How Consumer Sentiment Affects Personal Consumption

Gregory Hughes

Abstract:

This paper investigates the relationship between consumer confidence and major economic indicators as it relates to the United States after the financial crisis of 2008. This study reveals the effect consumer sentiment has on economic forecasting as it relates to personal consumption. Macro level data used to indicate future economic performance is lacking without the inclusion of consumer confidence levels.

JEL Classification: E22, E27

Keywords: Consumer Confidence, Consumer Price Index, Gross Domestic Product Growth

[a] Department of Economics, Bryant University, 1150 Douglas Pike, Smithfield, RI 02917. Phone: (603) 714-4766. Email: ghughes@bryant.edu

---

The author thanks Jason Braun and Sydney Ludvigston for past analysis and Dr. Remesh Mohan for oversight and guidance.

1.0 INTRODUCTION

The consumer sentiment index is a key indicator for future economic growth in the United States. The American psyche has the ability to sway consumption and savings wildly in either direction. A poor outlook on future growth in the job market can greatly affect the savings rate. More savings lead to less investment and lower growth. The key to economic growth stability is in the condition of consumer sentiment.

This study aims to fortify the understanding of how consumer sentiment can influence personal expenditures. Analysis of consumer sentiment can play a crucial role in projecting future economic conditions to help better prepare investors and policy makers. Currently, consumer sentiment is often excluded from the list of key economic indicators. This study aims to fortify past findings that consumer sentiment should be considered in future economic projections. Confidence's influence on personal expenditure dictates its relevance among other indicators. This study is intends to prove that.

Consumer confidence, or consumer sentiment as it is often referred to, is the degree of optimism the populous holds for economy and the future prospects of growth. This is evident in consumer spending and saving behaviours. Confidence estimates are provided through the research and poll information provided from The Conference Board and the University of Michigan Consumer Sentiment Index (MCSI). Both indices are released on monthly report detailing their findings.

The Conference Board's Consumer Confidence Index (CCI) is based on a survey of 5000 households nationwide spread throughout the nine US census regions. The index

was introduced in 1967 on a bimonthly basis and later converted to a monthly index in 1977. Respondents are asked for their opinion on current economic conditions, their future outlook for the economy in six months, the current state of the job market now and in six months, and their total family income for the next six months. The CCI is modelled using the base year of 1985 due to its position between a trough and peak of the US business cycle.

The University of Michigan Consumer Sentiment Index is a monthly report based on roughly 500 telephone interviews asking similar questions to the CCI. The MCSI asks respondents to provide an evaluation of their current personal financial stability, six months from now, and their outlook on their financial stability in one year. Additionally, respondents are asked to provide their attitude towards major household item purchases. The MCSI often overshadows the CCI because it has been recorded since 1940. The current, and most accepted standard, is in its monthly format which was instituted in 1978. The MCSI uses a base year of 1964 for the same reasons the CCI uses there base year. Michigan researchers believed 1964 to be neutral in the business cycle. The value given to the base year is 100.

