THE IMPACT OF CONSUMER CONFIDENCE ON HOUSEHOLD DELEVERAGING
TRENDS DURING THE 2008 FINANCIAL CRISIS

Julie Cross

Senior Research Seminar: ECON 480

Honors in Economics: Fall 2012

Professor Evan Kraft

ABSTRACT

At the onset of the 2008 financial crisis, a sudden trend toward U.S. household deleveraging and a contemporaneous drop in U.S. consumer sentiment occurred. This paper seeks to determine whether the increased deleveraging can be explained by the fall in the consumer sentiment index. Quarterly data from 1980 through 2010 for the consumer sentiment index as well as eight other independent variables was used to estimate the debt service ratio through two similar multiple linear regression models. Rolling regressions which stopped each quarter from Q2 2007 to Q4 2008, and a separate regression through Q4 of 2010 were run and analyzed to ascertain the significance of consumer sentiment as the financial crisis progressed. Two conclusions emerge: : (1) a decline in consumer confidence leads to an increase in household deleveraging, and (2) consumer confidence more significantly predicts deleveraging trends during the financial crisis than in the rest of the sample.

INTRODUCTION

  Beginning in the 1980s, the United States economy has become increasingly leveraged. Households found it easier to accumulate more and more debt during this time period because of the more widespread use of credit cards and the introduction of home equity lines of credit. Both of these innovations allowed and encouraged consumers to spend beyond their means and caused measures of household debt to rise. Household debt as a percent of disposable personal income rose from 68% in 1980 and peaked at 129% at the end of 2007[1]; then households began to deleverage, or offload debt, almost as fast as they were once accumulating it. A drastic decrease in consumer confidence can be observed in unison with the trend toward deleveraging[2] (see figure 1). In general times, a higher CSI may indicate higher borrowing as consumers feel comfortable and confident that they will be able to pay back the debt. With that being said, the relationship between consumer sentiment and DSR is not as direct as it may seem. If borrowers have a low CSI because they fear inflation and recognize that borrowers win with inflation (inflation decreases real interest rates which encourages borrowing), then borrowers may decide not to deleverage or even increase borrowing at the same time consumer confidence falls. Given figure 1, it appears that there is a clear relationship between the decline in consumer confidence and deleveraging from 2007 to 2010. This paper seeks to determine the impacts of consumer confidence on deleveraging trends in the United States in the context of the 2008 financial crisis.

  The remainder of the paper will discuss relevant literature, present the models used in this research paper, point out the relevant results, and end with concluding remarks.

---

[1] Roxburgh, Charles, Susan Lund, and et al. "Debt and deleveraging: Uneven progress on the path to growth." *McKinsey Global Institute*. McKinsey&Company, JAN 2012. Web. 19 Sep 2012.
[2] *University of Michigan: Consumer Sentiment (UMCSENT)*. 2012. FRED Economic Data, St. Louis. Web. 01 Dec 2012.

Figure 1: Household Debt as a Percent of DPI and the Consumer Sentiment Index
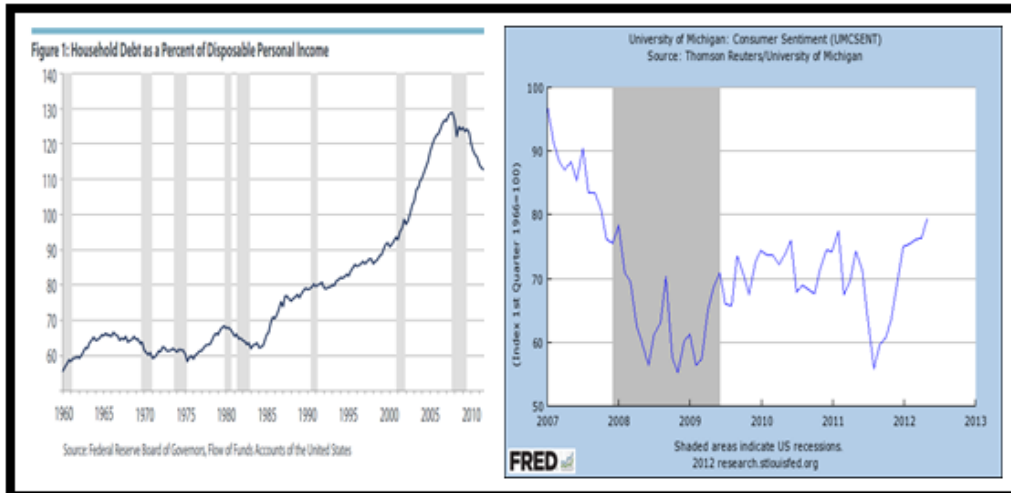
The graph on the left represents the household debt as a percent of disposable personal income from 1980-2010. The graph on the right represents the change in the consumer sentiment index from 2007-2012.[3,4]

LITERATURE REVIEW

Consumer Confidence:

Economists have tried to use the consumer sentiment index (CSI) to explain many macroeconomic trends. The CSI ascertains information about consumers' feelings of three main areas: "how consumers view prospects for their own financial situation, how they view prospects for the general economy over the near term, and their view of prospects for the economy over the long term."[5] The sample is specifically designed to be representative of the United States' population. Extensive research has been done to try to use consumer confidence trends to

---

[3] Roxburgh, Charles, Susan Lund, and et al. "Debt and deleveraging: Uneven progress on the path to growth." *McKinsey Global Institute*. McKinsey&Company, JAN 2012. Web. 19 Sep 2012.
[4] *University of Michigan: Consumer Sentiment (UMCSENT)*. 2012. FRED Economic Data, St. Louis. Web. 01 Dec 2012.
[5] "Survey of Consumers ." *Survey of Consumers: University of Michigan*. Survey Research Center: University of Michigan, n.d. Web. 13 Dec 2012.

explain consumption trends. Two researchers, Dees and Brinca, examined consumer confidence in the context that the "erosion of confidence" is integral in respect to the longevity and impact of the financial crisis. Dees and Brinca confirmed previous findings that consumer confidence can be a good predictor of consumption, but also specified that this is especially true in certain situations. For example, when household survey indicators feature large changes, it appears that confidence indicators are better at predicting; implying that not just the direction of change in confidence is relevant but so is the magnitude of the change. The main idea is that in times of shock, consumer sentiment is a good predictor of consumption.[6]

Debt and Deleveraging:

As it would be useful to know how far along in the deleveraging process the United States is, economists have already examined these aggregate debt levels and deleveraging trends. McKinsey&Co examined the deleveraging processes of the 10 largest economies of developed countries in comparison to the deleveraging processes of Sweden and Finland during the 1990s. This is a valid comparison as these countries experienced financial crises due to the bursting of credit booms and housing bubbles as well. The process of deleveraging in the Nordic countries occurred in three stages: (1) Early Stage of Recession, (2) Private-sector Deleveraging, and (3) Rebound and public-sector deleveraging. As of the release of the report in 2011, the United States was closely following the precedent trends set by the Nordic countries and is in stage 2 where the private sector is deleveraging. Since the end of 2008, household debt as a percentage of disposable personal income has fallen 15 percentage points. McKinsey predicts that the United States still has at least 2 years before the massive trend towards deleveraging will slow.[7]

[6] Dees, S., & Brinca, P. (2011). *Consumer confidence as a predictor of consumption spending: Evidence for the United States and the euro area* . Frankfurt, Germany: European Central Bank.
[7] Roxburgh, Charles, Susan Lund, and et al. "Debt and deleveraging: Uneven progress on the path to growth." *McKinsey Global Institute*. McKinsey&Company, JAN 2012. Web. 19 Sep 2012.

While research at the aggregate level is useful to generalize trends at a national level, economists have also tried to understand more specifically how these debt levels are changing. One study looks more specifically at mortgage debt as mortgage debt is the vast majority of household debt and is the primary determinant of rising household debt from the 1990s to 2007. This study determined that debt was declining for two reasons – people not taking on new debt and people reducing the debt that they already had. The author, Bhutta, points out that this reduction in household debt may not actually be due to people's desire to reduce their debt, but rather (1) people being credit constrained or (2) people trying to improve their balance sheets by increasing their assets rather than decreasing their liabilities.[8]

Another way economists have attempted to paint a more detailed picture of household debt is to examine a difference in trends among households of varying economic statuses. From a study done comparing and contrasting Germany, Great Britain, and the USA, Brown and Taylor concluded that (1) a key factor in debt accumulation and deleveraging is whether or not households can afford to service their current debt levels, (2) the poorest and youngest households are potentially most vulnerable to adverse changes in their financial circumstances, and (3) the probability of having negative net worth increases if households are in the lowest income quartile.[9] Both of these studies illustrate the importance of looking beyond just the aggregate debt level.

Turinetti and Zhuang aimed to create a model that quantitatively expressed the theoretically expected relationships between the unemployment rate, the interest rates, disposable

[8] Bhutta, Neil. *Mortgage Debt and Household Deleveraging: Accounting for the Decline in Mortgage Debt using Consumer Credit Record Data*. Board of Governors of the Federal Reserve System (U.S.), Finance and Economics Discussion Series: 2012-14, 2012. *EconLit.* Web. 3 Oct. 2012.
[9] Brown, Sarah, and Karl Taylor. "Household Debt and Financial Assets: Evidence from Germany, Great Britain and the USA."*Journal of the Royal Statistical Society: Series A (Statistics in Society)* 171.3 (2008): 615-43. *EconLit.* Web. 2 Oct. 2012.

income per capita, share of retired population, educational attainment, housing prices, consumer confidence, and the share of the working age population with the level of household debt in the United States economy. The main operational definition for level of household debt was the Debt Service Ratio (DSR), but the regression was run with five other operational definitions for the level of household debt, but focus was placed on the DSR. Turinetti and Zhuang used a linear regression model to incorporate all of these variables and based the model on quarterly data from 1980 to 2010 that was controlled for seasonality. The researchers concluded that unemployment rate, interest rate, disposable income per capita, share of retired population, and educational attainment were negatively associated with debt while housing prices, consumer confidence, and share of working age population were positively associated with debt.[10]

ECONOMETRIC MODEL

Model 1:

Turinetti and Zhuang used a linear regression model to quantitatively explain the determinants of US household debt. The researchers used quarterly data from 1980 – 2010 that was controlled for time trends. The model used by Turinetti and Zhuang to explore determinants of US household debt that will be replicated in this study is presented as follows[11]:

$$DSR_t = \beta_0 + \beta_1 U_t + \beta_2 FF_t + \beta_3 HPI_t + \beta_4 CSI_t + \beta_5 DPI_t + \beta_6 Working_t + \beta_7 Retire_t + \beta_8 High_t + B_9 College_t + \varepsilon_t"$$

The variables in the model are defined as follows:

DSR_t	=	Debt Service Ratio
U_t	=	Unemployment rate
FF_t	=	Federal funds rate

---

[10] Turinetti, Erin, and Hong Zhuang. "Exploring Determinants of U.S. Household Debt." *Journal of Applied Business Research* 27.6 (2011): 85-91. *EconLit.* Web. 2 Oct. 2012. Pg. 85.
[11] Ibid. Pg. 87.

HPI_t	=	Housing price index
CSI_t	=	Consumer sentiment index
DPI_t	=	Per capita disposable personal income
$Working_t$	=	Percent of working age population in the population
$Retire_t$	=	Percent of retiring age population in the population
$High_t$	=	Percent of population aged 25 and over who have completed 4 years of high school and over
$College_t$	=	Percent of population aged 25 and over who have completed 4 years of college and over
ε_t	=	Random Error Term

Model 2:

In addition to using Turinetti and Zhuang's model to look at the impact of consumer confidence

on debt, an additional model which is a modified version of Turinetti and Zhuang's is also ran.

This model uses a similar approach, but rather than adding in a time trend to account for the

trend in the dependent variable, the first differences (changes in the variables) are examined.

The changes are the change between the contemporaneous value of the variable and the value of

the variable for one lagged period. The second model is presented as follows:

$$\Delta DSR_t = \beta_0 + \beta_1\Delta U_t + \beta_2\Delta FF_t + \beta_3\Delta HPI_t + \beta_4\Delta CSI_t + \beta_5\Delta DPI_t + \beta_6\Delta Working_t + \beta_7\Delta Retire_t + \beta_8\Delta High_t + B_9\Delta College_t + \varepsilon_t$$

The variables in the model are defined as follows:

ΔDSR_t	=	Change in Debt Service Ratio
ΔU_t	=	Unemployment rate
ΔFF_t	=	Federal funds rate
ΔHPI_t	=	Housing price index
ΔCSI_t	=	Consumer sentiment index
ΔDPI_t	=	Per capita disposable personal income
$\Delta Working_t$	=	Percent of working age population in the population
$\Delta Retire_t$	=	Percent of retiring age population in the population
$\Delta High_t$	=	Percent of population aged 25 and over who have completed 4 years of high school and over
$\Delta College_t$	=	Percent of population aged 25 and over who have completed 4 years of college and over
ε_t	=	Random Error Term

The models presented above seem fairly simple, but as pointed out by Turinetti and

Zhuang, some estimation issues need to be addressed. The following changes were implemented

to the first model. First, because lagged variables might be affecting the DSR rather than the contemporaneous ones, a regression was run with four lags of each variable and the joint coefficients (computed by summing the coefficients for the four lagged variables) are presented. Second, a trend variable is added to de-trend the data. Third, three dummy variables are added to account for the possible seasonality of quarterly data.[12] The estimation changes to the second model are similar to the first. The only difference is that no trend line is added because the model uses changes in the variables rather than the variables themselves.

