45876.6**	**3752.1**	**8.18%**
	Mountain	8504.9	1328.9	15.63%
	Pacific	19680.3	1424.8	7.24%
	West	**28185.2**	**2753.7**	**9.77%**
	Total (USA)	**130465.5**	**7606.2**	**5.83%**
Dec 2007 - Dec 2009	New England	7085.1	-315.3	-4.45%
	Middle Atlantic	18672.1	-735.1	-3.94%
	Northeast	**25757.2**	**-1050.4**	**-4.08%**
	East North Central	21524.5	-1610.4	-7.48%
	West North Central	10222.4	-437.3	-4.28%
	Midwest	**31746.9**	**-2047.7**	**-6.45%**
	South Atlantic	26509.6	-1919.7	-7.24%
	East South Central	7838.7	-548	-6.99%
	West South Central	15280.4	-490.3	-3.21%
	South	**49628.7**	**-2958**	**-5.96%**
	Mountain	9833.8	-825.8	-8.40%
	Pacific	21105.1	-1629.4	-7.72%
	West	**30938.9**	**-2455.2**	**-7.94%**
	Total (USA)	**138071.7**	**-8511.3**	**-6.16%**
Dec 2009 - Dec 2014	New England	6769.8	402.9	5.95%
	Middle Atlantic	17937.0	1027.1	5.73%
	Northeast	**24706.8**	**1430**	**5.79%**
	East North Central	19914.1	1463.4	7.35%
	West North Central	9785.1	643.2	6.57%
	Midwest	**29699.2**	**2106.6**	**7.09%**
	South Atlantic	24589.9	2186.6	8.89%
	East South Central	7290.7	507.5	6.96%
	West South Central	14790.1	1828.9	12.37%
	South	**46670.7**	**4523**	**9.69%**
	Mountain	9008.0	912.4	10.13%
	Pacific	19475.7	2225.0	11.42%
	West	**28483.7**	**3137.4**	**11.01%**
	Total (USA)	**129560.4**	**11197**	**8.64%**
Dec 2001 - Dec 2014	New England	6967.1	205.6	2.95%
	Middle Atlantic	18085.1	879.0	4.86%
	Northeast	**25052.2**	**1084.6**	**4.33%**
	East North Central	21557.9	-180.4	-0.84%
	West North Central	9793.6	634.7	6.48%
	Midwest	**31351.5**	**454.3**	**1.45%**
	South Atlantic	24444.1	2332.4	9.54%
	East South Central	7448.0	350.2	4.70%
	West South Central	13984.5	2634.5	18.84%
	South	**45876.6**	**5317.1**	**11.59%**
	Mountain	8504.9	1415.5	16.64%
	Pacific	19680.3	2020.4	10.27%
	West	**28185.2**	**3435.9**	**12.19%**
	Total (USA)	**130465.5**	**10291.9**	**7.89%**

Sources: US Bureau of Labor Statistics; US Census Bureau; Author's Calculations

Table 2. Change in total nonfarm employment from December 2001 to December 2007, in thousands.