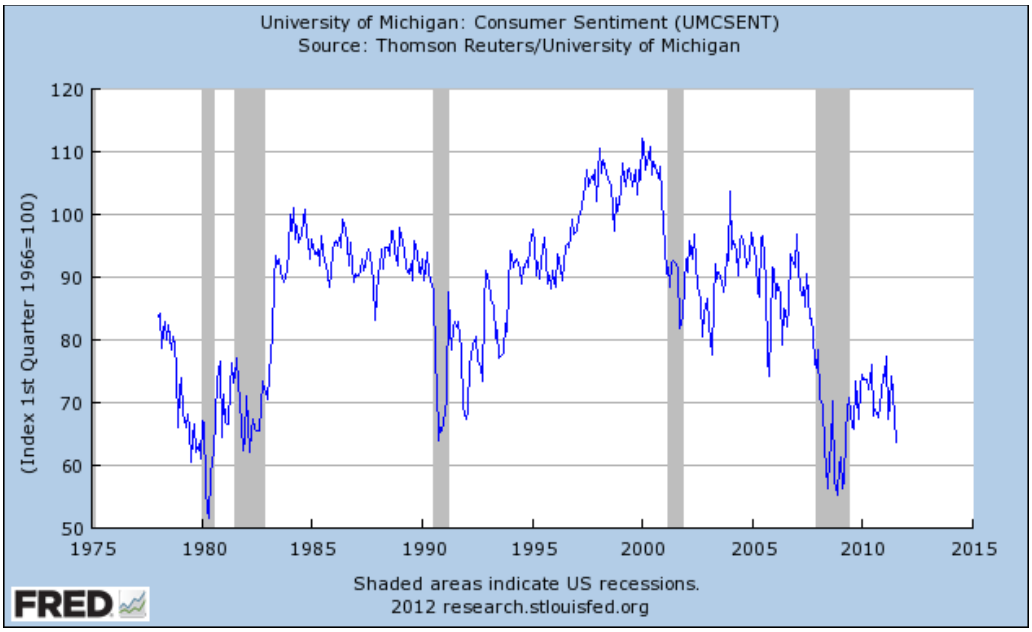


Figure 3

2.0 TRENDS

The MCSI has seen volatility since its inception in 1940. By the time the study moved to its current monthly index in 1978, the figures began to gain traction as a useful economic tool. The MCSI in 1978 reported a value of 82.3. Thereafter, the index dropped precipitously down to 54.4 in the second quarter of 1980. To date, this is still the lowest consumer sentiment figure on record. The recession of the early 1980's is largely to blame for the lack of consumer confidence. From July 1981 to November 1982, the United States was in recession due to contractionary monetary policy in an effort to control inflation. Unemployment for this period jumped from 6.9% to 7.5%. The 28 point drop is attributed to these factors. The index rose quickly to reach over 100 in 1983 through 1984 as the economy pulled out of recession. Confidence remained volatile yet steady through to the fourth quarter of 1990 when recession again caused a drop in confidence to 65.1. This period is linked to the early 1990's recession which hindered the US economy from 1990 through 1992.

Confidence climbed past 110 from 1992 to 2000 largely due to the strengthening economy over this period. This period is defined by the ever-expanding internet and technology industry. By the turn of the new millennium, stocks took a tumble as the US was feeling the effects of the “dot-com” bubble late in 2000 and the terrorist attacks in 2001. Confidence levels dove as more questions were raised about the US long term stability. Consumer confidence has failed to rebound significantly after the 2001 drop during which volatility and short-term spikes have been commonplace. The MCSI stands at 71.9 for the third quarter of 2011. Figure 2 demonstrates the inherent relationship between peaks and troughs in unemployment rate and gains and losses of consumer sentiment, compared with Figure 1.

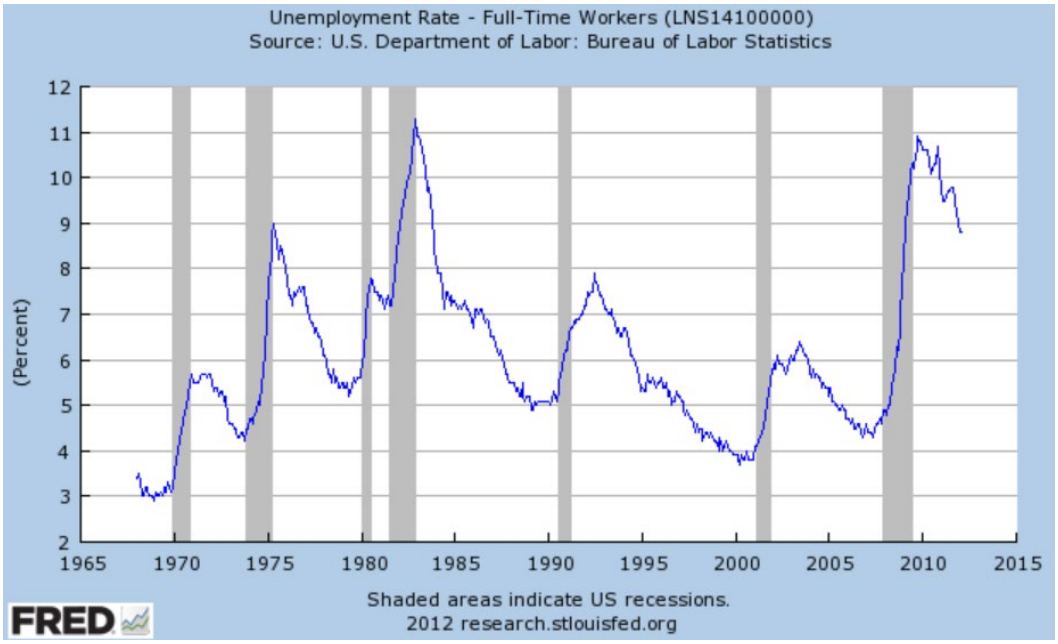


Figure 2

3.0 LITERATURE.REVIEW

Past economic research has proven that there is a link between consumer sentiment and personal expenditures. Bram and Ludvigson (1998) found that both methods of measuring consumer confidence, the Conference Board Consumer

Confidence Index and the University of Michigan Index of Consumer Sentiment, have an effect on personal expenditures. They note that there is some interesting results when confidence figures are regressed with other economic indicators. While their study concludes that confidence should be factored, its inclusion shows varying degrees of success.