Information regarding the source of the variables can be found in Appendix A. The predictions for the coefficients of each variable and the economic rationale leading to that prediction are presented below:

DSR_t: The DSR was chosen as the dependent variable because it measures household indebtedness. It is a ratio of consumer debt payments to consumer personal income.[13]

U_t: As unemployment rises, consumers are typically more strapped for money and their consumption decreases. Creditworthiness also falls. Unemployment typically rises during recessions. History indicates that personal savings rate tends to increase during a recession, thereby decreasing borrowing. All of this suggests that the unemployment rate will have a negative impact on the DSR.[14]

FF_t: It is commonly accepted that consumers borrow more when interest rates decline. Keynes presented this as an inverse relationship between interest rates and consumption. Due to this, a negative relationship between the federal funds rate and the DSR is anticipated.[15]

HPI_t: A higher HPI clearly suggests higher mortgage payments. Higher mortgage payments directly increases consumer debt payments. Hence, a positive relationship between the federal funds rate and the DSR is anticipated according to Turinetti and Zhuang.[16] But, there are two complications here: if houses are more expensive, the quantity of houses demand falls and borrowing may fall. At the same time, greater housing values give homeowners more equity in their houses, allowing home equity loans to increase. The sign of this variable is somewhat ambiguous in theory.

---

[12] Ibid. Pg. 87.
[13] Ibid. Pg. 87.
[14] Ibid. Pg. 87.
[15] Ibid. Pg. 87.
[16] Ibid. Pg. 87.

CSI_t: In general times, a higher CSI may indicate higher borrowing as consumers feel comfortable and confident that they will be able to pay back the debt. Therefore, a positive relationship between consumer sentiment and DSR is anticipated. With that being said, the relationship between consumer sentiment and DSR is not as direct as it may seem. If borrowers have a low CSI because they fear inflation and recognize that borrowers win with inflation, then that may incur additional borrowing and a higher DSR.[17]

DPI_t: A higher disposable personal income is related to higher personal consumption, which suggests higher borrowing and debt. However, the DSR is the ratio of consumer debt payments to consumer DPI. Therefore the predicted sign is ambiguous as it depends on whether the increase in debt is greater or less than the increase in DPI.[18] In fact, with higher DPI, some may be able to satisfy their consumption desires without borrowing, so DSR could go down with increase DPI.

$Working_t$: People who are working tend to be acquiring debt (i.e. mortgage payments, paying for children's education) and consuming more. Therefore, a positive relationship is anticipated between the percent of working aged population and the DSR.[19]

$Retire_t$: People who are retiring tend to be more cautious about accumulating debt and consuming because their income is more limited. Therefore, a negative relationship is anticipated between the percent of retiring aged population and the DSR.[20]

$High_t$: Debt tends to vary widely across households with different education attainment. The anticipated signs of the coefficients relating to education are unknown. Previous studies have suggested both positive and negative relationships regarding educational attainment; Soman and Cheema (2002) predict a negative relationship and Dynan and Kohn (2007) predict a positive relationship.[21]

$College_t$: Debt tends to vary widely across households with different education attainment. The anticipated signs of the coefficients relating to education are unknown. Previous studies have suggested both positive and negative relationships regarding educational attainment; Soman and Cheema (2002) predict a negative relationship and Dynan and Kohn (2007) predict a positive relationship.[22]

---

[17] Ibid. Pg. 87.
[18] Ibid. Pg. 87.
[19] Ibid. Pg. 88.
[20] Ibid. Pg. 88.
[21] Ibid. Pg. 88.
[22] Ibid. Pg. 88.

RESULTS

All printouts of regressions ran (16 in total) can be found in Appendix B. Only portions of those results are presented in this section.

Model 1:

Using the original data from Q1 1980 to Q4 2010, overall the model fits the data quite well. The R-squared is 0.9583. Because this number is so close to 1, the model fits the data incredibly well. (Almost suspiciously well—such high R-squared values can be signs of econometric problems.)

Figure 2: Regression Results from Model 1

Variable	Coefficient	Robust Standard Error
Unemployment Rate	-0.165	0.198
Interest Rate	-0.130**	0.043
Housing Price Index	0.028	0.053
Consumer Sentiment Index	0.037***	0.007
Disposable Personal Income per capita	0.000	0.000
The Share of Working-age Population	-0.127	0.085
The Share of Retiring-age Population	-0.399	0.513
High School Education and Over	-0.187	0.130
College Education and Over	0.292	0.261
Trend	-0.047**	0.020
Quarter 1	-0.075	0.127
Quarter 2	.0.017	0.161
Quarter 3	-0.012	0.176
Constant	32.720**	12.013
F-Statisticv		
R-squared	0.9538	
Observations	120	

Robust Standard errors: ***$p<0.01$, **$p<0.05$, *$p<0.1$

When running the regression with data from Q1 of 1980 to Q4 of 2010, only the coefficients of the trend variable, the federal funds rate, the consumer sentiment index, and the constant were significant. When stopping the data at various quarters of 2007 and 2008, other variables that

were statistically significant included the unemployment rate and percent of the population aged 25 and over who are high school graduates.

The sign of the coefficients were the same as predicted by theory for the federal funds rate, consumer sentiment index, the housing price index, the unemployment rate, and the retiring population The two variables that had coefficients with unexpected signs were the trend variable and the percent of the population who is working aged. The negative trend line is particularly surprising because the debt service ratio clearly rises over time on average. The signs of the coefficients were the same in all versions of the regressions run (i.e. Q2 of 2007, Q3 of 2007, Q4 of 2007, Q1 of 2008, Q2 of 2008, Q3 of 2008, and Q4 of 2008) except that when the data was stopped at Q4 of 2008, the coefficient for the percent of the population who is working aged is positive. The negative trend line, while strange, just means that the part of DSR that is not explained by the other variables trends downward. To my mind, just putting in a time trend alongside other variables is not very satisfying, because we it is always hard to give much of an economic interpretation of the trend in such a model.

When running a rolling regression, Turinetti and Zhuang's model exhibits t-statistics for the CSI coefficient that are always significant. Looking just at the regressions from model 1, it can be inferred that the relationship between consumer sentiment and household debt is a direct relationship and consequentially the relationship between consumer confidence and deleveraging is an inverse relationship. It can also be inferred that this relationship is always significant regardless of the time period.

Model 2:

Using the original data from Q1 1980 to Q4 2010, the overall the model fits the data reasonably well. The R-squared is 0.7090. This number is a bit smaller than the R-squared from Turinetti

and Zhuang's original model (which is perhaps why they chose to use values rather than changes in values as variables), but this model allows us to look at changes in variables which is quite useful when examining time series data. I actually have more faith in this model, because I am more confident that we are not mainly just picking up trends.

Figure 3: Regression Results from Model 2

Variable	Coefficient	Robust Standard Error
ΔUnemployment Rate	-0.193**	0.057
ΔInterest Rate	-0.027	0.018
ΔHousing Price Index	0.029	0.017
ΔConsumer Sentiment Index	0.011**	0.002
ΔDisposable Personal Income per capita	0.000***	0.000
ΔThe Share of Working-age Population	0.003	0.030
ΔThe Share of Retiring-age Population	0.058	0.046
ΔHigh School Education and Over	-0.072	0.039
ΔCollege Education and Over	0.229*	0.079
Quarter 1	0.063	0.062
Quarter 2	0.011	0.059
Quarter 3	-0.029	0.070
Constant	-0.009	0.048
F-statistic		
R-squared	0.7090	
Observations	120	

Robust Standard errors: ***p<0.01, **p<0.05, *p<0.1

When running the regression with data from Q1 of 1980 to Q4 of 2010, the change in the consumer sentiment index, the change in the unemployment rate, the change in the percent of the population aged 25 and over who have a college degree, and the change in the disposable personal income ratio were the only variables that were statistically significant. Comparing that to stopping the data at Q2 of 2007, the change in the percent of the population aged 25 and over who have a high school degree was also statistically significant and the consumer sentiment index was not. In this regression, overall the coefficients were as expected except for the coefficients for the percent of the population that is working aged and the percent of the

population that is retiring aged. These coefficients changed signs depending on when the data was stopped. Perhaps this could be partially due to the fact that the data for these variables was yearly so the changes for three quarters in a row was zero and then there was one change.

Recall that when the rolling regressions were ran on model 1, the results suggested that consumer confidence is always significant in predicting the debt level. However, when doing the rolling regressions on model 2, consumer confidence only becomes statistically significant once Q1 of 2008 is included and its significance rises throughout 2008 and also in 2010 (regressions were not run for 2009). This is the same period where the projected and actual DSR started to separate in Model 1. This may suggest that the financial crisis caused consumer sentiment to become a significant and much better predictor of household deleveraging trends and household indebtedness.

Figure 4: Data regarding the CSI coefficients from Rolling Regressions

Period	CSI COEFFICIENT (MODEL 1)	ROBUST STD ERROR (MODEL 1)	T-STATISTIC (MODEL 1)	ΔCSI COEFFICIENT (MODEL 2)	ROBUST STD ERROR (MODEL 2)	T-STATISTIC (MODEL 2)
2007Q2	0.030***	0.007	4.28	0.004	0.003	1.45
2007Q3	0.031***	0.007	4.37	0.003	0.002	1.29
2007Q4	0.029***	0.007	4.12	0.004	0.002	1.45
2008Q1	0.030***	0.007	4.28	0.005**	0.002	2.20
2008Q2	0.033***	0.007	4.57	0.007**	0.002	3.19
2008Q3	0.033***	0.007	4.66	0.011***	0.002	4.60
2008Q4	0.031***	0.007	4.60	0.010***	0.002	4.18
2010Q4	0.037***	0.007	5.43	0.011***	0.002	4.61

Robust Standard errors: ***p<0.01, **p<0.05, *p<0.1

Projections with Model 1 and Model 2:

Running the regression with Model 1 with coefficients determined from data up to Q2 of 2007 with data from Q3 2007 through Q4 2010, one can see that the projected debt service ratio is less than the actual values. The trend lines begin to part ways in Q1 of 2008 (see figure 5). Running the regression with Model 2 with coefficients determined from data up to Q2 of 2007 with data

from Q3 2007 through Q4 2010, one can see that there are two specific time periods that this model does not adequately present the changes in DSR. From Q3 of 2008 to Q1 of 2009, the model predicts a much larger positive change in DSR than actually occurred. From Q4 2009 through Q4 2010, the model and what actually happened occur in opposing directions (see figure 6). Then when one looks at how these projected changes in DSR and actual changes in DSR affect DSR, one can see that the projected DSR is greater than the actual DSR. This contrasts what was found with Model 1(see figure 7).

Figure 5: Projected DSR from Model 1(Data from 1980-2007)
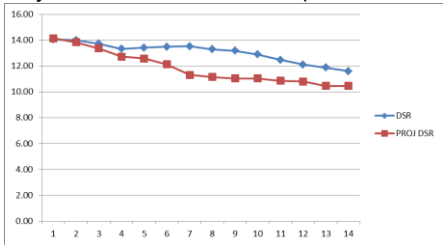
Figure 6: Projected ΔDSR from Model 2 (Data from 1980-2007)
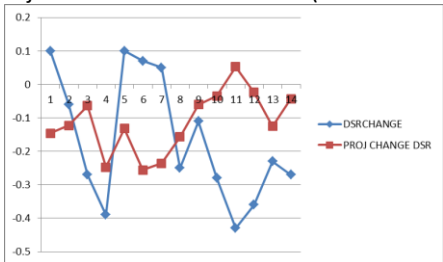
Figure 7: Projected DSR from Model 2 (Data from 1980-2007)
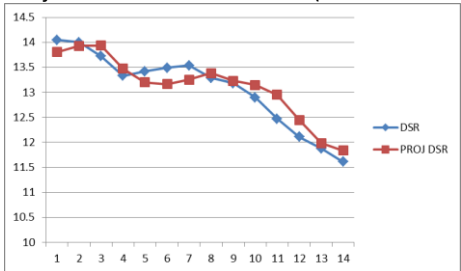
Looking at these three graphs (particularly figure 5 and 6), we can see there is a clear structural break in the model. While the first model was useful in predicting pre-crisis debt levels, we can see that after 2007 it starts to under predict the DSR. There is also a structural break in the second model as it is not properly predicting the direction of the changes of the debt level.

CONCLUSIONS

Running rolling regressions that disentangle the data in the times of the financial crisis from the rest of the data on both of these models has illustrated two important points:

(1) Consumer confidence was a statistically significant predictor of household indebtedness (and consequentially deleveraging) in times after the financial crisis.

(2) As the time since households were first affected by the financial crisis increased, the impact of consumer confidence on household indebtedness became statistically more significant.

This suggests that economic policy advisors should pay particular importance to consumer confidence levels during times of financial crises when looking into policies that impact household debt and deleveraging levels – especially policies that pertain to the housing market as that makes up the vast majority of household debt.

Many opportunities and possibilities exist for future research. First, it would be interesting to see whether consumer sentiment also was more correlated with borrowing behavior in other major recessions. The early 1990's comes to mind as a time when financial sector problems could have affected consumer sentiment and borrowing simultaneously. Second, it may be interesting to see if there is an economically meaningful explanation as to why model 1 (using coefficients determined from a regression with data up to 2007) under predicts

the DSR and model 2 (using coefficients determined from a regression with data up to 2007) doesn't represent the direction of the changes in the DSR properly and over predicts the DSR. Lastly, and perhaps the most interesting possibility for future research, regards the differences in deleveraging trends between people of different economic statuses. Recall that other economists thought this may be interesting as well, but the problem still exists that there is a lack of available data that is segmented by economic status. Once this data becomes more readily available, it would be very interesting to look at the changes in the DSR for differing economic groups. There certainly is room for further research about the deleveraging behavior broken down by income categories, regions, and other demographic indicators.

References

Bhutta, Neil. *Mortgage Debt and Household Deleveraging: Accounting for the Decline in Mortgage Debt using Consumer Credit Record Data*. Board of Governors of the Federal Reserve System (U.S.), Finance and Economics Discussion Series: 2012-14, 2012. *EconLit.* Web. 3 Oct. 2012.