State	Division	Dec 2001 Total Nonfarm Employment	Dec 2007 Total Nonfarm Employment	Change in Total Nonfarm Employment	Percent Change
Michigan	East North Central	4491.3	4245.9	-245.4	-5.46%
Ohio	East North Central	5473.5	5419.6	-53.9	-0.98%
Massachusetts	New England	3292.5	3312.1	19.6	0.60%
Illinois	East North Central	5914.6	5987.9	73.3	1.24%
Louisiana	West South Central	1902.2	1935.6	33.4	1.76%
Connecticut	New England	1675.1	1705.5	30.4	1.81%
Rhode Island	New England	477.1	487.8	10.7	2.24%
New Jersey	Middle Atlantic	3989.0	4083.5	94.5	2.37%
Maine	New England	603.3	620.7	17.4	2.88%
Pennsylvania	Middle Atlantic	5644.1	5814.6	170.5	3.02%
Vermont	New England	299.4	308.5	9.1	3.04%
Indiana	East North Central	2901.8	2993.1	91.3	3.15%
Kansas	West North Central	1342.1	1385.8	43.7	3.26%
Mississippi	East South Central	1123.1	1160.3	37.2	3.31%
Missouri	West North Central	2709.8	2802.4	92.6	3.42%
West Virginia	South Atlantic	735.8	761.9	26.1	3.55%
Wisconsin	East North Central	2776.7	2878.0	101.3	3.65%
New York	Middle Atlantic	8452.0	8774.0	322	3.81%
Minnesota	West North Central	2667.6	2771.3	103.7	3.89%
Kentucky	East South Central	1773.6	1857.8	84.2	4.75%
New Hampshire	New England	619.7	650.5	30.8	4.97%
Iowa	West North Central	1450.8	1524.9	74.1	5.11%
Nebraska	West North Central	917.1	967.7	50.6	5.52%
Arkansas	West South Central	1144.2	1207.6	63.4	5.54%
Maryland	South Atlantic	2475.1	2612.4	137.3	5.55%
Tennessee	East South Central	2655.7	2805.7	150	5.65%
Delaware	South Atlantic	416.3	440.6	24.3	5.84%
California	Pacific	14564.5	15422.2	857.7	5.89%
Georgia	South Atlantic	3925.0	4170.1	245.1	6.24%
Oklahoma	West South Central	1512.4	1607.3	94.9	6.27%
Alabama	East South Central	1895.6	2014.9	119.3	6.29%
District of Columbia	South Atlantic	656.1	700.1	44	6.71%
Colorado	Mountain	2189.4	2350.5	161.1	7.36%
Virginia	South Atlantic	3492.9	3776.2	283.3	8.11%
South Dakota	West North Central	376.8	408.3	31.5	8.36%
North Carolina	South Atlantic	3836.1	4167.8	331.7	8.65%
South Carolina	South Atlantic	1790.9	1948.7	157.8	8.81%
Oregon	Pacific	1582.5	1737.8	155.3	9.81%
North Dakota	West North Central	329.4	362.0	32.6	9.90%
Alaska	Pacific	288.2	318.0	29.8	10.34%
Washington	Pacific	2698.9	2999.2	300.3	11.13%
Florida	South Atlantic	7115.9	7931.8	815.9	11.47%
Texas	West South Central	9425.7	10529.9	1104.2	11.71%
New Mexico	Mountain	757.6	849.1	91.5	12.08%
Montana	Mountain	391.3	446.5	55.2	14.11%
Hawaii	Pacific	546.2	627.9	81.7	14.96%
Idaho	Mountain	563.3	656.5	93.2	16.55%
Utah	Mountain	1071.0	1265.2	194.2	18.13%
Wyoming	Mountain	247.6	294.1	46.5	18.78%
Arizona	Mountain	2246.5	2679.3	432.8	19.27%
Nevada	Mountain	1038.2	1292.6	254.4	24.50%
Total (USA)		**130465.5**	**138071.7**	**7606.2**	**5.83%**

Sources: US Bureau of Labor Statistics; US Census Bureau

Table 3. Change in total nonfarm employment from December 2007 to December 2009, in thousands.