Westerhoff and Hohnisch (2010) concluded that policy makers need to consider consumer sentiment when developing the proper fiscal and monetary policy to handle economics fluctuations. They too agree that consumer sentiment can be slightly insignificant in normal business cycles but need to be included in any complete model. Desroches and Gosselin (2004) surmised that sentiment figures do have significant predictor power but only when factored with other fundamental economic indicators. Additionally, they conclude that the real value of consumer sentiment figures is in their predictive powers during major economic events. The volatility in the market can be better estimated through consumer sentiment. During times of upheaval, the consumers buying habits can be better explained by their frame of mind. Dion (2006) attributes the predictor power of consumer sentiment to undeniable psychological forces within human nature. He believes that the psychological aspects of spending cannot be underestimated when considering the consumers spending habits. In this light, it seems impossible to think that consumer sentiment is often ignored in many economic predictors and studies.

4.0 EMPIRICAL DATA & METHODOLOGY

4.1 DATA

Data from this study was obtained through a variety of sources. The primary source of data was acquired from the economic research department of the Federal

Reserve Bank of St. Louis. Data available from the MCSI is in its monthly format from 1978 through 2011. All other economic data obtained through the St. Louis Fed is in quarterly format. Monthly data for consumer sentiment is averaged in the four months to attain quarterly figures in line with other data. The data used from the St. Louis fed includes the three-month Treasury bill rate, real personal household consumption, real stock price index using the Standard and Poor 500, and growth in real labor income. All data is compiled in quarterly inputs from the first quarter of 1978 to the second quarter 2011. To better suit the data into a regression, the logged values of real personal consumption and real stock price index (S&P500) are used in place of raw data.

4.2 METHODOLOGY

This study asses the relationship between consumer confidence and changes in consumer spending and consumption. To accurately gauge the effect of consumer confidence, a baseline analysis must be made without including consumer confidence. This equation is based off of the previously cited economic indicators of real personal consumption, inflation adjusted stock price in the S&P500, growth in real labor income, and the 3-month Treasury bill rate. Data are logged for real personal consumption and real stock price. For real stock price and the 3-month Treasury bill rate, first difference is taken to better incorporate the data into model. The model is estimated using a vector autoregression (VAR) due to the use of lags in the explanatory variables.

$$\Delta \ln(C_t) = \alpha_0 + \sum^{n} \beta_i Y_{t-k} + \beta_i P_{t-k} + \beta_i T_{t-k} + \varepsilon_t$$

The second regression includes the confidence variable derived from the MCSI. The confidence variable's effect on the performance of the regression analysis reveals the

validity of including a confidence term (S). The estimated equation including the confidence term is written below. As with the baseline regression, the equation is run as a vector autoregression (VAR) including four lags of each explanatory variable.

$$\Delta \ln(C_t) = \alpha_0 + \sum^n \beta_i Y_{t-k} + \beta_i P_{t-k} + \beta_i T_{t-k} + \beta_i S_{t-k} + \varepsilon_t$$

For both models, the analysis is using VAR which measures interdependence of all of the variables in the model over the time series. As mentioned previously, this model uses a series from 1978 to 2011 in quarterly inputs totaling 128 observations. In order to properly gauge the impact of each variable, a unit root test is conducted on both the baseline equation and the confidence equation. The results of the unit root test without the confidence term can be found in Appendix A. After unit root, VAR is used to measure variable interdependence and impulse response.

5.0 RESULTS

The results of the regression leave much to be desired for anyone trying to argue for the inclusion of consumer sentiment in future forecasts. Including the MCSI in the original regression lowers predictive power. The impulse response figures and variance decomposition relationships are also unassuming. Consumption's reaction to exogenous impulses is fairly limited in scope. Including the MCSI, the degree of reaction in personal consumption changes very little whether confidence is included or not.

This also factors the relative indifference of consumption when factoring for consumer confidence. This is not to say that the model should not include confidence. It merely shows that confidence may have varying results in a model depending on what

other explanatory variables are included. Unit root and VAR outputs can be found in Appendices *A* and *B* for the base model and consumer sentiment.

6.0 CONCLUSION

Consumer sentiment is volatile and often misunderstood metric. It is a reactionary index based solely on opinion. It is not a scientific metric and needs to be treated as such. Using analytics helps to better understand the significance of the consumer sentiment index as it relates to consumption. Including the consumer sentiment in the empirical model does very little to further explain variations in personal consumption. Leaving the MCSI out of a forecast model my better simulate the expected growth of personal consumption.

The reasoning behind these findings may be hard to pinpoint. Sentiment survey is not an art and it is based off the relatively small sample size. It is within reason to believe that sentiment may not accurately represent the general population. More importantly, past research has suggested that the survey questions can change the results of the poll entirely. This point is predominant in Bram and Ludvigson's (1998) findings citing the substantial differences between the CCI and the MCSI which use different questions in their surveys. It is important to note that a model with different explanatory variables was not explored. The model, based off Bram and Ludvigson (1998), has proven predictive power. The results of this study are similar to what was found in their previous study. However, its application after a major economic downturn helps to solidify their model. A major question surrounding consumer sentiment is its predictive power in a volatile market.