Brown, Sarah, and Karl Taylor. "Household Debt and Financial Assets: Evidence from Germany, Great Britain and the USA."*Journal of the Royal Statistical Society: Series A (Statistics in Society)* 171.3 (2008): 615-43. *EconLit.* Web. 2 Oct. 2012.

Dees, S., & Brinca, P. (2011). *Consumer confidence as a predictor of consumption spending: Evidence for the united states and the euro area* . Frankfurt, Germany: European Central Bank.

Roxburgh, Charles, Susan Lund, and et al. "Debt and deleveraging: Uneven progress on the path to growth." *McKinsey Global Institute*. McKinsey&Company, JAN 2012. Web. 19 Sep 2012.

"Survey of Consumers ." *Survey of Consumers: University of Michigan*. Survey Research Center: University of Michigan, n.d. Web. 13 Dec 2012.

Turinetti, Erin, and Hong Zhuang. "Exploring Determinants of U.S. Household Debt." *Journal of Applied Business Research*27.6 (2011): 85-91. *EconLit.* Web. 2 Oct. 2012.

University of Michigan: Consumer Sentiment (UMCSENT). 2012. FRED Economic Data, St. Louis. Web. 01 Dec 2012.

Appendix A

Debt Service Ratio (DSR): The DSR is an estimate of the ratio of consumer debt payments (the estimate of required payments on outstanding mortgage and consumer debt) to consumer disposable personal income. Seasonally adjusted quarterly DSR data is available from the Federal Reserve Board: http://www.federalreserve.gov/releases/housedebt/default.htm.

Unemployment Rate: The unemployment rate is the percentage of people who are unemployed out of entire workforce. People who are unemployed are characterized by the following three criteria: (1) do not have a job, (2) have actively looked for work in the prior four weeks, and (3) are currently available for work. Seasonally adjusted quarterly unemployment rate data is available from the Bureau of Labor Statistics: http://data.bls.gov/timeseries/LNS14000000

Federal Funds Rate: The federal funds rate is the rate banks charge other banks for overnight loans. Not seasonally adjusted monthly and annual data is available from FRED: http://www.federalreserve.gov/releases/h15/data.htm.

Housing Price Index (HPI): The HPI broadly measures the movement of single-family house prices. The HPI only has data dating back to 1991. Turinetti and Zhuang estimated the data prior to 1991 with linear regression; the same technique will be employed in this study. Seasonally adjusted quarterly data is available up to Q2 of 2012 from the Federal Housing Finance Agency: http://www.fhfa.gov/Default.aspx?Page=87.

The Index of Consumer Sentiment (ICS): The ICS determines consumers' views on their own financial situation, the short-term economy, and the long-term economy by conducting 500 telephone interviews each month. Quarterly data is available up to Q1 of 2012 from the Survey of Consumers, University of Michigan: http://www.fhfa.gov/Default.aspx?Page=87.

Per capita disposable personal income (DPI): Per capita DPI is equal to personal income minus current taxes. Turinetti and Zhuang attained the data from the Bureau of Economic Analysis (BEA), but the seasonally adjusted monthly data in chained 2005 dollars is available from FRED: http://research.stlouisfed.org/fred2/series/A229RX0.

Percent of working age population in the population: Since only annual data is available, the annual value is repeated for each four quarters of that year. The data is available from the US Census Bureau: http://www.census.gov/popest/data/intercensal/index.html

Percent of retiring age population in the population: Since only annual data is available, the annual value is repeated for each four quarters of that year. The data is available from the US Census Bureau: http://www.census.gov/popest/data/intercensal/index.html

Percent of population aged 25 and over who completed 4 years of high school and over: Since only annual data is available, the annual value is repeated for each four quarters of that year. The data is available from the US Census Bureau: http://www.census.gov/hhes/socdemo/education/data/cps/historical/index.html (Table 2)

Percent of population aged 25 and over who completed 4 years of college and over: Since only annual data is available, the annual value is repeated for each four quarters of that year. The data is available from the US Census Bureau:
http://www.census.gov/hhes/socdemo/education/data/cps/historical/index.html (Table 2)

Appendix B

```
----------------------------------------------------------------------------------
----------------------------------
      name:  <unnamed>
       log:  c:\dissert.log
  log type:  text
 opened on:  13 Dec 2012, 17:39:36

. insheet using "C:\Users\pcuser\Desktop\VALUES.csv"
(48 vars, 120 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(30 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(30 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(30 real changes made)

.
. //MODEL 1: DATA 1980Q1 THROUGH 2010Q4
. regress dsr trend fflag1 fflag2 fflag3 fflag4 csilag1 csilag2 csilag3 csilag4
hpilag1 hpilag2 hpilag3 hpilag4 collegela
> g1 collegelag2 collegelag3 collegelag4 hsglag1 hsglag2 hsglag3 hsglag4
unemploymentlag1 unemploymentlag2 unemploymentla
> g3 unemploymentlag4 workinglag1 workinglag2 workinglag3 workinglag4 retiringlag1
retiringlag2 retiringlag3 retiringlag4
>  dpilag1 dpilag2 dpilag3 dpilag4 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =      120
                                                F( 40,    79) =   100.43
                                                Prob > F      =   0.0000
                                                R-squared     =   0.9583
                                                Root MSE      =   .25221


------------------------------------------------------------------------------
             |               Robust
         dsr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       trend |  -.0471589   .0204494    -2.31   0.024    -.0878626   -.0064553
      fflag1 |  -.0752815   .0409375    -1.84   0.070    -.1567657    .0062026
      fflag2 |    .023723    .047566     0.50   0.619    -.0709548    .1184008
      fflag3 |  -.0233677   .0442787    -0.53   0.599    -.1115023     .064767
      fflag4 |  -.0553743   .0376969    -1.47   0.146    -.1304081    .0196595
     csilag1 |   .0032937   .0063134     0.52   0.603    -.0092729    .0158602
     csilag2 |   .0132385   .0069055     1.92   0.059    -.0005066    .0269836
     csilag3 |   .0071454   .0073961     0.97   0.337    -.0075761    .0218668
     csilag4 |     .01297   .0064026     2.03   0.046     .0002259    .0257141
     hpilag1 |  -.0204236   .0387824    -0.53   0.600    -.0976181    .0567708
     hpilag2 |   .0260656    .066204     0.39   0.695    -.1057101    .1578413
     hpilag3 |  -.0041426   .0675528    -0.06   0.951    -.1386029    .1303178
     hpilag4 |   .0263675   .0409774     0.64   0.522    -.0551959    .1079309
```

```
   collegelag1 |   -.0004237    .2545596    -0.00   0.999     -.507112     .5062645
   collegelag2 |    .0659635    .3010158     0.22   0.827    -.5331935     .6651205
   collegelag3 |    .0134238    .2953214     0.05   0.964    -.5743987     .6012464
   collegelag4 |    .2129311    .1929123     1.10   0.273    -.1710513     .5969135
       hsglag1 |   -.1455812    .1181363    -1.23   0.221    -.3807256     .0895632
       hsglag2 |    .0447166     .142492     0.31   0.754    -.2389066     .3283398
       hsglag3 |   -.1005488    .1496242    -0.67   0.504    -.3983683     .1972708
       hsglag4 |    .0146146    .1100583     0.13   0.895    -.2044509     .2336801
  unemployme~1 |    .2153395    .1747539     1.23   0.222    -.1324994     .5631784
  unemployme~2 |   -.0125935    .2151378    -0.06   0.953    -.4408146     .4156275
  unemployme~3 |    .0267639     .242511     0.11   0.912    -.4559421     .5094699
  unemployme~4 |   -.3947471    .1610471    -2.45   0.016    -.7153034    -.0741909
    workinglag1 |    -.072821    .0865854    -0.84   0.403    -.2451649     .0995228
    workinglag2 |     -.03044     .080087    -0.38   0.705    -.1898493     .1289692
    workinglag3 |     .021025    .0942949     0.22   0.824    -.1666642     .2087142
    workinglag4 |   -.0447732    .0784355    -0.57   0.570    -.2008951     .1113486
    retiringlag1 |    .4624095    .5396901     0.86   0.394    -.6118169     1.536636
    retiringlag2 |   -.1885335    .5598914    -0.34   0.737    -1.302969     .9259025
    retiringlag3 |    .1221261    .4930899     0.25   0.805    -.8593448     1.103597
    retiringlag4 |   -.7836965    .4581873    -1.71   0.091    -1.695696     .1283025
        dpilag1 |   -.0001949    .0001368    -1.43   0.158    -.0004672     .0000773
        dpilag2 |    -.000019    .0001405    -0.14   0.893    -.0002987     .0002606
        dpilag3 |    .0001213    .0001718     0.71   0.482    -.0002207     .0004633
        dpilag4 |     .000064    .0001503     0.43   0.671    -.0002351     .0003632
       quarter1 |   -.0750173    .1265451    -0.59   0.555     -.326899     .1768644
       quarter2 |   -.0170753    .1608584    -0.11   0.916    -.3372559     .3031054
       quarter3 |   -.0124136    .1755929    -0.07   0.944    -.3619225     .3370953
          _cons |    32.72029    12.01252     2.72   0.008      8.80996     56.63062
-----------------------------------------------------------------------------

.
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\CHANGES.csv"
(51 vars, 120 obs)

. do "C:\Users\pcuser\Desktop\DOFILE-REG8.do"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(30 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(30 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(30 real changes made)

.
. //MODEL 2: DATA 1980Q1 THROUGH 2010Q4
. regress dsrchange ffchange ffchange1 ffchange2 ffchange3 csichange csichange1
csichange2 csichange3 hpichange hpichange
> 1 hpichange2 hpichange3 collegechange collegechange1 collegechange2 collegechange3
hsgchange hsgchange1 hsgchange2 hsgc
```

```
> hange3 unemploymentchange unemploymentchange1 unemploymentchange2
unemploymentchange3 workingchange workingchange1 work
> ingchange2 workingchange3 retiringchange retiringchange1 retiringchange2
retiringchange3 dpichange dpichange1 dpichange
> 2 dpichange3 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =      120
                                                F( 39,   80) =    14.44
                                                Prob > F      =   0.0000
                                                R-squared     =   0.7090
                                                Root MSE      =   .09694


------------------------------------------------------------------------------
             |               Robust
   dsrchange |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    ffchange |  -.0270783   .0183123    -1.48   0.143    -.063521     .0093644
   ffchange1 |   .0037395   .0147989     0.25   0.801   -.0257112    .0331902
   ffchange2 |   .0003223   .0189903     0.02   0.987   -.0374697    .0381143
   ffchange3 |  -.0044697   .0182728    -0.24   0.807   -.0408338    .0318943
   csichange |   .0014974   .0021498     0.70   0.488   -.0027809    .0057757
  csichange1 |   .0051579    .002811     1.83   0.070   -.0004362     .010752
  csichange2 |    .002814   .0023119     1.22   0.227   -.0017868    .0074147
  csichange3 |   .0016501   .0023826     0.69   0.491   -.0030915    .0063916
   hpichange |   .0035954   .0128263     0.28   0.780   -.0219298    .0291205
  hpichange1 |   .0066423   .0198157     0.34   0.738   -.0327922    .0460768
  hpichange2 |  -.0043075    .022012    -0.20   0.845   -.0481128    .0394978
  hpichange3 |   .0230786   .0135242     1.71   0.092   -.0038354    .0499925
 collegecha~e |  -.0298652   .0858658    -0.35   0.729   -.2007436    .1410131
 collegecha~1 |   .0730092   .0749297     0.97   0.333   -.0761055     .222124
 collegecha~2 |   .1180248   .0862936     1.37   0.175    -.053705    .2897545
 collegecha~3 |   .0678127   .0709026     0.96   0.342   -.0732879    .2089133
    hsgchange |   .0093591   .0382415     0.24   0.807   -.0667439    .0854621
   hsgchange1 |  -.0081772   .0357105    -0.23   0.819   -.0792432    .0628889
   hsgchange2 |  -.0358165   .0389349    -0.92   0.360   -.1132993    .0416664
   hsgchange3 |  -.0375527   .0431226    -0.87   0.386   -.1233695     .048264
 unemployme~e |  -.0077333     .04964    -0.16   0.877   -.1065201    .0910534
 unemployme~1 |   .0275985   .0549165     0.50   0.617   -.0816888    .1368858
 unemployme~2 |   .0006686   .0664205     0.01   0.992   -.1315126    .1328497
 unemployme~3 |  -.2140073   .0583189    -3.67   0.000   -.3300655    -.097949
 workingcha~e |   .0004255   .0367583     0.01   0.991   -.0727258    .0735768
 workingcha~1 |   .0064671   .0307394     0.21   0.834   -.0547062    .0676404
 workingcha~2 |   .0080932    .029746     0.27   0.786   -.0511031    .0672896
 workingcha~3 |  -.0122221   .0241978    -0.51   0.615   -.0603772     .035933
 retiringch~e |  -.3255635   .3944066    -0.83   0.412   -1.110458    .4593306
 retiringch~1 |   .9248207   .6950684     1.33   0.187   -.4584094    2.308051
 retiringch~2 |  -.7294341    .589283    -1.24   0.219   -1.902145    .4432765
 retiringch~3 |   .1883814   .1846085     1.02   0.311   -.1790012     .555764
    dpichange |   -.000458   .0000399   -11.49   0.000   -.0005373   -.0003787
   dpichange1 |  -7.41e-06   .0000539    -0.14   0.891   -.0001146    .0000998
   dpichange2 |   .0000989   .0000509     1.94   0.056   -2.38e-06    .0002001
   dpichange3 |   .0000531   .0000508     1.05   0.299    -.000048    .0001543
     quarter1 |   .0628432   .0618426     1.02   0.313   -.0602274    .1859138
     quarter2 |   .0114912   .0594505     0.19   0.847   -.1068191    .1298015
     quarter3 |  -.0291994   .0696904    -0.42   0.676   -.1678877     .109489
        _cons |  -.0085132   .0479067    -0.18   0.859   -.1038505    .0868242
------------------------------------------------------------------------------

.
. clear

.
end of do-file
```