State	Division	Dec 2007 Total Nonfarm Employment	Dec 2009 Total Nonfarm Employment	Change in Total Nonfarm Employment	Percent Change
Nevada	Mountain	1292.6	1126.3	-166.3	-12.87%
Arizona	Mountain	2679.3	2381.7	-297.6	-11.11%
Florida	South Atlantic	7931.8	7128.0	-803.8	-10.13%
Michigan	East North Central	4245.9	3835.7	-410.2	-9.66%
Oregon	Pacific	1737.8	1592.0	-145.8	-8.39%
South Carolina	South Atlantic	1948.7	1788.5	-160.2	-8.22%
California	Pacific	15422.2	14154.4	-1267.8	-8.22%
Idaho	Mountain	656.5	603.7	-52.8	-8.04%
Georgia	South Atlantic	4170.1	3844.3	-325.8	-7.81%
North Carolina	South Atlantic	4167.8	3845.8	-322	-7.73%
Tennessee	East South Central	2805.7	2592.3	-213.4	-7.61%
Ohio	East North Central	5419.6	5007.9	-411.7	-7.60%
Alabama	East South Central	2014.9	1864.2	-150.7	-7.48%
Indiana	East North Central	2993.1	2774.8	-218.3	-7.29%
Utah	Mountain	1265.2	1174.2	-91	-7.19%
Hawaii	Pacific	627.9	583.2	-44.7	-7.12%
Delaware	South Atlantic	440.6	410.1	-30.5	-6.92%
Illinois	East North Central	5987.9	5584.9	-403	-6.73%
Rhode Island	New England	487.8	456.3	-31.5	-6.46%
Mississippi	East South Central	1160.3	1085.5	-74.8	-6.45%
Kentucky	East South Central	1857.8	1748.7	-109.1	-5.87%
Colorado	Mountain	2350.5	2213.8	-136.7	-5.82%
Wisconsin	East North Central	2878.0	2710.8	-167.2	-5.81%
Connecticut	New England	1705.5	1606.6	-98.9	-5.80%
Washington	Pacific	2999.2	2827.1	-172.1	-5.74%
New Mexico	Mountain	849.1	802.5	-46.6	-5.49%
New Jersey	Middle Atlantic	4083.5	3864.1	-219.4	-5.37%
Missouri	West North Central	2802.4	2658.4	-144	-5.14%
Wyoming	Mountain	294.1	279.3	-14.8	-5.03%
Minnesota	West North Central	2771.3	2632.4	-138.9	-5.01%
Maine	New England	620.7	592.7	-28	-4.51%
Kansas	West North Central	1385.8	1323.4	-62.4	-4.50%
Montana	Mountain	446.5	426.5	-20	-4.48%
Arkansas	West South Central	1207.6	1155.6	-52	-4.31%
Vermont	New England	308.5	295.4	-13.1	-4.25%
Maryland	South Atlantic	2612.4	2502.3	-110.1	-4.21%
Virginia	South Atlantic	3776.2	3622.3	-153.9	-4.08%
Iowa	West North Central	1524.9	1462.8	-62.1	-4.07%
Pennsylvania	Middle Atlantic	5814.6	5583.1	-231.5	-3.98%
New Hampshire	New England	650.5	624.8	-25.7	-3.95%
Oklahoma	West South Central	1607.3	1545.5	-61.8	-3.84%
Massachusetts	New England	3312.1	3194.0	-118.1	-3.57%
New York	Middle Atlantic	8774.0	8489.8	-284.2	-3.24%
Texas	West South Central	10529.9	10209.7	-320.2	-3.04%
Nebraska	West North Central	967.7	939.1	-28.6	-2.96%
Louisiana	West South Central	1935.6	1879.3	-56.3	-2.91%
West Virginia	South Atlantic	761.9	744.4	-17.5	-2.30%
South Dakota	West North Central	408.3	400.7	-7.6	-1.86%
Alaska	Pacific	318.0	319.0	1	0.31%
District of Columbia	South Atlantic	700.1	704.2	4.1	0.59%
North Dakota	West North Central	362.0	368.3	6.3	1.74%
Total (USA)		**138071.7**	**129560.4**	**-8511.3**	**-6.16%**

Sources: US Bureau of Labor Statistics; US Census Bureau

Table 4. Change in total nonfarm employment from December 2009 to December 2014, in thousands.