Consumer confidence in the market is a very important index to monitor for fiscal and monetary purposes. The figures should be taken into weighed for any policy change. It is not a scientific index by rather a social measuring stick. It's inclusion in any predicative model should be a consideration. Whether it has a significant effect on the results is subjective to the study.

Appendix A

Unit root test without confidence term.

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.14032	0.0000	4	507
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-10.7155	0.0000	4	507
ADF - Fisher Chi-square	124.495	0.0000	4	507
PP - Fisher Chi-square	115.894	0.0000	4	522

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Vector Autoregression Estimates Without Confidence Term

Included observations: 128 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	LOGCONSUMP	INCOME	DLOGSP	DTBILL
LOGCONSUMP(-1)	1.178014	1671.840	-0.198261	11.19707
	(0.10470)	(1129.58)	(1.21092)	(15.2548)
	[11.2510]	[1.48006]	[-0.16373]	[0.73400]
LOGCONSUMP(-2)	0.018787	-871.3721	0.711962	-24.85290
	(0.15947)	(1720.46)	(1.84436)	(23.2347)
	[0.11780]	[-0.50648]	[0.38602]	[-1.06964]
LOGCONSUMP(-3)	0.037279	-517.3787	0.569152	15.16573
	(0.15755)	(1699.68)	(1.82209)	(22.9541)
	[0.23662]	[-0.30440]	[0.31236]	[0.66070]
LOGCONSUMP(-4)	-0.222101	-193.1539	-1.040485	-0.538434
	(0.10463)	(1128.83)	(1.21013)	(15.2448)
	[-2.12264]	[-0.17111]	[-0.85981]	[-0.03532]
INCOME(-1)	6.59E-07	1.218651	5.30E-05	0.000533
	(8.8E-06)	(0.09516)	(0.00010)	(0.00129)
	[0.07477]	[12.8068]	[0.51966]	[0.41485]
INCOME(-2)	-1.42E-05	-0.089180	-0.000197	-0.000230
	(1.4E-05)	(0.15016)	(0.00016)	(0.00203)
	[-1.02285]	[-0.59391]	[-1.22636]	[-0.11356]
INCOME(-3)	1.26E-05	-0.369392	-2.28E-06	-0.001221
	(1.4E-05)	(0.15136)	(0.00016)	(0.00204)
	[0.89860]	[-2.44042]	[-0.01406]	[-0.59724]
INCOME(-4)	-2.12E-07	0.239423	0.000142	0.000827

	(8.3E-06)	(0.08983)	(9.6E-05)	(0.00121)
	[-0.02541]	[2.66532]	[1.47428]	[0.68151]
DLOGSP(-1)	0.012961	244.4838	0.298001	0.897167
	(0.00876)	(94.4997)	(0.10131)	(1.27621)
	[1.47967]	[2.58714]	[2.94161]	[0.70299]
DLOGSP(-2)	0.017952	34.71907	-0.001299	0.195023
	(0.00915)	(98.7192)	(0.10583)	(1.33320)
	[1.96180]	[0.35170]	[-0.01228]	[0.14628]
DLOGSP(-3)	-0.007810	178.6871	-0.046160	1.066106
	(0.00905)	(97.6150)	(0.10464)	(1.31828)
	[-0.86312]	[1.83053]	[-0.44111]	[0.80871]
DLOGSP(-4)	0.004755	133.0356	0.025371	-0.638610
	(0.00885)	(95.4948)	(0.10237)	(1.28965)
	[0.53716]	[1.39312]	[0.24784]	[-0.49518]
DTBILL(-1)	-0.001930	-0.393462	-0.008065	0.296629
	(0.00068)	(7.36280)	(0.00789)	(0.09943)
	[-2.82813]	[-0.05344]	[-1.02181]	[2.98317]
DTBILL(-2)	-0.000860	7.289101	0.001277	-0.316989
	(0.00072)	(7.76714)	(0.00833)	(0.10489)
	[-1.19467]	[0.93845]	[0.15341]	[-3.02197]
DTBILL(-3)	-0.000243	13.80495	0.006774	0.293797
	(0.00069)	(7.44876)	(0.00799)	(0.10060)
	[-0.35178]	[1.85332]	[0.84832]	[2.92059]
DTBILL(-4)	-0.000112	13.34301	0.000327	-0.129881
	(0.00068)	(7.28775)	(0.00781)	(0.09842)
	[-0.16573]	[1.83088]	[0.04182]	[-1.31965]
C	-0.093316	-732.4964	-0.313829	-7.935827
	(0.08002)	(863.334)	(0.92551)	(11.6593)
	[-1.16609]	[-0.84845]	[-0.33909]	[-0.68065]
R-squared	0.999709	0.999719	0.200410	0.223970
Adj. R-squared	0.999667	0.999678	0.085154	0.112110
Sum sq. resids	0.003319	386315.3	0.443962	70.45748
S.E. equation	0.005468	58.99422	0.063243	0.796713
F-statistic	23842.58	24674.69	1.738821	2.002233
Log likelihood	494.2200	-694.4164	180.8749	-143.4148
Akaike AIC	-7.456562	11.11588	-2.560545	2.506481
Schwarz SC	-7.077777	11.49467	-2.181760	2.885267
Mean dependent	8.728116	6857.330	0.020061	-0.072891
S.D. dependent	0.299745	3289.686	0.066121	0.845517

