

Consumption As A Leading Indicator

A Stocks, Bonds, Consumers Leading Index (SBCLI)

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Forecasting the Economy

- Businesses, governments, consumers, and nonprofits all use forecasts of economic growth importantly in their daily decisions.
- Forecast users make better decisions when they have models that are simple, robust, and understandable.
- The Conference Board's class Index of Leading Economic Indicators is excellent, but uses 10-12 economic variables that many individuals do not normally follow and that are not so intuitive. They do reflect business activity. But how many of them do you know, and what they are doing?
- There are benefits to having a model, such as is presented here, which uses only 3, highly intuitive variables (stock market, bond market, and real consumer spending) and appears to do as well as the LEI. Decision makers could do reasonably good updates of forecasts almost immediately, given moves in the stock market, interest rates, and consumer spending.

Overview of SBCLI:

Three Key Factors In Economic Forecasting

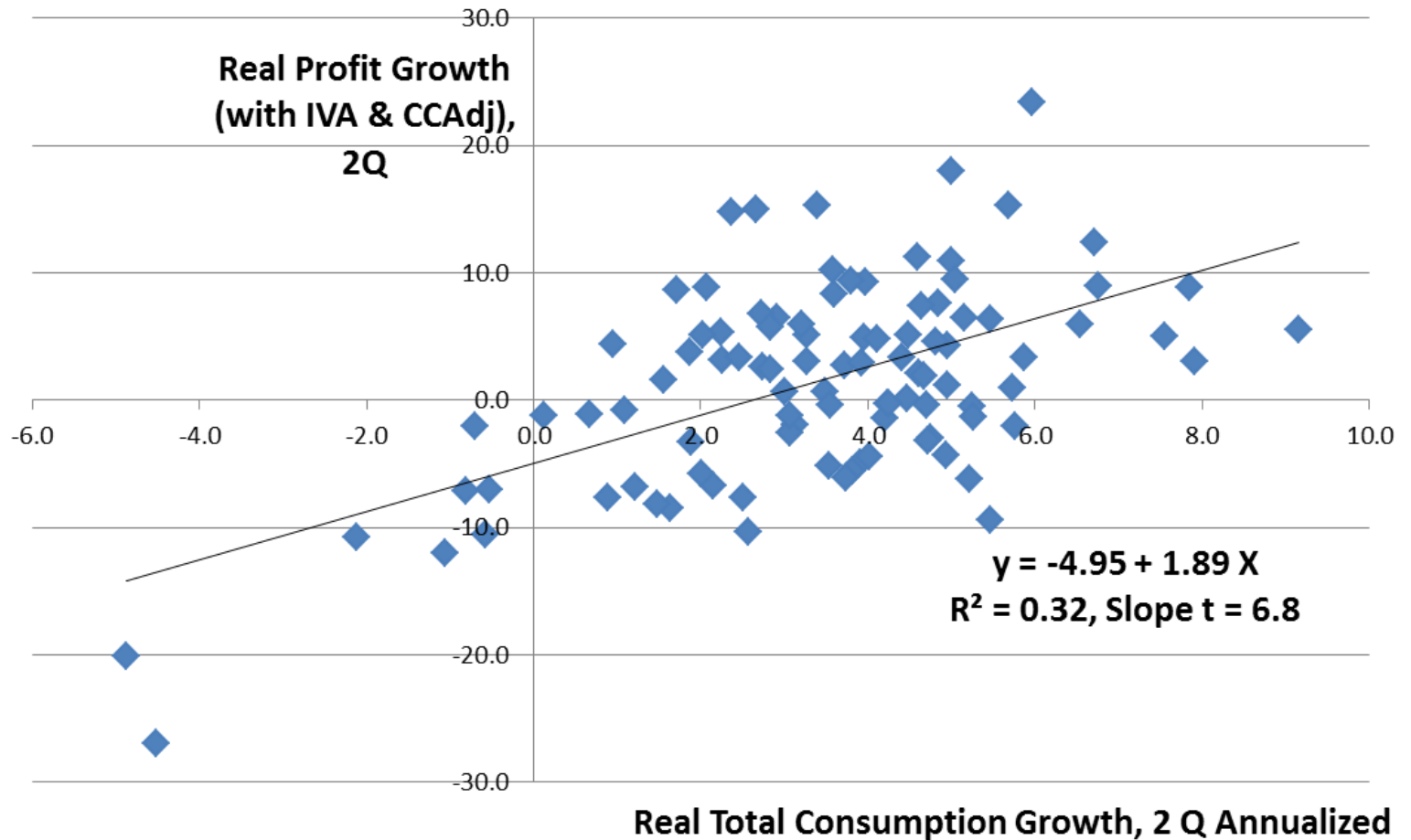
- S. **Stocks: Stock market returns** predict profits, which are related to economic growth.
- B. **Bonds: Term structure slope** predicts increases and slowdowns in economic growth.
- C. **Consumers**: Consumers make intelligent choices, $C(W, \underline{s}, t)$. **Consumption growth that is independent of stock market returns** reflects consumers' views of jobs, incomes and investment opportunities.