State	Division	Dec 2009 Total Nonfarm Employment	Dec 2014 Total Nonfarm Employment	Change in Total Nonfarm Employment	Percent Change
Maine	New England	592.7	604.7	12	2.02%
West Virginia	South Atlantic	744.4	763.1	18.7	2.51%
New Jersey	Middle Atlantic	3864.1	3982.3	118.2	3.06%
New Mexico	Mountain	802.5	827.4	24.9	3.10%
Missouri	West North Central	2658.4	2744.6	86.2	3.24%
Mississippi	East South Central	1085.5	1124.5	39	3.59%
Alabama	East South Central	1864.2	1942.8	78.6	4.22%
Arkansas	West South Central	1155.6	1204.6	49	4.24%
Pennsylvania	Middle Atlantic	5583.1	5825.5	242.4	4.34%
Connecticut	New England	1606.6	1678.1	71.5	4.45%
New Hampshire	New England	624.8	653.0	28.2	4.51%
Virginia	South Atlantic	3622.3	3797.4	175.1	4.83%
Rhode Island	New England	456.3	479.3	23	5.04%
Vermont	New England	295.4	311.7	16.3	5.52%
Maryland	South Atlantic	2502.3	2641.3	139	5.55%
Wyoming	Mountain	279.3	295.0	15.7	5.62%
Illinois	East North Central	5584.9	5907.0	322.1	5.77%
Kansas	West North Central	1323.4	1401.9	78.5	5.93%
Wisconsin	East North Central	2710.8	2872.0	161.2	5.95%
South Dakota	West North Central	400.7	424.7	24	5.99%
Nebraska	West North Central	939.1	996.8	57.7	6.14%
Louisiana	West South Central	1879.3	1996.6	117.3	6.24%
Iowa	West North Central	1462.8	1559.1	96.3	6.58%
Montana	Mountain	426.5	454.7	28.2	6.61%
Alaska	Pacific	319.0	340.6	21.6	6.77%
Ohio	East North Central	5007.9	5368.8	360.9	7.21%
Hawaii	Pacific	583.2	626.0	42.8	7.34%
Kentucky	East South Central	1748.7	1880.0	131.3	7.51%
Minnesota	West North Central	2632.4	2831.4	199	7.56%
New York	Middle Atlantic	8489.8	9156.3	666.5	7.85%
Massachusetts	New England	3194.0	3445.9	251.9	7.89%
Oklahoma	West South Central	1545.5	1668.3	122.8	7.95%
Delaware	South Atlantic	410.1	442.8	32.7	7.97%
District of Columbia	South Atlantic	704.2	761.4	57.2	8.12%
Indiana	East North Central	2774.8	3012.1	237.3	8.55%
Idaho	Mountain	603.7	659.1	55.4	9.18%
Nevada	Mountain	1126.3	1230.5	104.2	9.25%
North Carolina	South Atlantic	3845.8	4203.1	357.3	9.29%
Arizona	Mountain	2381.7	2607.3	225.6	9.47%
Georgia	South Atlantic	3844.3	4226.5	382.2	9.94%
Michigan	East North Central	3835.7	4217.6	381.9	9.96%
Oregon	Pacific	1592.0	1750.8	158.8	9.97%
Tennessee	East South Central	2592.3	2850.9	258.6	9.98%
South Carolina	South Atlantic	1788.5	1975.2	186.7	10.44%
Washington	Pacific	2827.1	3122.6	295.5	10.45%
Florida	South Atlantic	7128.0	7965.7	837.7	11.75%
California	Pacific	14154.4	15860.7	1706.3	12.05%
Colorado	Mountain	2213.8	2492.8	279	12.60%
Texas	West South Central	10209.7	11749.5	1539.8	15.08%
Utah	Mountain	1174.2	1353.6	179.4	15.28%
North Dakota	West North Central	368.3	469.8	101.5	27.56%
Total (USA)		**129560.4**	**140757.4**	**11197.0**	**8.64%**

Sources: US Bureau of Labor Statistics; US Census Bureau

Table 5. Regional changes in Personal Consumption Expenditures (PCE).