Formatted: French (France)

```
. insheet using "C:\Users\pcuser\Desktop\VALUES2007q2.csv"
(48 vars, 106 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(27 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(27 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(26 real changes made)

.
. //MODEL 1: DATA 1980Q1 THROUGH 2007Q2
. regress dsr trend fflag1 fflag2 fflag3 fflag4 csilag1 csilag2 csilag3 csilag4
hpilag1 hpilag2 hpilag3 hpilag4 collegela
> g1 collegelag2 collegelag3 collegelag4 hsglag1 hsglag2 hsglag3 hsglag4
unemploymentlag1 unemploymentlag2 unemploymentla
> g3 unemploymentlag4 workinglag1 workinglag2 workinglag3 workinglag4 retiringlag1
retiringlag2 retiringlag3 retiringlag4
>  dpilag1 dpilag2 dpilag3 dpilag4 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =      106
                                                F( 40,    65) =   114.77
                                                Prob > F      =   0.0000
                                                R-squared     =   0.9706
                                                Root MSE      =  .20858

------------------------------------------------------------------------------
             |               Robust
         dsr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       trend | -.0394055   .0214821    -1.83   0.071    -.0823082    .0034971
      fflag1 | -.1997611   .0438782    -4.55   0.000    -.2873919   -.1121303
      fflag2 |  .0561395   .0626538     0.90   0.374    -.0689888    .1812677
      fflag3 | -.0378981   .0555624    -0.68   0.498    -.1488637    .0730676
      fflag4 | -.0246282   .0409572    -0.60   0.550    -.1064253    .0571689
     csilag1 |  -.002174   .0064004    -0.34   0.735    -.0149564    .0106085
     csilag2 |  .0130201   .0076793     1.70   0.095    -.0023164    .0283567
     csilag3 |  .0076017   .0079426     0.96   0.342    -.0082608    .0234642
     csilag4 |  .0118139   .0062479     1.89   0.063    -.0006641    .0242918
     hpilag1 | -.1035863    .064155    -1.61   0.111    -.2317127    .0245401
     hpilag2 |  .1401517   .1572923     0.89   0.376    -.1739826    .4542861
     hpilag3 | -.0715554   .1704673    -0.42   0.676     -.412002    .2688913
     hpilag4 |  .0721273   .0773866     0.93   0.355    -.0824244     .226679
  collegelag1 |  .0496996   .1970322     0.25   0.802    -.3438009    .4432002
  collegelag2 |  .2066241   .2562492     0.81   0.423     -.305141    .7183891
  collegelag3 | -.0720442    .285837    -0.25   0.802    -.6429001    .4988117
  collegelag4 |  .1615431   .2075804     0.78   0.439    -.2530237    .5761099
      hsglag1 | -.0795025   .0826169    -0.96   0.339    -.2444998    .0854948
      hsglag2 |  .0635976   .1187692     0.54   0.594    -.1736008     .300796
      hsglag3 | -.1180726   .1269219    -0.93   0.356    -.3715532     .135408
      hsglag4 | -.0763745   .0962295    -0.79   0.430    -.2685582    .1158091
 unemployme~1 |  -.019891   .1726689    -0.12   0.909    -.3647346    .3249527
```

```
unemployme~2 |   .0614481    .2155837     0.29    0.777    -.3691024     .4919986
unemployme~3 |  -.0839371    .2712506    -0.31    0.758    -.6256618     .4577877
unemployme~4 |  -.3799784    .1730964    -2.20    0.032    -.7256758    -.0342811
 workinglag1 |  -.1334645    .0730882    -1.83    0.072    -.2794316     .0125027
 workinglag2 |    .055017    .0759418     0.72    0.471    -.0966493     .2066833
 workinglag3 |   .0421841    .0982782     0.43    0.669     -.154091     .2384593
 workinglag4 |  -.0816926    .0809086    -1.01    0.316    -.2432782      .079893
 retiringlag1 |  -.0625962     .558482    -0.11    0.911    -1.177962     1.052769
 retiringlag2 |   .0120716    .5437916     0.02    0.982    -1.073955     1.098098
 retiringlag3 |  -.2381777    .5225896    -0.46    0.650    -1.281861     .8055059
 retiringlag4 |  -.6390134    .5402085    -1.18    0.241    -1.717884     .4398576
      dpilag1 |  -.0002433    .0001551    -1.57    0.121     -.000553     .0000664
      dpilag2 |  -.0001605    .0001778    -0.90    0.370    -.0005156     .0001945
      dpilag3 |   .0001961    .0001796     1.09    0.279    -.0001627     .0005549
      dpilag4 |  -.0000632    .0001614    -0.39    0.697    -.0003855     .0002591
      quarter1 |  -.0829357    .1094507    -0.76    0.451     -.301524     .1356525
      quarter2 |   -.005431    .1278487    -0.04    0.966    -.2607626     .2499005
      quarter3 |  -.0568463    .1567204    -0.36    0.718    -.3698386      .256146
        _cons |   46.92049     12.4103     3.78    0.000     22.13541     71.70556
-------------------------------------------------------------------------------

.
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\VALUES2007q3.csv"
(48 vars, 107 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(27 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(27 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(27 real changes made)

.
. //MODEL 1: DATA 1980Q1 THROUGH 2007Q2
. regress dsr trend fflag1 fflag2 fflag3 fflag4 csilag1 csilag2 csilag3 csilag4
hpilag1 hpilag2 hpilag3 hpilag4 collegela
> g1 collegelag2 collegelag3 collegelag4 hsglag1 hsglag2 hsglag3 hsglag4
unemploymentlag1 unemploymentlag2 unemploymentla
> g3 unemploymentlag4 workinglag1 workinglag2 workinglag3 workinglag4 retiringlag1
retiringlag2 retiringlag3 retiringlag4
>  dpilag1 dpilag2 dpilag3 dpilag4 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =       107
                                                F( 40,    66) =    139.62
                                                Prob > F      =    0.0000
                                                R-squared     =    0.9710
                                                Root MSE      =    .21007
```

```
------------------------------------------------------------------------------
             |               Robust
         dsr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       trend | -.0372652   .0215027    -1.73   0.088    -.0801967    .0056663
      fflag1 | -.1970124   .0443699    -4.44   0.000    -.2855996   -.1084251
      fflag2 |  .0566002    .063621     0.89   0.377    -.0704233    .1836237
      fflag3 | -.0334128   .0560252    -0.60   0.553    -.1452708    .0784451
      fflag4 | -.0316596   .0397457    -0.80   0.429    -.1110145    .0476954
     csilag1 | -.0008667   .0063778    -0.14   0.892    -.0136005    .0118671
     csilag2 |  .0105058   .0079233     1.33   0.189    -.0053136    .0263252
     csilag3 |  .0072003   .0078478     0.92   0.362    -.0084684    .0228689
     csilag4 |  .0140866    .006165     2.28   0.026     .0017777    .0263955
     hpilag1 |   -.05125   .0548504    -0.93   0.354    -.1607624    .0582624
     hpilag2 |  .0269151   .1302367     0.21   0.837    -.2331109    .2869412
     hpilag3 |  .0219877   .1452787     0.15   0.880    -.2680706    .3120459
     hpilag4 |  .0389929   .0680716     0.57   0.569    -.0969164    .1749021
  collegelag1 |   .110005   .1951171     0.56   0.575     -.279559    .4995689
  collegelag2 |  .0776929   .2428964     0.32   0.750    -.4072655    .5626512
  collegelag3 |  .0231213   .2838721     0.08   0.935    -.5436476    .5898902
  collegelag4 |   .123989   .2170776     0.57   0.570    -.3094204    .5573985
      hsglag1 | -.0785076   .0807624    -0.97   0.335    -.2397549    .0827397
      hsglag2 |  .0321543   .1131267     0.28   0.777    -.1937105    .2580191
      hsglag3 | -.1045046   .1247804    -0.84   0.405    -.3536367    .1446275
      hsglag4 | -.0706186   .0977361    -0.72   0.473     -.265755    .1245179
 unemployme~1 | -.0008096   .1733913    -0.00   0.996    -.3469965    .3453773
 unemployme~2 |  .0063438   .2106602     0.03   0.976    -.4142528    .4269405
 unemployme~3 | -.0082681   .2619038    -0.03   0.975    -.5311759    .5146397
 unemployme~4 | -.4165812   .1706192    -2.44   0.017    -.7572335   -.0759289
   workinglag1 | -.1080767   .0740216    -1.46   0.149    -.2558657    .0397123
   workinglag2 |  .0197938   .0730259     0.27   0.787    -.1260071    .1655946
   workinglag3 |   .064513   .0987739     0.65   0.516    -.1326954    .2617215
   workinglag4 | -.0926735   .0843065    -1.10   0.276    -.2609968    .0756499
  retiringlag1 |  .0179642   .5568486     0.03   0.974     -1.09382    1.129748
  retiringlag2 | -.1512116   .5275682    -0.29   0.775    -1.204535    .9021123
  retiringlag3 | -.1129355   .5161454    -0.22   0.827    -1.143453     .917582
  retiringlag4 | -.6651008   .5537571    -1.20   0.234    -1.770713     .440511
      dpilag1 | -.0002488   .0001541    -1.61   0.111    -.0005565    .0000588
      dpilag2 | -.0001071   .0001654    -0.65   0.519    -.0004373    .0002231
      dpilag3 |  .0001444    .000175     0.82   0.412    -.0002051    .0004939
      dpilag4 | -.0000707   .0001612    -0.44   0.662    -.0003925     .000251
     quarter1 | -.0730833   .1169193    -0.63   0.534    -.3065202    .1603536
     quarter2 | -.0266154   .1348303    -0.20   0.844    -.2958127    .2425819
     quarter3 | -.0208088   .1587924    -0.13   0.896    -.3378479    .2962304
        _cons |  47.93032   12.21097     3.93   0.000     23.55034     72.3103
------------------------------------------------------------------------------

.
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\VALUES2007q4.csv"
(48 vars, 108 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(27 real changes made)
```

```
. gen quarter2=0

. replace quarter2 = 1 if period == 2
(27 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(27 real changes made)

.
. //MODEL 1: DATA 1980Q1 THROUGH 2007Q4
. regress dsr trend fflag1 fflag2 fflag3 fflag4 csilag1 csilag2 csilag3 csilag4
hpilag1 hpilag2 hpilag3 hpilag4 collegela
> g1 collegelag2 collegelag3 collegelag4 hsglag1 hsglag2 hsglag3 hsglag4
unemploymentlag1 unemploymentlag2 unemploymentla
> g3 unemploymentlag4 workinglag1 workinglag2 workinglag3 workinglag4 retiringlag1
retiringlag2 retiringlag3 retiringlag4
>  dpilag1 dpilag2 dpilag3 dpilag4 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =      108
                                                F( 40,    67) =   134.31
                                                Prob > F      =   0.0000
                                                R-squared     =   0.9711
                                                Root MSE      =    .2127

------------------------------------------------------------------------------
             |               Robust
         dsr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       trend |  -.0361102   .0218207    -1.65   0.103    -.0796646    .0074441
      fflag1 |  -.2086631   .0438549    -4.76   0.000    -.2961978   -.1211284
      fflag2 |   .0651131   .0626502     1.04   0.302    -.0599372    .1901634
      fflag3 |   -.035954   .0547757    -0.66   0.514    -.1452866    .0733787
      fflag4 |  -.0228626   .0392953    -0.58   0.563    -.1012963     .055571
     csilag1 |  -.0003477    .006362    -0.05   0.957    -.0130463    .0123509
     csilag2 |   .0105179   .0079218     1.33   0.189    -.0052941      .02633
     csilag3 |   .0047401   .0079085     0.60   0.551    -.0110453    .0205255
     csilag4 |   .0141235   .0059751     2.36   0.021      .002197    .0260499
     hpilag1 |  -.0193424   .0520291    -0.37   0.711    -.1231929    .0845082
     hpilag2 |   .0163878   .1193232     0.14   0.891    -.2217822    .2545578
     hpilag3 |  -.0242513   .1350152    -0.18   0.858    -.2937427    .2452402
     hpilag4 |   .0637896   .0651015     0.98   0.331    -.0661535    .1937327
  collegelag1 |   .0994425   .2021134     0.49   0.624    -.3039777    .5028626
  collegelag2 |   .1288782   .2464477     0.52   0.603    -.3630334    .6207898
  collegelag3 |  -.0841571   .2810636    -0.30   0.766    -.6451624    .4768482
  collegelag4 |   .1841473   .2202193     0.84   0.406    -.2554122    .6237069
      hsglag1 |  -.0811197   .0847413    -0.96   0.342    -.2502641    .0880248
      hsglag2 |   .0456944   .1136122     0.40   0.689    -.1810766    .2724653
      hsglag3 |  -.1507601   .1216695    -1.24   0.220    -.3936135    .0920933
      hsglag4 |   -.044549   .0981407    -0.45   0.651    -.2404387    .1513407