Determinant resid covariance (dof adj.)	0.000189
Determinant resid covariance	0.000107
Log likelihood	-141.4314
Akaike information criterion	3.272366
Schwarz criterion	4.787507

Variance Decomposition Without Confidence Term

Variance Decomposition of LOGCONSUMP:

Period	S.E.	LOGCONSUMP	INCOME	DTBILL	DLOGSP
1	0.005468	100.0000	0.000000	0.000000	0.000000
2	0.008423	96.12438	0.046612	3.008331	0.820681
3	0.011562	88.29745	0.118618	7.878494	3.705433
4	0.014822	84.85224	0.391611	10.58139	4.174753
5	0.017975	81.40150	0.947170	13.16006	4.491271
6	0.021011	78.22515	1.541249	15.76318	4.470419

Variance Decomposition of INCOME:

Period	S.E.	LOGCONSUMP	INCOME	DTBILL	DLOGSP
1	58.99422	6.182939	93.81706	0.000000	0.000000
2	99.59797	12.44972	85.45777	0.003836	2.088667
3	141.2856	17.11986	78.67511	0.003448	4.201590
4	177.8255	22.75002	67.99310	0.209997	9.046881
5	215.3698	27.88158	57.26370	0.920928	13.93379
6	249.3491	31.61646	49.00034	1.308330	18.07487

Variance Decomposition of DTBILL:

Period	S.E.	LOGCONSUMP	INCOME	DTBILL	DLOGSP
1	0.796713	11.83124	0.003121	88.16564	0.000000
2	0.846303	14.46230	0.210023	84.93813	0.389551
3	0.875556	14.40041	0.494186	84.28568	0.819725
4	0.886207	14.20613	0.705885	83.33962	1.748366
5	0.891603	14.33138	0.959938	82.95353	1.755158
6	0.898230	14.44059	1.105803	82.67588	1.777731

Variance Decomposition of DLOGSP:

Period	S.E.	LOGCONSUMP	INCOME	DTBILL	DLOGSP
1	0.063243	10.55469	2.736075	0.043501	86.66574
2	0.066333	9.889871	3.355800	0.978181	85.77615
3	0.066878	9.779607	4.100012	1.099919	85.02046
4	0.068471	9.759658	7.145918	1.800045	81.29438
5	0.068938	9.628546	8.331281	1.793559	80.24661
6	0.069208	9.723485	8.469982	2.106219	79.70031

Cholesky Ordering: LOGCONSUMP INCOME DTBILL DLOGSP

Appendix B

Unit Root Test With Confidence Term

Group unit root test: Summary
Series: LOGCONSUMP, INCOME, LOGSP, TBILL
Date: 04/14/12 Time: 12:11
Sample: 1978Q2 2011Q2
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 10
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-10.4619	0.0000	4	511
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-10.4011	0.0000	4	511
ADF - Fisher Chi-square	119.199	0.0000	4	511
PP - Fisher Chi-square	186.480	0.0000	4	524

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Vector Autoregression Estimates With Confidence Term