Time Period	Division/Region	Percent Change in Durable Goods Consumption	Percent Change in Nondurable Goods Consumption	Percent Change in Services Consumption	Percent Change in Total Consumption
Dec 2001 - Dec 2007	New England	21.73%	31.71%	37.48%	34.34%
	Middle Atlantic	24.12%	29.87%	37.81%	34.57%
	Northeast	**23.41%**	**30.38%**	**37.72%**	**34.51%**
	East North Central	10.16%	30.37%	31.53%	28.48%
	West North Central	17.62%	30.44%	34.83%	31.42%
	Midwest	**12.50%**	**30.39%**	**32.50%**	**29.37%**
	South Atlantic	31.65%	42.61%	45.53%	42.90%
	East South Central	24.51%	37.02%	36.71%	35.11%
	West South Central	31.92%	41.21%	39.01%	38.49%
	South	**30.68%**	**41.26%**	**42.22%**	**40.36%**
	Mountain	41.17%	56.21%	48.71%	49.39%
	Pacific	30.09%	40.57%	43.01%	40.78%
	West	**33.25%**	**45.31%**	**44.51%**	**43.15%**
	Total (USA)	**25.82%**	**37.43%**	**39.56%**	**37.27%**
Dec 2007 - Dec 2009	New England	-10.16%	-0.41%	3.78%	1.38%
	Middle Atlantic	-10.16%	-0.08%	4.05%	1.73%
	Northeast	**-10.16%**	**-0.17%**	**3.97%**	**1.63%**
	East North Central	-11.70%	-1.09%	2.85%	0.34%
	West North Central	-5.78%	1.89%	4.44%	2.59%
	Midwest	**-9.76%**	**-0.17%**	**3.33%**	**1.02%**
	South Atlantic	-16.20%	0.03%	4.55%	0.81%
	East South Central	-14.79%	2.00%	4.67%	1.51%
	West South Central	-11.22%	2.90%	5.54%	2.60%
	South	**-14.43%**	**1.21%**	**4.86%**	**1.46%**
	Mountain	-18.32%	-0.45%	4.37%	0.16%
	Pacific	-17.91%	-3.09%	3.47%	-0.51%
	West	**-18.04%**	**-2.23%**	**3.72%**	**-0.32%**
	Total (USA)	**-13.62%**	**-0.15%**	**4.06%**	**0.97%**
Dec 2009 - Dec 2014	New England	22.68%	18.85%	15.87%	17.14%
	Middle Atlantic	21.75%	22.12%	17.44%	18.79%
	Northeast	**22.02%**	**21.20%**	**17.00%**	**18.33%**
	East North Central	22.49%	19.79%	15.01%	16.80%
	West North Central	21.66%	21.71%	19.26%	20.09%
	Midwest	**22.21%**	**20.39%**	**16.30%**	**17.82%**
	South Atlantic	27.75%	23.10%	20.45%	21.84%
	East South Central	23.45%	18.32%	19.06%	19.34%
	West South Central	29.99%	31.33%	24.98%	27.08%
	South	**27.88%**	**24.84%**	**21.61%**	**23.07%**
	Mountain	24.29%	22.30%	21.58%	22.05%
	Pacific	26.55%	23.48%	19.40%	20.94%
	West	**25.87%**	**23.09%**	**20.00%**	**21.26%**
	Total (USA)	**25.10%**	**22.78%**	**19.09%**	**20.53%**
Dec 2001 - Dec 2014	New England	34.17%	55.89%	65.31%	59.54%
	Middle Atlantic	35.76%	58.47%	68.40%	62.62%
	Northeast	**35.29%**	**57.75%**	**67.54%**	**61.76%**
	East North Central	19.15%	54.47%	55.59%	50.58%
	West North Central	34.83%	61.75%	67.93%	61.91%
	Midwest	**24.06%**	**56.72%**	**59.22%**	**53.98%**
	South Atlantic	40.94%	75.60%	83.27%	75.53%
	East South Central	30.98%	65.38%	70.37%	63.68%
	West South Central	52.26%	90.83%	83.34%	80.57%
	South	**42.99%**	**78.49%**	**81.37%**	**75.25%**
	Mountain	43.31%	90.18%	88.70%	82.62%
	Pacific	35.14%	68.22%	76.69%	69.40%
	West	**37.47%**	**74.87%**	**79.85%**	**73.03%**
	Total (USA)	**35.97%**	**68.48%**	**72.95%**	**67.05%**

Sources: US Bureau of Economic Analysis; US Census Bureau; Author's Calculations

Table 6. Consumer Confidence Index Survey Questions.

Present Situation Questions
(1) Appraisal of current business conditions.
(a) Good
(b) Bad
(c) Normal
(2) Appraisal of current employment conditions.
(a) Jobs plentiful
(b) Jobs not so plentiful
(c) Jobs hard to get

Expectations Questions
(1) Expectations regarding business conditions six months hence.
(a) Better
(b) Worse
(c) Same
(2) Expectations regarding employment conditions six months hence.
(a) Better
(b) Worse
(c) Same
(3) Expectations regarding total family income six months hence.
(a) Increase
(b) Decrease
(c) Same

Source: The Conference Board (2012)

Table 7. Summary statistics for selected variables.