S. Stock Market Returns Predict Profits and Economic Growth.

The Stock Market Is the Most Established Economic Forecaster

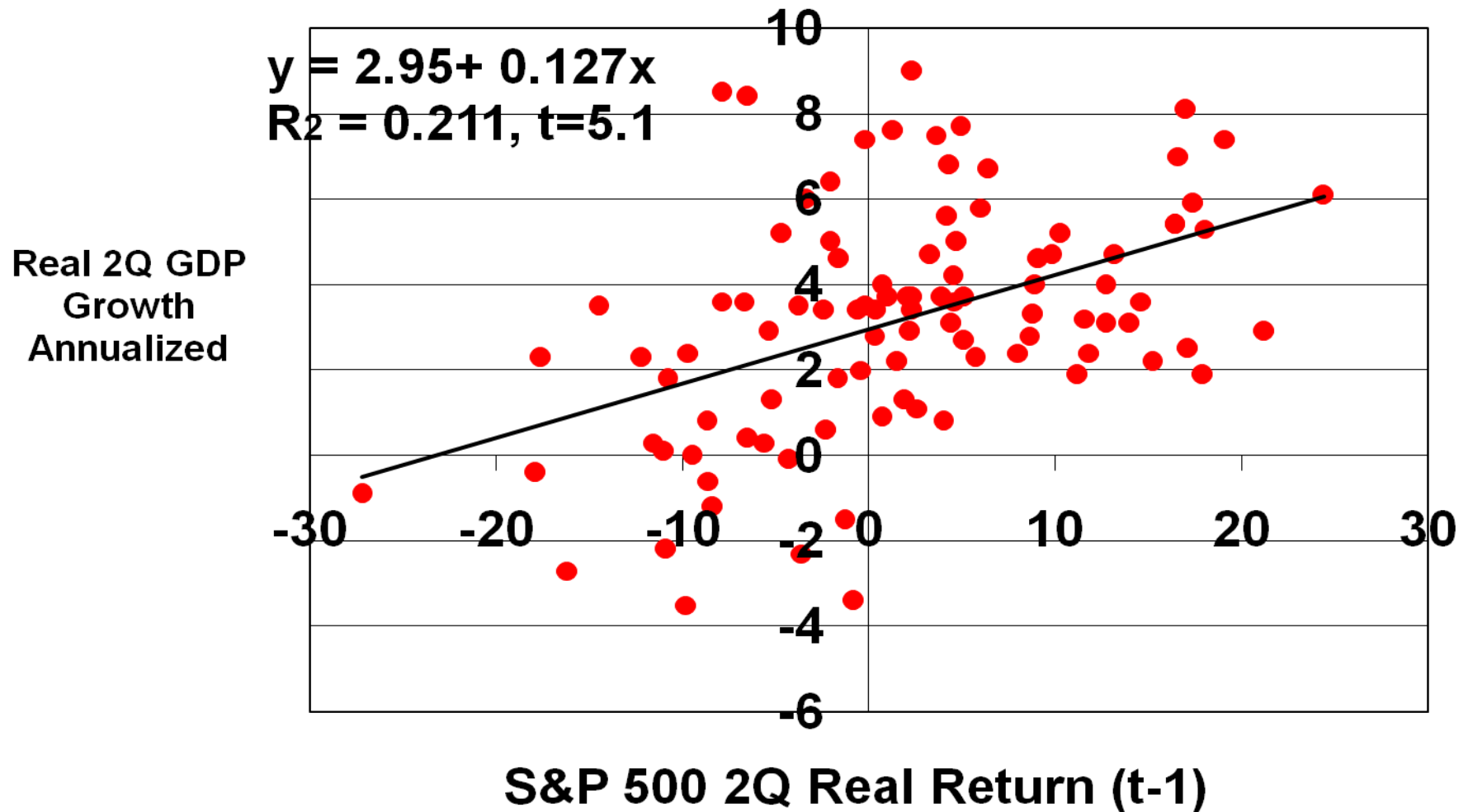
- For decades, it has been recognized that investors use forecasts of economic growth to inform when to buy and sell stocks, as economic growth affects corporate profits greatly. When stock prices decline, it is often viewed as a forecast that the economy will be weaker. When stock prices surge, it is typically assumed that the economy will be stronger.
- Eugene Fama's work in 1981 showed that this is true statistically, and the return on the stock market is the most important factor in the Index of Leading Economic Indicators.
- Campbell Harvey's work in 1989-1992 questioned the efficacy of the stock market as a forecaster, and showed that in the period that he examined (1976-1989), the slope of the term structure of interest rates (from the bond market) was a much better predictor of growth than was the stock market. Note: Harvey was a student of Fama at the University of Chicago.