 unemployme~1 |  -.0580307    .172518    -0.34   0.738     -.402378    .2863166
 unemployme~2 |   .0605787   .2099328     0.29   0.774    -.3584489    .4796063
 unemployme~3 |  -.0607998   .2579145    -0.24   0.814    -.5755993    .4539997
 unemployme~4 |  -.3838977   .1672167    -2.30   0.025    -.7176636   -.0501318
   workinglag1 |  -.1185462   .0755102    -1.57   0.121    -.2692653    .0321728
   workinglag2 |   .0354781   .0742833     0.48   0.634     -.112792    .1837481
   workinglag3 |   .0580835   .0958734     0.61   0.547    -.1332805    .2494476
   workinglag4 |  -.0869404   .0808367    -1.08   0.286    -.2482911    .0744104
  retiringlag1 |  -.0167604   .5515998    -0.03   0.976    -1.117758    1.084237
  retiringlag2 |  -.0732297   .5160267    -0.14   0.888    -1.103223    .9567638
  retiringlag3 |  -.2640734   .5163765    -0.51   0.611    -1.294765    .7666184
  retiringlag4 |  -.5429935   .5535339    -0.98   0.330    -1.647852    .5618649
```

```
     dpilag1 |  -.0002533    .0001531    -1.65   0.103    -.0005588    .0000523
     dpilag2 |  -.0000904    .0001641    -0.55   0.584     -.000418    .0002371
     dpilag3 |   .0001621    .0001755     0.92   0.359    -.0001882    .0005124
     dpilag4 |  -.0001149    .0001592    -0.72   0.473    -.0004328    .0002029
    quarter1 |  -.1003932    .1159067    -0.87   0.389    -.3317439    .1309576
    quarter2 |  -.0510056    .1391312    -0.37   0.715    -.3287127    .2267015
    quarter3 |   -.067371    .1593198    -0.42   0.674    -.3853747    .2506326
       _cons |    48.9925     12.2094     4.01   0.000     24.62243    73.36257
------------------------------------------------------------------------------

.
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\VALUES2008Q1.csv"
(48 vars, 109 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(28 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(27 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(27 real changes made)

.
. //MODEL 1: DATA 1980Q1 THROUGH 2008Q1
. regress dsr trend fflag1 fflag2 fflag3 fflag4 csilag1 csilag2 csilag3 csilag4
hpilag1 hpilag2 hpilag3 hpilag4 collegela
> g1 collegelag2 collegelag3 collegelag4 hsglag1 hsglag2 hsglag3 hsglag4
unemploymentlag1 unemploymentlag2 unemploymentla
> g3 unemploymentlag4 workinglag1 workinglag2 workinglag3 workinglag4 retiringlag1
retiringlag2 retiringlag3 retiringlag4
>  dpilag1 dpilag2 dpilag3 dpilag4 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =      109
                                                F( 40,    68) =   105.12
                                                Prob > F      =   0.0000
                                                R-squared     =   0.9707
                                                Root MSE      =   .21586


------------------------------------------------------------------------------
             |               Robust
         dsr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       trend |  -.0279431    .0216336    -1.29   0.201    -.0711123     .015226
      fflag1 |  -.2172691    .0430664    -5.04   0.000    -.3032068   -.1313313
      fflag2 |   .0668816    .0603626     1.11   0.272    -.0535701    .1873332
      fflag3 |  -.0329552    .0562428    -0.59   0.560    -.1451861    .0792756
      fflag4 |  -.0096676    .0396436    -0.24   0.808    -.0887751    .0694399
     csilag1 |   .0029198    .0065301     0.45   0.656    -.0101109    .0159504
     csilag2 |   .0093132    .0081375     1.14   0.256    -.0069249    .0255512
```

```
      csilag3 |    .0060687    .0077966     0.78   0.439    -.0094891    .0216266
      csilag4 |    .0121307    .0059541     2.04   0.046     .0002495    .0240119
      hpilag1 |   -.0153326     .051022    -0.30   0.765    -.1171453    .0864802
      hpilag2 |    .0414184    .1206211     0.34   0.732    -.1992774    .2821141
      hpilag3 |   -.0469127    .1298496    -0.36   0.719    -.3060236    .2121981
      hpilag4 |    .0558433    .0624916     0.89   0.375    -.0688568    .1805434
   collegelag1 |   .1159375    .2104259     0.55   0.583    -.3039608    .5358358
   collegelag2 |   .1172426    .2549789     0.46   0.647      -.39156    .6260451
   collegelag3 |   -.044764    .2782438    -0.16   0.873    -.5999907    .5104628
   collegelag4 |   .0860487    .2132721     0.40   0.688    -.3395291    .5116264
       hsglag1 |   -.0829108    .0869248    -0.95   0.344    -.2563666     .090545
       hsglag2 |    .0496373    .1154637     0.43   0.669    -.1807671    .2800416
       hsglag3 |     -.14597    .1212118    -1.20   0.233    -.3878445    .0959044
       hsglag4 |   -.0921445    .0932678    -0.99   0.327    -.2782575    .0939684
  unemployme~1 |   -.0702453    .1699825    -0.41   0.681    -.4094401    .2689495
  unemployme~2 |    .0331639    .2092198     0.16   0.875    -.3843277    .4506555
  unemployme~3 |   -.0375274    .2609499    -0.14   0.886    -.5582447     .48319
  unemployme~4 |   -.3862116    .1695595    -2.28   0.026    -.7245624   -.0478608
   workinglag1 |    -.101839    .0770915    -1.32   0.191    -.2556726    .0519947
   workinglag2 |    .0340614    .0782802     0.44   0.665    -.1221443     .190267
   workinglag3 |    .0843021    .0959089     0.88   0.383     -.107081    .2756853
   workinglag4 |   -.0896741    .0790226    -1.13   0.260    -.2473612     .068013
  retiringlag1 |    .0281721    .5576302     0.05   0.960    -1.084562    1.140906
  retiringlag2 |   -.0439718    .5343807    -0.08   0.935    -1.110312    1.022368
  retiringlag3 |   -.3029539    .4949049    -0.61   0.542    -1.290521    .6846135
  retiringlag4 |   -.6006671    .5134326    -1.17   0.246    -1.625206    .4238717
       dpilag1 |     -.000264    .0001545    -1.71   0.092    -.0005724    .0000443
       dpilag2 |   -.0000873    .0001645    -0.53   0.598    -.0004156    .0002411
       dpilag3 |    .0001662    .0001801     0.92   0.360    -.0001933    .0005256
       dpilag4 |   -.0001229    .0001613    -0.76   0.449    -.0004448    .0001991
      quarter1 |   -.0680885    .1140099    -0.60   0.552    -.2955918    .1594147
      quarter2 |   -.0358907    .1395938    -0.26   0.798    -.3144458    .2426645
      quarter3 |   -.0474688    .1590012    -0.30   0.766    -.3647508    .2698132
         _cons |    51.47743    12.31081     4.18   0.000     26.91159    76.04326
-------------------------------------------------------------------------------

.
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\VALUES2008Q2.csv"
(48 vars, 110 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(28 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(28 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(27 real changes made)

.
```

```
. //MODEL 1: DATA 1980Q1 THROUGH 2008Q2
. regress dsr trend fflag1 fflag2 fflag3 fflag4 csilag1 csilag2 csilag3 csilag4
hpilag1 hpilag2 hpilag3 hpilag4 collegela
> g1 collegelag2 collegelag3 collegelag4 hsglag1 hsglag2 hsglag3 hsglag4
unemploymentlag1 unemploymentlag2 unemploymentla
> g3 unemploymentlag4 workinglag1 workinglag2 workinglag3 workinglag4 retiringlag1
retiringlag2 retiringlag3 retiringlag4
>  dpilag1 dpilag2 dpilag3 dpilag4 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =      110
                                                F( 40,    69) =   113.17
                                                Prob > F      =   0.0000
                                                R-squared     =   0.9695
                                                Root MSE      =   .22042


------------------------------------------------------------------------------
             |               Robust
         dsr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       trend | -.0160638   .0219465    -0.73   0.467    -.0598458    .0277183
      fflag1 | -.2207543   .0442577    -4.99   0.000     -.309046   -.1324626
      fflag2 |   .077182   .0621802     1.24   0.219    -.0468642    .2012281
      fflag3 | -.0445863    .054063    -0.82   0.412    -.1524391    .0632664
      fflag4 |  .0116364   .0394858     0.29   0.769    -.0671355    .0904083
     csilag1 |  .0066879   .0062761     1.07   0.290    -.0058326    .0192085
     csilag2 |  .0088577   .0082575     1.07   0.287    -.0076156     .025331
     csilag3 |  .0066401   .0083193     0.80   0.428    -.0099564    .0232366
     csilag4 |  .0109151   .0060885     1.79   0.077    -.0012312    .0230614
     hpilag1 | -.0056086   .0530437    -0.11   0.916    -.1114279    .1002107
     hpilag2 |   .019729    .121458     0.16   0.871     -.222573    .262031
     hpilag3 | -.0048574     .13237    -0.04   0.971    -.2689283    .2592135
     hpilag4 |  .0236843   .0662505     0.36   0.722    -.1084817    .1558504
 collegelag1 |  .0314369   .2136137     0.15   0.883    -.3947107    .4575845
 collegelag2 |  .1613054   .2609248     0.62   0.538    -.3592253    .6818361
 collegelag3 | -.0142631   .2841743    -0.05   0.960    -.5811753    .5526491
 collegelag4 |  .0082771   .2075571     0.04   0.968    -.4057879    .4223421
      hsglag1 | -.1278201   .0903739    -1.41   0.162    -.3081111    .0524709
      hsglag2 |  .0957249   .1169079     0.82   0.416    -.1375001    .3289498
      hsglag3 | -.1739205     .11973    -1.45   0.151    -.4127753    .0649343
      hsglag4 | -.1222686   .0895305    -1.37   0.176     -.300877    .0563399
unemployme~1 | -.0984483   .1738076    -0.57   0.573    -.4451849    .2482883
unemployme~2 |  .0656739   .2149182     0.31   0.761    -.3630761     .494424
unemployme~3 | -.0746827   .2636742    -0.28   0.778    -.6006984     .451333
unemployme~4 | -.3515698   .1725331    -2.04   0.045     -.695764   -.0073757
  workinglag1 | -.0948201   .0790422    -1.20   0.234    -.2525049    .0628647
  workinglag2 |  .0425126   .0805714     0.53   0.599    -.1182229     .203248
  workinglag3 |   .107581   .0975778     1.10   0.274    -.0870815    .3022434
  workinglag4 | -.1033155   .0790465    -1.31   0.196     -.261009     .054378
 retiringlag1 | -.2101246   .5533082    -0.38   0.705    -1.313944    .893695
 retiringlag2 |  .1556509   .5291222     0.29   0.770    -.8999191    1.211221
 retiringlag3 | -.3826914   .4781311    -0.80   0.426    -1.336537    .571154
 retiringlag4 | -.5267684   .4884997    -1.08   0.285    -1.501299    .4477618
      dpilag1 | -.0003237   .0001558    -2.08   0.041    -.0006345   -.0000129
      dpilag2 | -.0000588   .0001679    -0.35   0.727    -.0003938    .0002761
      dpilag3 |  .0001737   .0001842     0.94   0.349    -.0001938    .0005412
      dpilag4 | -.0000915   .0001638    -0.56   0.578    -.0004184    .0002353
     quarter1 | -.0328735   .1146564    -0.29   0.775    -.2616068    .1958598
     quarter2 |  .0155917   .1382846     0.11   0.911    -.2602784    .2914619
     quarter3 | -.0292295   .1644616    -0.18   0.859    -.3573215    .2988624
        _cons |  56.38861   12.48426     4.52   0.000     31.48319    81.29403
------------------------------------------------------------------------------



.
```

```
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\VALUES2008Q3.csv"
(48 vars, 111 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(28 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(28 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(28 real changes made)

.
. //MODEL 1: DATA 1980Q1 THROUGH 2008Q3
. regress dsr trend fflag1 fflag2 fflag3 fflag4 csilag1 csilag2 csilag3 csilag4
hpilag1 hpilag2 hpilag3 hpilag4 collegela
> g1 collegelag2 collegelag3 collegelag4 hsglag1 hsglag2 hsglag3 hsglag4
unemploymentlag1 unemploymentlag2 unemploymentla
> g3 unemploymentlag4 workinglag1 workinglag2 workinglag3 workinglag4 retiringlag1
retiringlag2 retiringlag3 retiringlag4
>  dpilag1 dpilag2 dpilag3 dpilag4 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =      111
                                                F( 40,    70) =  116.11
                                                Prob > F      =   0.0000
                                                R-squared     =   0.9700
                                                Root MSE      =   .21892

------------------------------------------------------------------------------
             |               Robust