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
CCI3	1,413	79.37	24.19	23.45	140.1
millemp	1,413	14.87	6.370	6.760	26.78
milldur	1,404	121.7	55.36	49.48	243.9
millnondur	1,404	232.7	106.3	90.71	501.9
millserv	1,404	684.0	337.0	218.5	1,401

Table 8. Results for Pooled OLS and Fixed Effects Regressions.

VARIABLES	(1)	(2)
CCI3	Pooled OLS	Fixed Effects
$millemp_t$	104.4***	97.14***
	(12.35)	(13.96)
$millemp_{t-1}$	27.22	18.85**
	(19.58)	(5.881)
$millemp_{t-2}$	-136.3***	-114.3***
	(12.21)	(17.01)
$milldur_{t-12}$	0.786***	0.841**
	(0.0307)	(0.256)
$millnondur_{t-12}$	0.138***	0.00317
	(0.0234)	(0.166)
$millserv_{t-12}$	-0.0890***	-0.0529
	(0.00449)	(0.0567)
period2	-29.37***	-30.91***
	(1.696)	(2.057)
period3	-29.00***	-27.95***
	(1.323)	(5.534)
Constant	96.10***	2.267
	(1.073)	(72.87)
Observations	1,395	1,395
R-squared	0.743	0.755
Fixed Effects	-	*division*
Number of divisions	-	9

Table 9. Results for division-by-division OLS regression.

CCI3	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
$millemp_{t}$	215.0***	98.28***	49.06***	207.3***	75.50***	191.2***	134.1***	189.4***	93.35***
	(68.84)	(19.27)	(15.97)	(53.81)	(14.08)	(43.60)	(27.36)	(38.64)	(23.92)
$millemp_{t-1}$	36.66	6.034	-2.507	-13.74	15.17	75.66	0.989	19.88	-2.498
	(82.87)	(24.79)	(23.51)	(72.36)	(19.07)	(71.86)	(32.94)	(59.75)	(33.09)
$millemp_{t-2}$	-203.8***	-83.79***	-36.72**	-149.5***	-77.80***	-193.6***	-123.6***	-178.7***	-79.11***
	(63.61)	(18.76)	(15.95)	(47.96)	(12.60)	(47.81)	(25.38)	(39.96)	(20.63)
$milldur_{t-12}$	-0.00986	-0.346	0.195	0.652	0.143	-0.631	0.980**	1.173**	0.378
	(0.824)	(0.345)	(0.262)	(0.580)	(0.238)	(0.825)	(0.462)	(0.530)	(0.409)
$millnondur_{t-12}$	1.154**	0.332***	0.553***	0.416	0.394***	0.485	0.308*	1.553***	0.00992
	(0.487)	(0.114)	(0.131)	(0.254)	(0.114)	(0.303)	(0.175)	(0.452)	(0.128)
$millserv_{t-12}$	-0.396**	-0.0783	-0.267***	-0.275**	-0.210***	-0.276	-0.267***	-0.971***	-0.0348
	(0.159)	(0.0481)	(0.0422)	(0.114)	(0.0539)	(0.203)	(0.0976)	(0.207)	(0.0603)
period2	-32.70***	-28.47***	-17.70***	-27.50***	-26.10***	-21.43***	-27.36***	-27.24***	-34.05***
	(6.082)	(6.239)	(3.826)	(5.533)	(5.618)	(5.300)	(5.926)	(6.519)	(8.027)
period3	-19.61**	-25.89***	3.625	-17.30***	-20.51**	-27.80***	-31.84***	-9.287	-30.46**
	(7.903)	(7.859)	(4.521)	(6.300)	(9.575)	(7.667)	(8.545)	(6.968)	(13.95)
Constant	-234.4***	-268.4***	-96.90	-345.8***	-187.1***	-407.5***	-93.82	-130.2***	-178.1**
	(84.76)	(87.63)	(62.78)	(65.34)	(58.21)	(61.94)	(70.12)	(45.84)	(68.31)
Observations	155	155	155	155	155	155	155	155	155
R-squared	0.800	0.835	0.819	0.785	0.932	0.917	0.840	0.913	0.876

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10. Elasticities for division-by-division OLS regression.