Date: 04/14/12 Time: 12:18
Sample (adjusted): 1979Q3 2011Q2
Included observations: 128 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	LOGCONSUMP	INCOME	DTBILL	DLOGSP	CONF
LOGCONSUMP(-1)	1.055178	2256.283	11.45640	0.228999	179.2912
	(0.11501)	(1265.26)	(16.9902)	(1.35265)	(103.678)
	[9.17497]	[1.78326]	[0.67430]	[0.16930]	[1.72930]
LOGCONSUMP(-2)	0.045475	-996.5480	-21.88776	0.481344	-17.24512
	(0.15811)	(1739.47)	(23.3580)	(1.85961)	(142.537)
	[0.28762]	[-0.57290]	[-0.93706]	[0.25884]	[-0.12099]
LOGCONSUMP(-3)	0.064947	-366.6185	20.55914	0.807872	40.86338
	(0.15635)	(1720.06)	(23.0974)	(1.83886)	(140.946)
	[0.41541]	[-0.21314]	[0.89011]	[0.43933]	[0.28992]
LOGCONSUMP(-4)	-0.162466	-655.0986	-6.743687	-1.371347	-173.3378
	(0.11056)	(1216.33)	(16.3331)	(1.30033)	(99.6687)
	[-1.46950]	[-0.53859]	[-0.41289]	[-1.05461]	[-1.73914]
INCOME(-1)	4.45E-06	1.196674	0.000464	3.50E-05	-0.014433
	(8.8E-06)	(0.09713)	(0.00130)	(0.00010)	(0.00796)
	[0.50459]	[12.3207]	[0.35599]	[0.33752]	[-1.81349]
INCOME(-2)	-1.30E-05	-0.075496	4.29E-05	-0.000194	0.008766

	(1.4E-05)	(0.15132)	(0.00203)	(0.00016)	(0.01240)
	[-0.94652]	[-0.49890]	[0.02111]	[-1.20228]	[0.70693]
INCOME(-3)	8.71E-06	-0.348321	-0.001016	3.59E-05	0.003916
	(1.4E-05)	(0.15404)	(0.00207)	(0.00016)	(0.01262)
	[0.62186]	[-2.26125]	[-0.49123]	[0.21801]	[0.31021]
INCOME(-4)	-6.41E-07	0.213851	0.000202	0.000110	-0.000789
	(8.5E-06)	(0.09329)	(0.00125)	(0.00010)	(0.00764)
	[-0.07554]	[2.29237]	[0.16154]	[1.10038]	[-0.10318]
DTBILL(-1)	-0.002245	-1.391784	0.254459	-0.006715	-1.059251
	(0.00071)	(7.81454)	(0.10494)	(0.00835)	(0.64034)
	[-3.16081]	[-0.17810]	[2.42492]	[-0.80377]	[-1.65419]
DTBILL(-2)	-0.001005	7.895577	-0.344886	-0.000380	-0.037505
	(0.00075)	(8.25492)	(0.11085)	(0.00883)	(0.67643)
	[-1.33998]	[0.95647]	[-3.11132]	[-0.04306]	[-0.05545]
DTBILL(-3)	-0.000420	11.05488	0.265760	0.004493	-0.129529
	(0.00072)	(7.90930)	(0.10621)	(0.00846)	(0.64811)
	[-0.58451]	[1.39771]	[2.50226]	[0.53141]	[-0.19986]
DTBILL(-4)	-0.000192	17.09274	-0.080681	0.002449	-0.029518
	(0.00070)	(7.75146)	(0.10409)	(0.00829)	(0.63517)
	[-0.27299]	[2.20510]	[-0.77512]	[0.29550]	[-0.04647]
DLOGSP(-1)	0.007955	256.5705	0.885573	0.355571	14.49239
	(0.00955)	(105.092)	(1.41120)	(0.11235)	(8.61150)
	[0.83273]	[2.44139]	[0.62753]	[3.16484]	[1.68291]
DLOGSP(-2)	0.011866	75.93706	-0.257667	0.021579	3.400436
	(0.01000)	(110.014)	(1.47729)	(0.11761)	(9.01482)
	[1.18661]	[0.69025]	[-0.17442]	[0.18348]	[0.37720]
DLOGSP(-3)	-0.009547	114.0427	0.306418	-0.120049	-9.559124
	(0.00992)	(109.106)	(1.46509)	(0.11664)	(8.94039)
	[-0.96271]	[1.04525]	[0.20915]	[-1.02921]	[-1.06921]
DLOGSP(-4)	0.005062	155.8775	-0.249731	0.045228	9.269725
	(0.00882)	(96.9875)	(1.30237)	(0.10369)	(7.94739)
	[0.57416]	[1.60719]	[-0.19175]	[0.43620]	[1.16639]
CONF(-1)	0.000280	-0.966147	0.003820	-0.002010	0.737882
	(0.00013)	(1.40096)	(0.01881)	(0.00150)	(0.11480)
	[2.20032]	[-0.68963]	[0.20308]	[-1.34188]	[6.42765]
CONF(-2)	2.48E-07	-0.412241	0.008166	0.001315	-0.029375
	(0.00016)	(1.79962)	(0.02417)	(0.00192)	(0.14747)
	[0.00152]	[-0.22907]	[0.33791]	[0.68360]	[-0.19920]
CONF(-3)	-6.90E-05	1.837227	-0.003010	0.001680	0.118653
	(0.00016)	(1.76855)	(0.02375)	(0.00189)	(0.14492)
	[-0.42919]	[1.03883]	[-0.12674]	[0.88877]	[0.81876]
CONF(-4)	-9.66E-05	-1.669859	-0.025235	-0.001852	-0.123263
	(0.00012)	(1.34109)	(0.01801)	(0.00143)	(0.10989)