Profit Growth Strongly Related to
Contemporaneous Real Total Consumption Growth
2-Quarter Real Percentage Changes, 1960-2008



S&P 500 Return Leads GDP Growth

2-quarter percentage changes, 1960-2008 (Q2/Q4).



S&P 500 Return Leads Changes in Unemployment

6-month percentage changes, 1960-2008 (Dec-Jun-Dec).

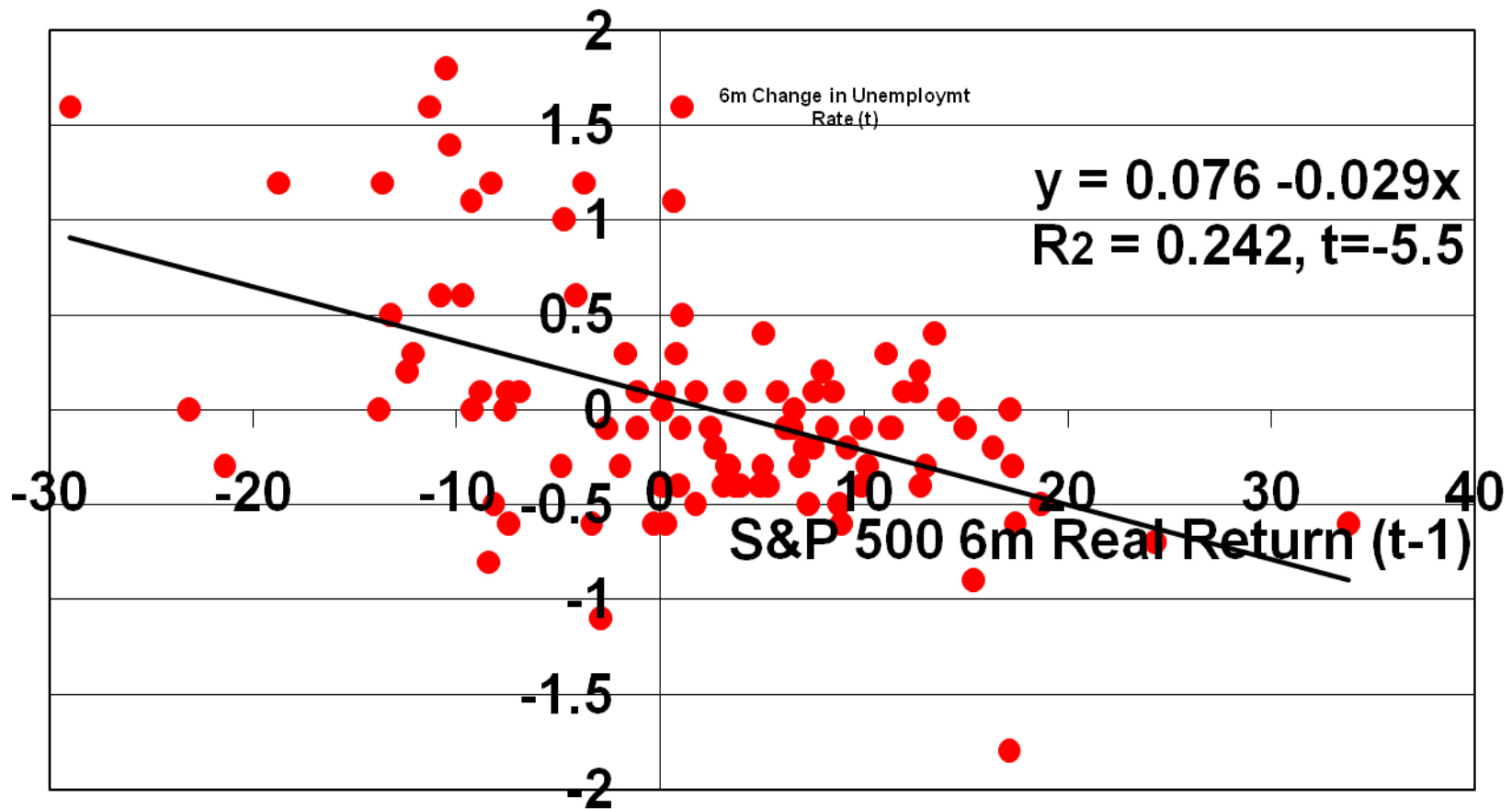
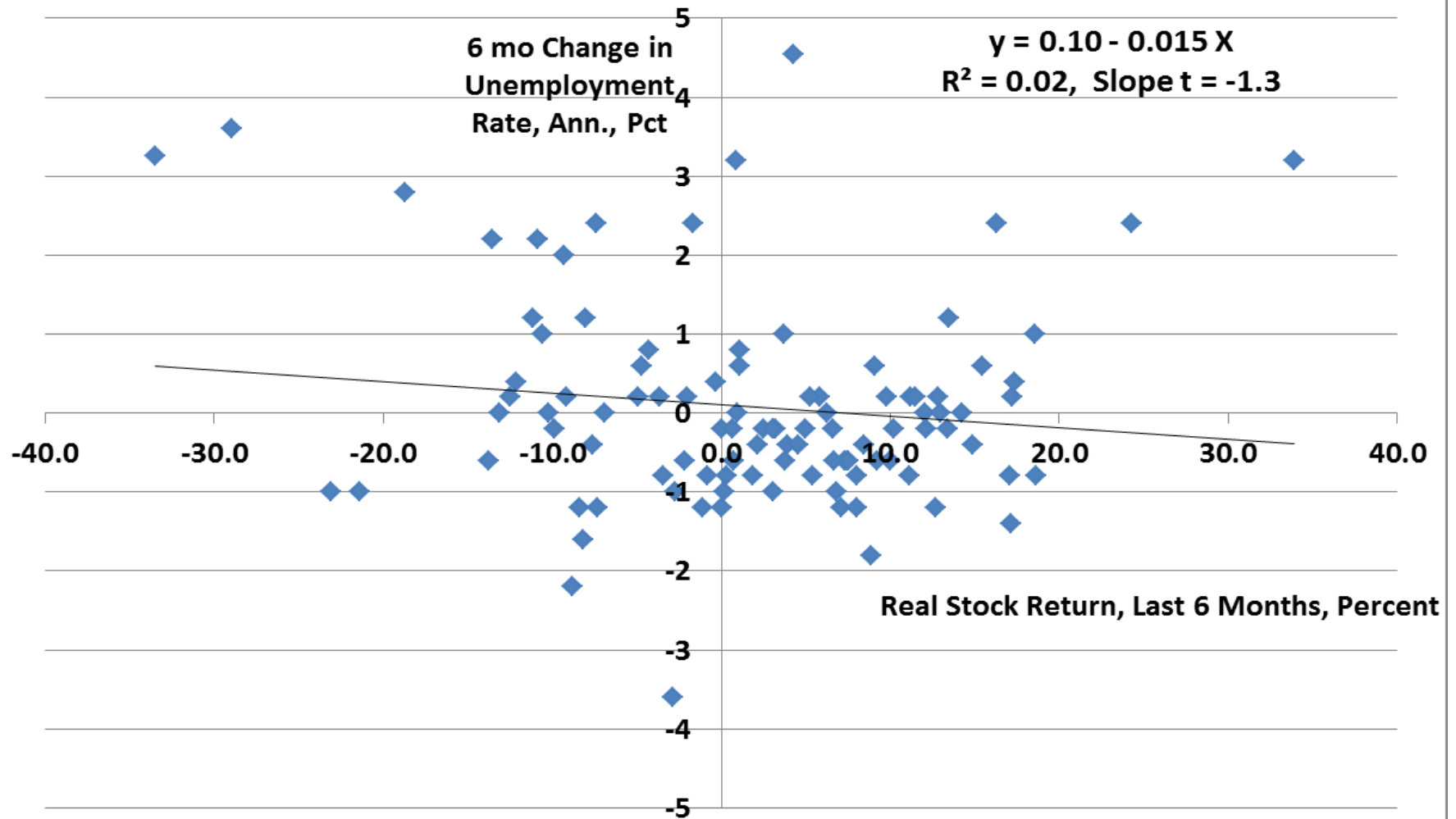