         dsr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       trend | -.0171275   .0209904    -0.82   0.417    -.0589915    .0247365
      fflag1 |  -.220987   .0440626    -5.02   0.000    -.3088672   -.1331068
      fflag2 |  .0762293   .0617264     1.23   0.221    -.0468802    .1993388
      fflag3 | -.0446946   .0535835    -0.83   0.407    -.1515635    .0621744
      fflag4 |  .0117455   .0395873     0.30   0.768    -.0672089    .0906999
     csilag1 |  .0060266   .0054418     1.11   0.272    -.0048268    .0168799
     csilag2 |  .0089657    .008232     1.09   0.280    -.0074525    .0253839
     csilag3 |  .0064872   .0082677     0.78   0.435    -.0100022    .0229767
     csilag4 |  .0110904   .0060266     1.84   0.070    -.0009294    .0231101
     hpilag1 | -.0042124   .0530509    -0.08   0.937    -.1100191    .1015943
     hpilag2 |  .0173179    .122369     0.14   0.888    -.2267393    .2613752
     hpilag3 | -.0061507    .132328    -0.05   0.963    -.2700707    .2577693
     hpilag4 |   .026124    .064279     0.41   0.686    -.1020765    .1543245
  collegelag1 |  .0229572   .2174646     0.11   0.916    -.4107623    .4566767
  collegelag2 |  .1782516   .2571291     0.69   0.490    -.3345762    .6910793
  collegelag3 | -.0224449    .277973    -0.08   0.936    -.5768445    .5319548
  collegelag4 |  .0121016   .2054558     0.06   0.953     -.397667    .4218701
      hsglag1 | -.1302886    .090603    -1.44   0.155    -.3109905    .0504134
```

```
      hsglag2 |   .1027196    .1134415      0.91    0.368     -.1235324     .3289716
      hsglag3 |  -.1764425    .1197268     -1.47    0.145     -.4152301     .0623452
      hsglag4 |  -.1189603    .0883318     -1.35    0.182     -.2951324     .0572119
 unemployme~1 |  -.1021111    .1735092     -0.59    0.558     -.4481643     .2439421
 unemployme~2 |   .0673024     .214254      0.31    0.754     -.3600137     .4946186
 unemployme~3 |  -.0730423    .2618433     -0.28    0.781     -.5952723     .4491877
 unemployme~4 |   -.351328    .1716166     -2.05    0.044     -.6936065    -.0090495
  workinglag1 |  -.0992017    .0766124     -1.29    0.200     -.2520004     .053597
  workinglag2 |   .0436301      .08063      0.54    0.590     -.1171813     .2044415
  workinglag3 |   .1046095     .095291      1.10    0.276     -.0854425     .2946615
  workinglag4 |   -.102425    .0789474     -1.30    0.199     -.2598806     .0550306
  retiringlag1 |  -.2135179    .5548971     -0.38    0.702     -1.320225     .8931893
  retiringlag2 |   .1881039    .5328944      0.35    0.725     -.8747205     1.250928
  retiringlag3 |  -.3984481     .484732     -0.82    0.414     -1.365216     .5683194
  retiringlag4 |  -.5337478    .4891297     -1.09    0.279     -1.509286     .4417906
       dpilag1 |  -.0003141    .0001442     -2.18    0.033     -.0006018    -.0000265
       dpilag2 |  -.0000559    .0001677     -0.33    0.740     -.0003903     .0002785
       dpilag3 |     .00017    .0001801      0.94    0.348     -.0001892     .0005291
       dpilag4 |  -.0000968    .0001631     -0.59    0.555     -.0004221     .0002285
      quarter1 |  -.0358098     .112634     -0.32    0.751     -.2604511     .1888316
      quarter2 |   .0186626     .140255      0.13    0.895     -.2610671     .2983923
      quarter3 |  -.0333497    .1611216     -0.21    0.837     -.3546966     .2879972
         _cons |   56.10076    12.38277      4.53    0.000      31.40411     80.79741
------------------------------------------------------------------------------

.
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\VALUES2008Q4.csv"
(48 vars, 112 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(28 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(28 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(28 real changes made)

.
. //MODEL 1: DATA 1980Q1 THROUGH 2008Q4
. regress dsr trend fflag1 fflag2 fflag3 fflag4 csilag1 csilag2 csilag3 csilag4
hpilag1 hpilag2 hpilag3 hpilag4 collegela
> g1 collegelag2 collegelag3 collegelag4 hsglag1 hsglag2 hsglag3 hsglag4
unemploymentlag1 unemploymentlag2 unemploymentla
> g3 unemploymentlag4 workinglag1 workinglag2 workinglag3 workinglag4 retiringlag1
retiringlag2 retiringlag3 retiringlag4
>  dpilag1 dpilag2 dpilag3 dpilag4 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =     112
                                                F( 40,    71) =  106.79
```

```
                                            Prob > F      =  0.0000
                                            R-squared     =  0.9701
                                            Root MSE      =  .21941

------------------------------------------------------------------------------
             |               Robust
         dsr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       trend |  -.0219209    .020246    -1.08   0.283    -.0622904    .0184485
      fflag1 |  -.2136431   .0423111    -5.05   0.000     -.298009   -.1292771
      fflag2 |   .0696343   .0588726     1.18   0.241    -.0477544     .187023
      fflag3 |  -.0532182   .0514105    -1.04   0.304    -.1557279    .0492915
      fflag4 |   .0152187   .0390732     0.39   0.698     -.062691    .0931284
     csilag1 |   .0069284   .0054078     1.28   0.204    -.0038545    .0177113
     csilag2 |   .0051366   .0070746     0.73   0.470    -.0089697    .0192429
     csilag3 |   .0070725   .0082527     0.86   0.394    -.0093828    .0235279
     csilag4 |   .0116557   .0060296     1.93   0.057     -.000367    .0236785
     hpilag1 |   .0199009   .0499129     0.40   0.691    -.0796226    .1194245
     hpilag2 |  -.0275971   .1203909    -0.23   0.819    -.2676497    .2124556
     hpilag3 |   .0015909   .1332184     0.01   0.991    -.2640391    .2672209
     hpilag4 |   .0402753   .0627472     0.64   0.523    -.0848392    .1653897
  collegelag1 |   .0330433   .2227085     0.15   0.882    -.4110248    .4771115
  collegelag2 |   .1285336    .251125     0.51   0.610    -.3721954    .6292625
  collegelag3 |   .0719719   .2599538     0.28   0.783    -.4463613    .5903052
  collegelag4 |  -.0137504   .2065373    -0.07   0.947     -.425574    .3980732
      hsglag1 |  -.1317421    .094094    -1.40   0.166    -.3193602     .055876
      hsglag2 |   .1038022   .1176823     0.88   0.381    -.1308497    .3384541
      hsglag3 |  -.1581835   .1195013    -1.32   0.190    -.3964622    .0800953
      hsglag4 |  -.1151159   .0907894    -1.27   0.209    -.2961449     .065913
  unemployme~1 |  -.0776505   .1687418    -0.46   0.647     -.414112     .258811
  unemployme~2 |    .018944   .1986035     0.10   0.924     -.37706    .4149481
  unemployme~3 |  -.0608903   .2608072    -0.23   0.816    -.5809252    .4591445
  unemployme~4 |  -.3419809   .1711167    -2.00   0.049    -.6831779   -.0007839
   workinglag1 |  -.0994545   .0756466    -1.31   0.193    -.2502894    .0513805
   workinglag2 |   .0296178   .0791903     0.37   0.710    -.1282831    .1875188
   workinglag3 |   .1094986   .0964767     1.13   0.260    -.0828706    .3018677
   workinglag4 |  -.1075957   .0808191    -1.33   0.187    -.2687444     .053553
  retiringlag1 |  -.2898082   .5538469    -0.52   0.602    -1.394148    .8145312
  retiringlag2 |   .2038708     .52899     0.39   0.701    -.8509054    1.258647
  retiringlag3 |  -.2205433   .4777421    -0.46   0.646    -1.173134    .7320475
  retiringlag4 |  -.6249764   .5058077    -1.24   0.221    -1.633528    .3835755
      dpilag1 |  -.0003732   .0001327    -2.81   0.006    -.0006378   -.0001086
      dpilag2 |   .0000351   .0001502     0.23   0.816    -.0002644    .0003346
      dpilag3 |   .0001754   .0001844     0.95   0.345    -.0001922     .000543
      dpilag4 |  -.0001329     .00016    -0.83   0.409    -.0004519    .0001862
     quarter1 |  -.0253551   .1153087    -0.22   0.827     -.255274    .2045638
     quarter2 |   .0256834   .1447895     0.18   0.860    -.2630187    .3143855
     quarter3 |    .007286   .1568407     0.05   0.963    -.3054454    .3200174
       _cons |   54.43946   12.08046     4.51   0.000     30.35171    78.52721
------------------------------------------------------------------------------

.
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\CHANGES2007Q2.csv"
(51 vars, 106 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0
```

```
. replace quarter1 = 1 if period == 1
(27 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(27 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(26 real changes made)

.
. //MODEL 2: DATA 1980Q1 THROUGH 2007Q2
. regress dsrchange ffchange ffchange1 ffchange2 ffchange3 csichange csichange1
csichange2 csichange3 hpichange hpichange
> 1 hpichange2 hpichange3 collegechange collegechange1 collegechange2 collegechange3
hsgchange hsgchange1 hsgchange2 hsgc
> hange3 unemploymentchange unemploymentchange1 unemploymentchange2
unemploymentchange3 workingchange workingchange1 work
> ingchange2 workingchange3 retiringchange retiringchange1 retiringchange2
retiringchange3 dpichange dpichange1 dpichange
> 2 dpichange3 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =      106
                                                F( 39,     66) =     8.96
                                                Prob > F      = 0.0000
                                                R-squared     = 0.6724
                                                Root MSE      = .08998

------------------------------------------------------------------------------
             |               Robust
   dsrchange |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    ffchange |   -.023122   .0188104    -1.23   0.223    -.0606782    .0144341
   ffchange1 |   .0016551   .0148068     0.11   0.911    -.0279077    .0312178
   ffchange2 |  -.0047479   .0195212    -0.24   0.809    -.0437232    .0342274
   ffchange3 |   .0060036   .0203535     0.29   0.769    -.0346335    .0466407
   csichange |   .0010801   .0023606     0.46   0.649    -.0036329    .0057931
  csichange1 |  -.0008817   .0026328    -0.33   0.739    -.0061382    .0043748
  csichange2 |   .0017363   .0025792     0.67   0.503    -.0034133    .0068858
  csichange3 |   .0016936   .0024392     0.69   0.490    -.0031764    .0065635
   hpichange |  -.0012578   .0257195    -0.05   0.961    -.0526085     .050093
  hpichange1 |  -.0204818   .0379905    -0.54   0.592    -.0963323    .0553686
  hpichange2 |   .0122739    .038795     0.32   0.753    -.0651828    .0897306
  hpichange3 |   .0280295   .0241048     1.16   0.249    -.0200974    .0761563
 collegecha~e |   .0053127   .0805946     0.07   0.948    -.1555995    .1662249
 collegecha~1 |   .0327536   .0865713     0.38   0.706    -.1400916    .2055988
 collegecha~2 |   .1635475   .0792609     2.06   0.043      .005298    .3217969
 collegecha~3 |   .0418255   .0605046     0.69   0.492    -.0789757    .1626268
   hsgchange |  -.0025424   .0406309    -0.06   0.950    -.0836646    .0785798
  hsgchange1 |  -.0205249   .0375894    -0.55   0.587    -.0955746    .0545248
  hsgchange2 |  -.0370177    .035705    -1.04   0.304    -.1083052    .0342697
  hsgchange3 |  -.0479192   .0372425    -1.29   0.203    -.1222763    .0264379
 unemployme~e |  -.0408367   .0498377    -0.82   0.416    -.1403408    .0586675
 unemployme~1 |  -.0121888   .0580216    -0.21   0.834    -.1280326     .103655
 unemployme~2 |   .0104875   .0668254     0.16   0.876    -.1229338    .1439088
 unemployme~3 |  -.1439597   .0627401    -2.29   0.025    -.2692244    -.018695
 workingcha~e |   .0062494    .039292     0.16   0.874    -.0721996    .0846984
 workingcha~1 |  -.0057759   .0384614    -0.15   0.881    -.0825666    .0710149
 workingcha~2 |    .005374   .0276961     0.19   0.847     -.049923    .0606709
```

```
workingcha~3 |  -.0262022    .0219577    -1.19   0.237    -.0700421     .0176377
retiringch~e |  -.2298069     .392553    -0.59   0.560    -1.013564     .5539506
retiringch~1 |    .620113     .696834     0.89   0.377    -.7711609     2.011387
retiringch~2 |  -.5746419    .5766416    -1.00   0.323    -1.725944     .5766603
retiringch~3 |   .1722063    .1720285     1.00   0.320    -.1712597     .5156724
   dpichange |  -.0004453     .000054    -8.24   0.000    -.0005531    -.0003374