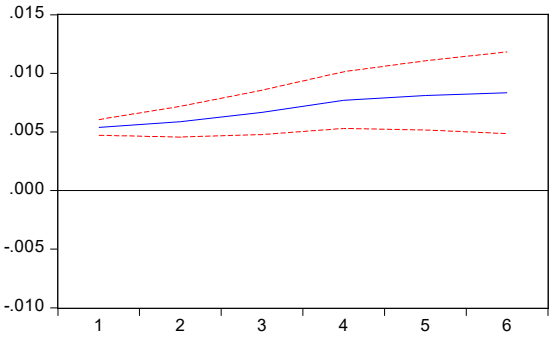
	[-0.79224]	[-1.24515]	[-1.40132]	[-1.29158]	[-1.12167]
C	-0.029319	-1843.201	-26.23374	-1.096003	-217.5628
	(0.11154)	(1227.11)	(16.4779)	(1.31186)	(100.552)
	[-0.26286]	[-1.50207]	[-1.59206]	[-0.83546]	[-2.16368]
R-squared	0.999729	0.999727	0.255537	0.228408	0.880963
Adj. R-squared	0.999678	0.999676	0.116385	0.084185	0.858713
Sum sq. resids	0.003097	374849.1	67.59148	0.428416	2516.948
S.E. equation	0.005380	59.18836	0.794793	0.063276	4.850039
F-statistic	19706.31	19610.63	1.836385	1.583713	39.59400
Log likelihood	498.6546	-692.4880	-140.7570	183.1561	-372.2656
Akaike AIC	-7.463353	11.14825	2.527454	-2.533688	6.144774
Schwarz SC	-6.995442	11.61616	2.995365	-2.065777	6.612686
Mean dependent	8.728116	6857.330	-0.072891	0.020061	86.38437
S.D. dependent	0.299745	3289.686	0.845517	0.066121	12.90311

Determinant resid covariance (dof adj.)	0.002792
Determinant resid covariance	0.001140
Log likelihood	-474.3918
Akaike information criterion	9.052997
Schwarz criterion	11.39255

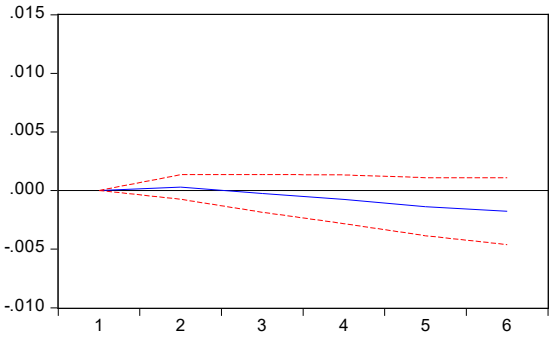
Impulse Response and Variance Decomposition

Response to Cholesky One S.D. Innovations ± 2 S.E.