CCI3	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
$millemp_{t}$	22.93***	28.51***	17.34***	25.80***	25.78***	21.22***	21.67***	21.87***	26.25***
	(7.365)	(5.584)	(5.624)	(6.733)	(4.914)	(4.890)	(4.447)	(4.493)	(6.982)
$millemp_{t-1}$	3.910	1.750	-0.887	-1.709	5.181	8.397	0.160	2.294	-0.702
	(8.841)	(7.189)	(8.317)	(9.006)	(6.506)	(7.964)	(5.318)	(6.894)	(9.305)
$millemp_{t-2}$	-21.74***	-24.30***	-12.99**	-18.60***	-26.56***	-21.48***	-19.94***	-20.62***	-22.24***
	(6.794)	(5.359)	(5.610)	(5.974)	(4.356)	(5.276)	(4.077)	(4.601)	(5.928)
$milldur_{t-12}$	-0.00903	-0.783	0.515	0.624	0.415	-0.528	1.333**	1.141**	0.975
	(0.755)	(0.787)	(0.690)	(0.553)	(0.687)	(0.695)	(0.623)	(0.516)	(1.031)
$millnondur_{t-12}$	2.092**	1.589***	2.991***	0.749	2.192***	0.899	0.774*	3.048***	0.0454
	(0.881)	(0.544)	(0.704)	(0.458)	(0.635)	(0.561)	(0.440)	(0.888)	(0.585)
$millserv_{t-12}$	-2.322**	-1.228*	-4.271***	-1.388**	-3.279***	-1.225	-1.773***	-4.981***	-0.534
	(0.921)	(0.742)	(0.671)	(0.572)	(0.830)	(0.890)	(0.644)	(1.062)	(0.912)
Observations	155	155	155	155	155	155	155	155	155

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix B: Robustness Checks for Consumer Confidence Moving Averages

Table B1. Pooled OLS and Fixed Effects Regression Results with and without Moving Averages

VARIABLES	*CCI*	*CCI3*	*CCI*	*CCI3*
CCI / CCI3	Pooled OLS	Pooled OLS	Fixed Effects	Fixed Effects
$millemp_t$	121.7***	104.4***	113.6***	97.14***
	(14.07)	(12.35)	(18.50)	(13.96)
$millemp_{t-1}$	-0.165	27.22	-7.043	18.85**
	(22.25)	(19.58)	(9.105)	(5.881)
$millemp_{t-2}$	-126.3***	-136.3***	-107.0***	-114.3***
	(13.24)	(12.21)	(13.80)	(17.01)
$milldur_{t-12}$	0.771***	0.786***	0.885***	0.841**
	(0.0335)	(0.0307)	(0.248)	(0.256)
$millnondur_{t-12}$	0.146***	0.138***	0.0263	0.00317
	(0.0252)	(0.0234)	(0.159)	(0.166)
$millserv_{t-12}$	-0.0882***	-0.0890***	-0.0577	-0.0529
	(0.00493)	(0.00449)	(0.0551)	(0.0567)
period2	-30.96***	-29.37***	-32.65***	-30.91***
	(1.743)	(1.696)	(2.041)	(2.057)
period3	-28.91***	-29.00***	-28.04***	-27.95***
	(1.483)	(1.323)	(5.726)	(5.534)
Constant	96.29***	96.10***	25.78	2.267
	(1.209)	(1.073)	(67.52)	(72.87)
Observations	1,395	1,395	1,395	1,395
R-squared	0.706	0.743	0.707	0.755
Fixed Effects	-	-	*division*	*division*
Number of divisions	-	-	9	9

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: Regressions where *CCI* is the dependent variable use Consumer Confidence Index data as they come. Regressions where *CCI3* is the dependent variables use the three-month moving average for the Consumer Confidence Index.