Figure 6

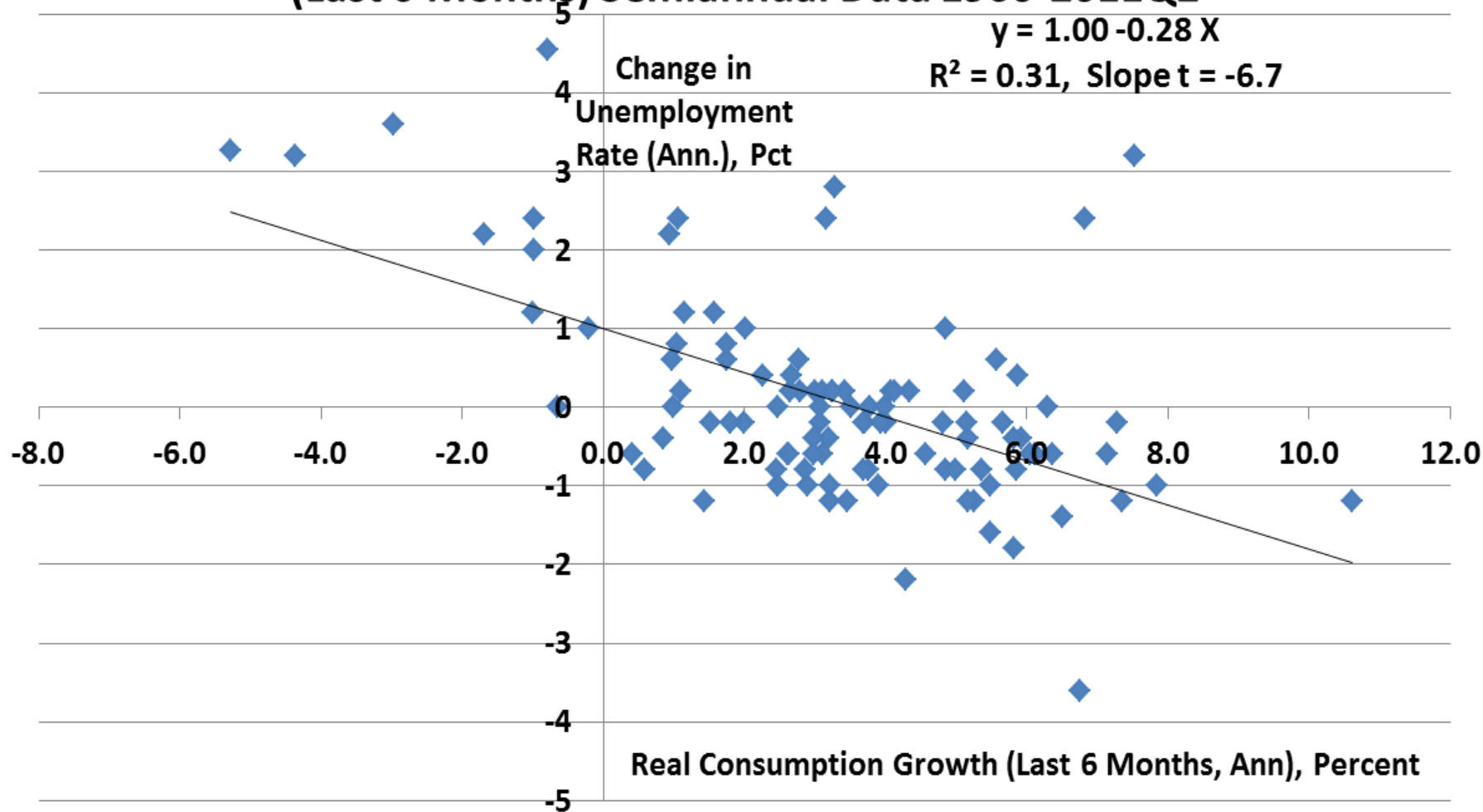
Real S&P 500 Returns Lead Macro Variables 1960-2011 Q2:
Regressions of Semiannual Growth on Lagged S&P 500 Returns