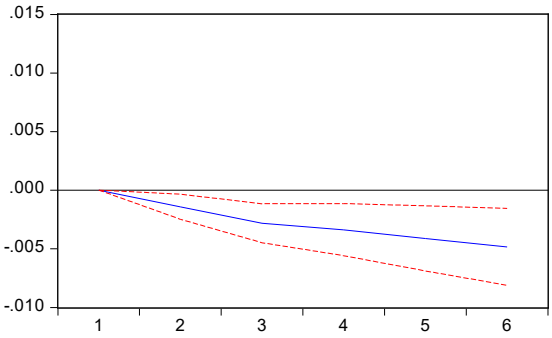
Response of LOGCONSUMP to LOGCONSUMP



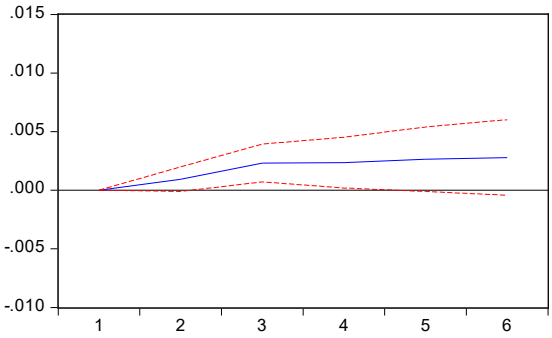
Response of LOGCONSUMP to INCOME



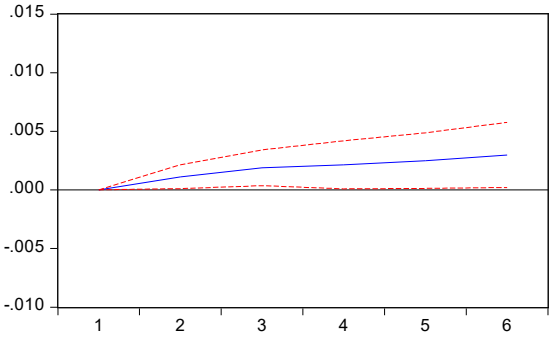
Response of LOGCONSUMP to DTBILL



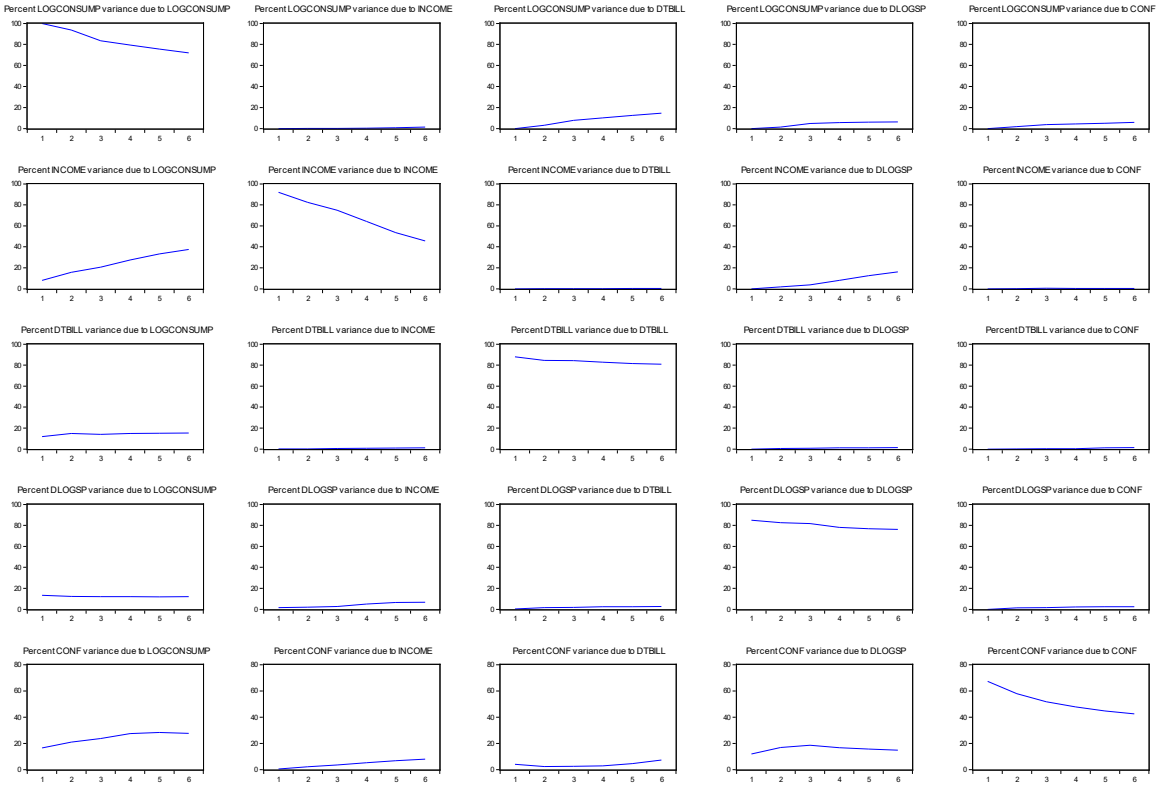
Response of LOGCONSUMP to DLOGSP



Response of LOGCONSUMP to CONF



Variance Decomposition



References

Bram, J. and Ludvigson, S. (1998) *Does Consumer Confidence Forecast Household Expenditure? A Sentiment Index Horse Race*, Federal Reserve Bank of New York Research Paper, No. 9708.

Westerhoff, F. and Hohnisch, M. (2010) *Consumer Sentiment and Countercyclical Fiscal Policies*, International Review of Applied Economics, Vol. 24, No. 5, pp. 609-618.

Desroches, B. and Gosselin, M. (2004) *Evaluating Threshold Effects in Consumer Sentiment*, Southern Economic Journal, Vol. 70, No. 4, pp. 942-952.

Dion, D. (2006) *Does Consumer Confidence Forecast Household Spending?*, MPRA Paper, Vol. 7, No. 902.

Lemmon, M. and Portniaguina, E. (2006) *Consumer Confidence and Asset Prices: Some Empirical Evidence*, The Review of Financial Studies, Vol. 19, No. 4, pp. 1499-1529.

Ludvigson, S. (2004) *Consumer Confidence and Consumer Spending*, The Journal of Economic Perspectives, Vol. 19, No. 2, pp. 29-50