  dpichange1 |    .000115    .0000534     2.15   0.035     8.35e-06     .0002217
  dpichange2 |   .0001527     .000053     2.88   0.005     .0000469     .0002584
  dpichange3 |   .0000373    .0000563     0.66   0.510    -.0000752     .0001498
    quarter1 |   .0283318    .0529072     0.54   0.594     -.077301     .1339645
    quarter2 |   .0283417     .058268     0.49   0.628    -.0879941     .1446776
    quarter3 |  -.0566187    .0630315    -0.90   0.372    -.1824652     .0692278
       _cons |  -.0021862    .0425417    -0.05   0.959    -.0871235      .082751
------------------------------------------------------------------------------

.
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\CHANGES2007Q3.csv"
(51 vars, 107 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(27 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(27 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(27 real changes made)

.
. //MODEL 2: DATA 1980Q1 THROUGH 2007Q3
. regress dsrchange ffchange ffchange1 ffchange2 ffchange3 csichange csichange1
csichange2 csichange3 hpichange hpichange
> 1 hpichange2 hpichange3 collegechange collegechange1 collegechange2 collegechange3
hsgchange hsgchange1 hsgchange2 hsgc
> hange3 unemploymentchange unemploymentchange1 unemploymentchange2
unemploymentchange3 workingchange workingchange1 work
> ingchange2 workingchange3 retiringchange retiringchange1 retiringchange2
retiringchange3 dpichange dpichange1 dpichange
> 2 dpichange3 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =       107
                                                F( 39,    67) =      8.77
                                                Prob > F      =   0.0000
                                                R-squared     =   0.6727
                                                Root MSE      =   .08938


------------------------------------------------------------------------------
             |               Robust
   dsrchange |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
```

```
    ffchange |  -.0232657    .0186435    -1.25   0.216    -.0604783    .0139469
   ffchange1 |    .001876    .0146888     0.13   0.899     -.027443    .0311949
   ffchange2 |   -.004672    .0193521    -0.24   0.810     -.043299    .0339549
   ffchange3 |   .0068378    .0197228     0.35   0.730    -.0325291    .0462047
    csichange |   .0011066    .0023245     0.48   0.636    -.0035332    .0057463
   csichange1 |  -.0009006    .0026239    -0.34   0.732     -.006138    .0043368
   csichange2 |   .0015375    .0025728     0.60   0.552    -.0035979    .0066728
   csichange3 |    .001451    .0024123     0.60   0.550     -.003364    .0062659
    hpichange |   .0012289    .0228941     0.05   0.957    -.0444679    .0469256
   hpichange1 |   -.018525    .0373002    -0.50   0.621    -.0929766    .0559266
   hpichange2 |   .0070844    .0333604     0.21   0.832    -.0595032     .073672
   hpichange3 |   .0288498    .0234308     1.23   0.223    -.0179183    .0756179
  collegecha~e |   .0036954    .0810796     0.05   0.964    -.1581402    .1655309
  collegecha~1 |   .0365655    .0834385     0.44   0.663    -.1299785    .2031095
  collegecha~2 |     .15698     .078037     2.01   0.048     .0012174    .3127426
  collegecha~3 |   .0438157    .0604087     0.73   0.471    -.0767606     .164392
    hsgchange |  -.0025815    .0409322    -0.06   0.950    -.0842826    .0791195
   hsgchange1 |  -.0193611     .037456    -0.52   0.607    -.0941237    .0554015
   hsgchange2 |  -.0395934    .0339769    -1.17   0.248    -.1074116    .0282248
   hsgchange3 |  -.0488545      .03673    -1.33   0.188    -.1221679     .024459
 unemployme~e |  -.0444429    .0501568    -0.89   0.379    -.1445563    .0556705
 unemployme~1 |  -.0103216    .0576405    -0.18   0.858    -.1253726    .1047293
 unemployme~2 |   .0069051    .0652434     0.11   0.916    -.1233212    .1371314
 unemployme~3 |  -.1403778    .0603876    -2.32   0.023     -.260912   -.0198436
  workingcha~e |   .0051452    .0392297     0.13   0.896    -.0731575     .083448
  workingcha~1 |  -.0047012    .0376242    -0.12   0.901    -.0797994     .070397
  workingcha~2 |   .0046272    .0276746     0.17   0.868    -.0506116    .0598659
  workingcha~3 |  -.0255103    .0216435    -1.18   0.243    -.0687109    .0176903
  retiringch~e |  -.2182634     .394689    -0.55   0.582    -1.006066    .5695392
  retiringch~1 |    .602462    .7060777     0.85   0.397    -.8068749    2.011799
  retiringch~2 |   -.559573    .5841771    -0.96   0.342    -1.725595    .6064495
  retiringch~3 |   .1646619    .1736885     0.95   0.347    -.1820218    .5113456
    dpichange |  -.0004446    .0000538    -8.27   0.000    -.0005519   -.0003372
   dpichange1 |   .0001161    .0000536     2.17   0.034     9.14e-06    .0002231
   dpichange2 |   .0001561    .0000525     2.97   0.004     .0000513     .000261
   dpichange3 |   .0000364    .0000563     0.65   0.520    -.0000759    .0001488
     quarter1 |   .0293385    .0532405     0.55   0.583      -.07693     .135607
     quarter2 |   .0271453    .0575142     0.47   0.638    -.0876536    .1419442
     quarter3 |   -.053204    .0626151    -0.85   0.399    -.1781843    .0717763
        _cons |  -.0036805    .0426658    -0.09   0.932    -.0888418    .0814807
---------------------------------------------------------------------------

.
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\CHANGES2007Q4.csv"
(51 vars, 108 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(27 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(27 real changes made)
```

```
. gen quarter3=0

. replace quarter3 = 1 if period == 3
(27 real changes made)

.
. //MODEL 2: DATA 1980Q1 THROUGH 2007Q4
. regress dsrchange ffchange ffchange1 ffchange2 ffchange3 csichange csichange1
csichange2 csichange3 hpichange hpichange
> 1 hpichange2 hpichange3 collegechange collegechange1 collegechange2 collegechange3
hsgchange hsgchange1 hsgchange2 hsgc
> hange3 unemploymentchange unemploymentchange1 unemploymentchange2
unemploymentchange3 workingchange workingchange1 work
> ingchange2 workingchange3 retiringchange retiringchange1 retiringchange2
retiringchange3 dpichange dpichange1 dpichange
> 2 dpichange3 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =      108
                                                F( 39,   68) =     9.08
                                                Prob > F      =   0.0000
                                                R-squared     =   0.6732
                                                Root MSE      =   .08889

------------------------------------------------------------------------------
             |               Robust
   dsrchange |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    ffchange |  -.0236894    .018674    -1.27   0.209    -.0609529    .0135741
   ffchange1 |   .0018757   .0145819     0.13   0.898    -.0272221    .0309734
   ffchange2 |   -.004402   .0192551    -0.23   0.820     -.042825     .034021
   ffchange3 |   .0069465   .0196541     0.35   0.725    -.0322726    .0461657
   csichange |   .0013455    .002236     0.60   0.549    -.0031163    .0058073
  csichange1 |  -.0008738   .0026092    -0.33   0.739    -.0060803    .0043327
  csichange2 |   .0017614   .0025284     0.70   0.488     -.003284    .0068067
  csichange3 |   .0013177   .0024064     0.55   0.586    -.0034843    .0061196
   hpichange |   .0023819   .0226189     0.11   0.916    -.0427535    .0475172
  hpichange1 |  -.0164865    .036872    -0.45   0.656    -.0900635    .0570906
  hpichange2 |   .0099366   .0326922     0.30   0.762    -.0552997     .075173
  hpichange3 |   .0233252   .0199328     1.17   0.246      -.01645    .0631005
 collegecha~e |   .0063553    .080828     0.08   0.938    -.1549345     .167645
 collegecha~1 |   .0344001   .0839323     0.41   0.683    -.1330843    .2018845
 collegecha~2 |   .1609585   .0767693     2.10   0.040     .0077677    .3141493
 collegecha~3 |   .0322431    .058338     0.55   0.582    -.0841685    .1486547
    hsgchange |  -.0027729   .0410548    -0.07   0.946    -.0846964    .0791507
   hsgchange1 |  -.0193785   .0376037    -0.52   0.608    -.0944155    .0556585
   hsgchange2 |   -.038958   .0341922    -1.14   0.259    -.1071873    .0292714
   hsgchange3 |  -.0535174   .0359698    -1.49   0.141    -.1252939    .0182592
 unemployme~e |  -.0433752   .0504703    -0.86   0.393    -.1440871    .0573366
 unemployme~1 |  -.0116687   .0574691    -0.20   0.840    -.1263466    .1030092
 unemployme~2 |   .0092258   .0641155     0.14   0.886    -.1187147    .1371663
 unemployme~3 |  -.1433995   .0599106    -2.39   0.019    -.2629493   -.0238497
 workingcha~e |   .0060911   .0393252     0.15   0.877     -.072381    .0845633
 workingcha~1 |  -.0060778   .0371246    -0.16   0.870    -.0801588    .0680032
 workingcha~2 |   .0061848   .0269601     0.23   0.819    -.0476132    .0599829
 workingcha~3 |    -.02663   .0208352    -1.28   0.206    -.0682061    .0149461
 retiringch~e |   -.193789   .3939574    -0.49   0.624    -.9799188    .5923408
 retiringch~1 |   .5911564    .709678     0.83   0.408    -.8249841    2.007297
 retiringch~2 |   -.564308   .5878272    -0.96   0.340    -1.737299     .608683
 retiringch~3 |   .1692355   .1746614     0.97   0.336    -.1792959    .5177668
    dpichange |  -.0004429   .0000537    -8.25   0.000    -.0005501   -.0003358
   dpichange1 |   .0001173   .0000531     2.21   0.030     .0000114    .0002232
   dpichange2 |   .0001565   .0000524     2.99   0.004     .0000519    .0002611
   dpichange3 |   .0000403   .0000555     0.73   0.470    -.0000704    .0001511
```

```
      quarter1 |   .0223546    .052138     0.43   0.669    -.0816852    .1263944
      quarter2 |   .0231854   .0580797     0.40   0.691    -.0927109    .1390817
      quarter3 |  -.0600081   .0608226    -0.99   0.327    -.1813778    .0613616
         _cons |  -.0008144   .0422797    -0.02   0.985    -.0851823    .0835535
-------------------------------------------------------------------------------

.
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\CHANGES2008Q1.csv"
(51 vars, 109 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(28 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(27 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(27 real changes made)

.
. //MODEL 2: DATA 1980Q1 THROUGH 2008Q1
. regress dsrchange ffchange ffchange1 ffchange2 ffchange3 csichange csichange1
csichange2 csichange3 hpichange hpichange
> 1 hpichange2 hpichange3 collegechange collegechange1 collegechange2 collegechange3
hsgchange hsgchange1 hsgchange2 hsgc
> hange3 unemploymentchange unemploymentchange1 unemploymentchange2
unemploymentchange3 workingchange workingchange1 work
> ingchange2 workingchange3 retiringchange retiringchange1 retiringchange2
retiringchange3 dpichange dpichange1 dpichange
> 2 dpichange3 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =      109
                                                F( 39,    69) =     8.60
                                                Prob > F      =   0.0000
                                                R-squared     =   0.6827
                                                Root MSE      =   .08932


-------------------------------------------------------------------------------
              |               Robust
     dsrchange |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+-----------------------------------------------------------------
      ffchange |  -.0206871   .0182087    -1.14   0.260    -.0570125    .0156384
     ffchange1 |   .0037955   .0150171     0.25   0.801    -.0261628    .0337539
     ffchange2 |  -.0069052    .019223    -0.36   0.721    -.0452539    .0314436
     ffchange3 |   .0074924   .0194353     0.39   0.701    -.0312801    .0462648
     csichange |   .0020038   .0021741     0.92   0.360    -.0023333    .0063409
    csichange1 |  -.0004464   .0025655    -0.17   0.862    -.0055644    .0046716
    csichange2 |   .0020694   .0025145     0.82   0.413    -.0029469    .0070856
    csichange3 |   .0016864   .0024043     0.70   0.485      -.00311    .0064828
     hpichange |   .0077603   .0228946     0.34   0.736    -.0379132    .0534338
```

The "Formatted: French (France)" annotation appears in the right margin.

```
   hpichange1 |  -.022053    .0369241   -0.60   0.552   -.0957145    .0516085
   hpichange2 |  .0203886    .0319338    0.64   0.525   -.0433176    .0840948
   hpichange3 |  .0151295    .0189164    0.80   0.427   -.0226076    .0528667
   collegecha~e | -.0098271   .0829352   -0.12   0.906   -.1752784    .1556241
   collegecha~1 |  .0295301   .0848427    0.35   0.729   -.1397265    .1987866
   collegecha~2 |  .1638614   .0788053    2.08   0.041    .0066491    .3210736
   collegecha~3 |  .0390843   .0573595    0.68   0.498   -.0753447    .1535134
     hsgchange |  -.0136402   .0390614   -0.35   0.728   -.0915656    .0642852
    hsgchange1 |  -.0181769   .0383065   -0.47   0.637   -.0945962    .0582425
    hsgchange2 |  -.0413018   .0342438   -1.21   0.232   -.1096163    .0270128
    hsgchange3 |  -.0466476   .0364605   -1.28   0.205   -.1193842    .0260891
   unemployme~e |  -.0375759  .0513721   -0.73   0.467   -.1400605    .0649087
   unemployme~1 |  -.0025118  .0572812   -0.04   0.965   -.1167847    .1117611
   unemployme~2 |  .0008697   .0656075    0.01   0.989   -.1300136    .131753
   unemployme~3 |  -.1433945  .060352    -2.38   0.020   -.2637933   -.0229956
   workingcha~e |  .0061653   .0355741    0.17   0.863   -.064803     .0771336
   workingcha~1 |  -.0065733  .0367701   -0.18   0.859   -.0799277    .0667811
   workingcha~2 |  .0065849   .0271363    0.24   0.809   -.0475504    .0607203
   workingcha~3 |  -.0269539  .0210521   -1.28   0.205   -.0689516    .0150439
   retiringch~e |  -.1800855  .3961876   -0.45   0.651   -.9704581    .6102871
   retiringch~1 |  .4552815   .7087475    0.64   0.523   -.958631     1.869194
   retiringch~2 |  -.4481557  .585519    -0.77   0.447   -1.616234    .7199226
   retiringch~3 |  .1345437   .173598     0.78   0.441   -.2117749    .4808623
     dpichange |  -.000458    .0000549   -8.35   0.000   -.0005675   -.0003486
    dpichange1 |  .0001176    .0000524    2.25   0.028    .0000131    .0002221
    dpichange2 |  .0001544    .0000528    2.92   0.005    .000049     .0002598
    dpichange3 |  .0000415    .0000564    0.74   0.465   -.000071     .000154
      quarter1 |  .0311433    .0533297    0.58   0.561   -.0752465    .1375332
      quarter2 |  .0260397    .0584066    0.45   0.657   -.0904784    .1425577
      quarter3 |  -.0587493   .0616629   -0.95   0.344   -.1817634    .0642649
         _cons |  -.0039819   .0424178   -0.09   0.925   -.0886031    .0806394
-------------------------------------------------------------------------------

.
. clear

.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\CHANGES2008Q2.csv"
(51 vars, 110 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(28 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(28 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(27 real changes made)

.
. //MODEL 2: DATA 1980Q1 THROUGH 2008Q2
. regress dsrchange ffchange ffchange1 ffchange2 ffchange3 csichange csichange1
csichange2 csichange3 hpichange hpichange
```

```
> 1 hpichange2 hpichange3 collegechange collegechange1 collegechange2 collegechange3
hsgchange hsgchange1 hsgchange2 hsgc
> hange3 unemploymentchange unemploymentchange1 unemploymentchange2
unemploymentchange3 workingchange workingchange1 work
> ingchange2 workingchange3 retiringchange retiringchange1 retiringchange2
retiringchange3 dpichange dpichange1 dpichange
> 2 dpichange3 quarter1 quarter2 quarter3, robust

Linear regression                                  Number of obs =      110
                                                   F( 39,    70) =     9.51
                                                   Prob > F      =   0.0000
                                                   R-squared     =   0.7088
                                                   Root MSE      =  .08913


------------------------------------------------------------------------------
             |               Robust
   dsrchange |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    ffchange |  -.0209097    .018359    -1.14   0.259    -.0575256    .0157063
   ffchange1 |    .005251   .0146242     0.36   0.721    -.0239161     .034418
   ffchange2 |  -.0069171   .0198102    -0.35   0.728    -.0464272     .032593
   ffchange3 |   .0059085   .0191954     0.31   0.759    -.0323756    .0441926
   csichange |   .0028331   .0020651     1.37   0.174    -.0012857    .0069518
  csichange1 |   .0001617   .0024388     0.07   0.947    -.0047023    .0050257
  csichange2 |   .0024734   .0024741     1.00   0.321     -.002461    .0074078
  csichange3 |   .0019924   .0023868     0.83   0.407     -.002768    .0067527
    hpichange |   .0072021   .0220858     0.33   0.745    -.0368467    .0512509
   hpichange1 |  -.0192553   .0361483    -0.53   0.596    -.0913509    .0528402
   hpichange2 |   .0192629    .032211     0.60   0.552    -.0449799    .0835057
   hpichange3 |   .0159666   .0188961     0.84   0.401    -.0217204    .0536536
 collegecha~e |  -.0005262   .0810789    -0.01   0.995    -.1622329    .1611806
 collegecha~1 |   .0156031   .0858904     0.18   0.856    -.1556999    .1869061
 collegecha~2 |   .1616865   .0792283     2.04   0.045     .0036707    .3197024
 collegecha~3 |   .0434053   .0573646     0.76   0.452    -.0710047    .1578153
    hsgchange |  -.0097564   .0395143    -0.25   0.806    -.0885651    .0690523
   hsgchange1 |  -.0243948   .0369153    -0.66   0.511    -.0980201    .0492305
   hsgchange2 |  -.0412772   .0341783    -1.21   0.231    -.1094437    .0268893
   hsgchange3 |  -.0451339   .0364179    -1.24   0.219     -.117767    .0274993
 unemployme~e |  -.0291557   .0511116    -0.57   0.570    -.1310945    .0727831
 unemployme~1 |   .0005825   .0572461     0.01   0.992    -.1135913    .1147562
 unemployme~2 |  -.0038189   .0675932    -0.06   0.955    -.1386292    .1309915
 unemployme~3 |  -.1535725   .0595921    -2.58   0.012    -.2724253   -.0347197
 workingcha~e |   .0087891   .0343993     0.26   0.799    -.0598181    .0773964
 workingcha~1 |  -.0062288   .0348817    -0.18   0.859    -.0757982    .0633405
 workingcha~2 |   .0092426   .0268882     0.34   0.732    -.0443842    .0628694
 workingcha~3 |  -.0254411   .0209082    -1.22   0.228    -.0671412    .0162589
  retiringch~e |  -.2062702   .3955636    -0.52   0.604    -.9951969    .5826565
  retiringch~1 |   .4696587   .7080737     0.66   0.509    -.9425497    1.881867
  retiringch~2 |  -.4227117    .580228    -0.73   0.469     -1.57994    .7345166
  retiringch~3 |   .1265675   .1721151     0.74   0.465    -.2167053    .4698403
    dpichange |   -.000475   .0000519    -9.16   0.000    -.0005785   -.0003716
   dpichange1 |   .0001018   .0000527     1.93   0.058    -3.41e-06     .000207
   dpichange2 |     .00015   .0000522     2.88   0.005      .000046     .000254
   dpichange3 |   .0000396   .0000566     0.70   0.486    -.0000733    .0001525
     quarter1 |   .0281096    .053205     0.53   0.599    -.0780044    .1342236
     quarter2 |   .0332867   .0589227     0.56   0.574     -.084231    .1508044
     quarter3 |  -.0567859   .0621567    -0.91   0.364    -.1807535    .0671818
        _cons |  -.0033235   .0427622    -0.08   0.938      -.08861    .0819631
------------------------------------------------------------------------------

.
. clear
```

```
.
end of do-file

. insheet using "C:\Users\pcuser\Desktop\CHANGES2008Q3.csv"
(51 vars, 111 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(28 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(28 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(28 real changes made)

.
. //MODEL 2: DATA 1980Q1 THROUGH 2008Q3
. regress dsrchange ffchange ffchange1 ffchange2 ffchange3 csichange csichange1
csichange2 csichange3 hpichange hpichange
> 1 hpichange2 hpichange3 collegechange collegechange1 collegechange2 collegechange3
hsgchange hsgchange1 hsgchange2 hsgc
> hange3 unemploymentchange unemploymentchange1 unemploymentchange2
unemploymentchange3 workingchange workingchange1 work
> ingchange2 workingchange3 retiringchange retiringchange1 retiringchange2
retiringchange3 dpichange dpichange1 dpichange
> 2 dpichange3 quarter1 quarter2 quarter3, robust

Linear regression                               Number of obs =      111
                                                F( 39,    71) =    9.61
                                                Prob > F      =  0.0000
                                                R-squared     =  0.6902
                                                Root MSE      =  .09142


------------------------------------------------------------------------------
             |               Robust
   dsrchange |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    ffchange |  -.0285206   .019252    -1.48   0.143    -.066908     .0098668
   ffchange1 |   .0057845   .015679     0.37   0.713    -.0254786    .0370475
   ffchange2 |  -.0027966   .0199618   -0.14   0.889    -.0425994    .0370062
   ffchange3 |    .005019   .020717     0.24   0.809    -.0362895    .0463274
   csichange |    .002242   .0020306    1.10   0.273    -.0018069    .0062909
  csichange1 |   .0025216   .0025602    0.98   0.328    -.0025833    .0076266
  csichange2 |   .0035218   .0024773    1.42   0.160    -.0014178    .0084614
  csichange3 |   .0025471    .002349    1.08   0.282    -.0021368    .0072309
   hpichange |  -.0075352   .0236078   -0.32   0.751    -.0546078    .0395374
  hpichange1 |   .0010873   .0387434    0.03   0.978    -.0761648    .0783394
  hpichange2 |   .0211074   .0312956    0.67   0.502    -.0412943     .083509
  hpichange3 |   .0117783   .0185564    0.63   0.528    -.0252222    .0487788
 collegecha~e |  -.0131218   .0788121   -0.17   0.868    -.1702687    .1440251
 collegecha~1 |   .0397935    .081499    0.49   0.627    -.1227108    .2022978
 collegecha~2 |   .1136644   .0838468    1.36   0.180    -.0535213    .2808502
 collegecha~3 |   .0347137   .0603158    0.58   0.567    -.0855525    .1549799
    hsgchange |  -.0113726   .0394875   -0.29   0.774    -.0901084    .0673632
   hsgchange1 |  -.0252985   .0364462   -0.69   0.490    -.0979701    .0473732
```

```
      hsgchange2 |  -.0508276    .030133    -1.69   0.096    -.110911     .0092559
      hsgchange3 |  -.0491377   .0405524    -1.21   0.230    -.1299969    .0317215
     unemployme~e |  -.0406398   .0504052    -0.81   0.423    -.141145     .0598654
     unemployme~1 |   .0190534   .0575307     0.33   0.741    -.0956595    .1337663
     unemployme~2 |  -.0029993   .0706865    -0.04   0.966    -.1439443    .1379456
     unemployme~3 |  -.1681538   .0649874    -2.59   0.012    -.2977349   -.0385727
     workingcha~e |   .0032946   .0353302     0.09   0.926    -.0671518    .0737409
     workingcha~1 |  -.0019327   .0327704    -0.06   0.953    -.067275     .0634096
     workingcha~2 |   .0074675   .0289015     0.26   0.797    -.0501605    .0650956
     workingcha~3 |  -.0170908   .0194782    -0.88   0.383    -.0559292    .0217476
      retiringch~e |  -.2945398   .3966917    -0.74   0.460    -1.085521    .4964411
      retiringch~1 |   .7920848    .686103     1.15   0.252    -.5759656    2.160135
      retiringch~2 |  -.6596172    .571087    -1.16   0.252    -1.798332    .479098
      retiringch~3 |   .1719176    .170811     1.01   0.318    -.16867      .5125051
        dpichange |  -.0004379   .0000468    -9.36   0.000    -.0005313   -.0003446
       dpichange1 |   .0000652   .0000521     1.25   0.214    -.0000386    .0001691
       dpichange2 |     .00012   .0000532     2.26   0.027     .000014     .0002261
       dpichange3 |   .0000384   .0000535     0.72   0.475    -.0000683    .000145
         quarter1 |   .0320055   .0528208     0.61   0.546    -.0733162    .1373272
         quarter2 |   .0143295    .058272     0.25   0.806    -.1018615    .1305204
         quarter3 |  -.0414351   .0654414    -0.63   0.529    -.1719215    .0890514
            _cons |  -5.68e-06   .0445626    -0.00   1.000    -.0888611    .0888497
------------------------------------------------------------------------------

.
. clear

.
. end of do-file

. insheet using "C:\Users\pcuser\Desktop\CHANGES2008Q4.csv"
(51 vars, 112 obs)

. do "C:\Users\pcuser\AppData\Local\Temp\STD00000000.tmp"

. gen quarter1=0

. replace quarter1 = 1 if period == 1
(28 real changes made)

. gen quarter2=0

. replace quarter2 = 1 if period == 2
(28 real changes made)

. gen quarter3=0

. replace quarter3 = 1 if period == 3
(28 real changes made)

.
. //MODEL 2: DATA 1980Q1 THROUGH 2008Q4
. regress dsrchange ffchange ffchange1 ffchange2 ffchange3 csichange csichange1
csichange2 csichange3 hpichange hpichange
> 1 hpichange2 hpichange3 collegechange collegechange1 collegechange2 collegechange3
hsgchange hsgchange1 hsgchange2 hsgc
> hange3 unemploymentchange unemploymentchange1 unemploymentchange2
unemploymentchange3 workingchange workingchange1 work
> ingchange2 workingchange3 retiringchange retiringchange1 retiringchange2
retiringchange3 dpichange dpichange1 dpichange
> 2 dpichange3 quarter1 quarter2 quarter3, robust

Linear regression                                      Number of obs =     112
```

```
                                       F( 39,    72) =     9.85
                                       Prob > F      =   0.0000
                                       R-squared     =   0.6788
                                       Root MSE      =   .09247

------------------------------------------------------------------------------
             |               Robust
   dsrchange |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    ffchange | -.0247256   .0196064    -1.26   0.211    -.0638102    .0143591
   ffchange1 |  .0084789   .0158337     0.54   0.594    -.0230849    .0400427
   ffchange2 | -.0030411   .0198594    -0.15   0.879    -.0426301    .0365479
   ffchange3 |   .000876   .0201253     0.04   0.965     -.039243    .0409949
   csichange |   .002171   .0020642     1.05   0.296    -.0019438    .0062858
  csichange1 |  .0035431   .0025797     1.37   0.174    -.0015994    .0086857
  csichange2 |   .002159   .0023793     0.91   0.367    -.0025841    .0069021
  csichange3 |   .002046   .0024701     0.83   0.410    -.0028781      .00697
   hpichange | -.0213643   .0224089    -0.95   0.344    -.0660357    .0233071
  hpichange1 |  .0304199   .0347548     0.88   0.384    -.0388624    .0997023
  hpichange2 | -.0028049   .0307044    -0.09   0.927    -.0640131    .0584033
  hpichange3 |  .0165953   .0198797     0.83   0.407    -.0230342    .0562247
 collegecha~e | -.0246892   .0814435    -0.30   0.763    -.1870439    .1376654
 collegecha~1 |  .0477029   .0853381     0.56   0.578    -.1224155    .2178213
 collegecha~2 |  .0863271   .0799004     1.08   0.284    -.0729515    .2456058
 collegecha~3 |  .0713155   .0634824     1.12   0.265    -.0552343    .1978653
   hsgchange | -.0073224   .0401296    -0.18   0.856    -.0873194    .0726746
  hsgchange1 | -.0298859   .0371874    -0.80   0.424    -.1040176    .0442458
  hsgchange2 | -.0491733   .0319878    -1.54   0.129    -.1129398    .0145932
  hsgchange3 | -.0436797   .0435518    -1.00   0.319    -.1304986    .0431391
 unemployme~e | -.0281214    .052163    -0.54   0.591    -.1321065    .0758636
 unemployme~1 |  .0285034   .0596897     0.48   0.634    -.0904859    .1474926
 unemployme~2 | -.0201056   .0715261    -0.28   0.779    -.1626903    .1224792
 unemployme~3 | -.1615674    .065566    -2.46   0.016    -.2922707    -.030864
 workingcha~e |  .0027516   .0328645     0.08   0.934    -.0627627    .0682659
 workingcha~1 |  .0050241    .033681     0.15   0.882    -.0621178     .072166
 workingcha~2 | -.0015256    .027015    -0.06   0.955     -.055379    .0523278
 workingcha~3 | -.0132045   .0227138    -0.58   0.563    -.0584836    .0320746
 retiringch~e | -.3134195   .4004238    -0.78   0.436     -1.11165    .4848108
 retiringch~1 |  .6566321   .6812027     0.96   0.338    -.7013205    2.014585
 retiringch~2 | -.4681284   .5651541    -0.83   0.410    -1.594742    .6584856
 retiringch~3 |  .1023704   .1690382     0.61   0.547    -.2346011    .4393419
   dpichange | -.0004435   .0000477    -9.29   0.000    -.0005387   -.0003483
  dpichange1 |  .0000297   .0000499     0.60   0.553    -.0000697    .0001291
  dpichange2 |   .000151   .0000496     3.04   0.003     .0000521      .00025
  dpichange3 |  .0000582   .0000532     1.09   0.278     -.000048    .0001643
    quarter1 |  .0518348   .0556624     0.93   0.355    -.0591262    .1627958
    quarter2 |  .0208491   .0604821     0.34   0.731    -.0997197     .141418
    quarter3 | -.0128411   .0644805    -0.20   0.843    -.1413807    .1156985
       _cons | -.0093339   .0464259    -0.20   0.841    -.1018822    .0832143
------------------------------------------------------------------------------

.
. clear

.
end of do-file

. log close
      name:  <unnamed>
       log:  c:\dissert.log
  log type:  text
 closed on:  13 Dec 2012, 17:46:22
```

Formatted: French (France)