Dependent Variable Y(t)	Const	Lagged Y (t-1) Var.	Stock Return Prior Lag 1: R(t-1)	Stock Return Lag 2: R(t-2)	Residual Auto-correlation	Corrected R-Squared
Unemployment Rate Change, 6 mo	0.19 t=2.0	0.32 t=3.6	-0.059 t= - 6.9	-0.019 t= -1.9	0.05	0.46 N=103
Employment Growth, 6 mo, Annualized	0.67 t=3.6	0.43 t=5.3	0.057 t=4.5	0.037 t=2.7	0.00	0.41 N=103
Real GDP Growth 2 Quarters, Annualized	2.08 t=5.7	0.25 t=2.5	0.109 t=4.5	0.019 t=0.7	0.00	0.29 N=103
Industrial Production Growth, 6 mo, Ann.	1.52 t=2.9	0.29 t=2.9	0.24 t=5.4	0.006 t= 0.1	0.01	0.34 N=103
Real Total Consumption Growth 2 Quarters, Annual	2.03 t=5.4	0.355 t=3.5	0.038 t=1.7	0.017 t= 0.8	-0.01	0.21 N=103

Weak Relation of 6-Month Change in Unemployment Rate (x2) vs. Real Stock Return (Last 6 Months) Semiannual Data 1960-2011Q2



Strong Relation of the 6 Month Change in the Unemployment Rate (x2) vs. Real Total Consumption Growth (Last 6 Months) Semiannual Data 1960-2011Q2



Summary on Stock Market Returns and the Economy

- Stock market returns are a leading indicator. They are more related to economic growth to come in the next 2 quarters than to current real economic growth.
- Similar results for stocks and changes in the unemployment rate. When stocks go up sharply, the unemployment rate tends to fall in the next 6 months.

B. Bond Market: The Slope of the Term Structure of Interest Rates Predicts Economic Growth

Term Structure of Interest Rates Optimally Related to Changes in Real Economic Growth

- Breeden's, (1986 article following Fisher (1907), derived optimal relations of the term structure of interest rates with the term structures of expected consumption growth, volatility and inflation.
- Harvey (1988-1991) tested the model's predictions, found them to forecast economic growth better than many professional economists, working in many countries. In 1996, slope of the term structure was added to the index of leading economic indicators.

Economic Growth and the Term Structure

- Basic Economic Insights

1. High real interest rates induce individuals to reduce consumption, save, and consume more later:

$$r \uparrow \Rightarrow C_{Today} \downarrow, C_{Future} \uparrow \Rightarrow \text{C-growth rate} \uparrow$$

2. Normal risk aversion implies that individuals prefer to buy riskless assets (versus risky). This protects against uncertain futures:

$$\sigma_C \uparrow \Rightarrow \text{Riskless bond prices} \uparrow \Rightarrow \text{Interest rates} \downarrow$$

3. Countries with higher degrees of time preference (impatience to consume) have to have higher rates.

- Term Structure Formula (Real Rates and Real Growth):

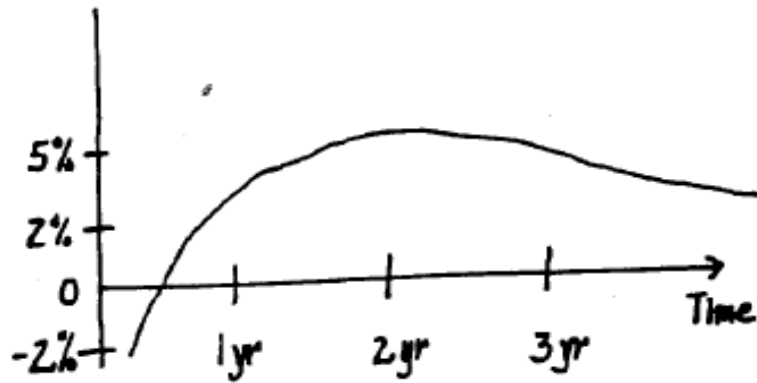
$$r(t, T) = \rho + [RRA] \mu_c(t, T) - \frac{[RRA]^2}{2} \sigma_c^2(t, T)$$

$$= \begin{bmatrix} \text{Time} \\ \text{Preference} \end{bmatrix} + \begin{bmatrix} \text{Risk} \\ \text{Aversion} \end{bmatrix} \begin{bmatrix} \text{Expected} \\ \text{Consumption} \\ \text{Growth} \end{bmatrix} - \begin{bmatrix} (RRA)^2 \\ 2 \end{bmatrix} \begin{bmatrix} \text{Variance of} \\ \text{Consumption} \\ \text{Growth} \end{bmatrix}$$

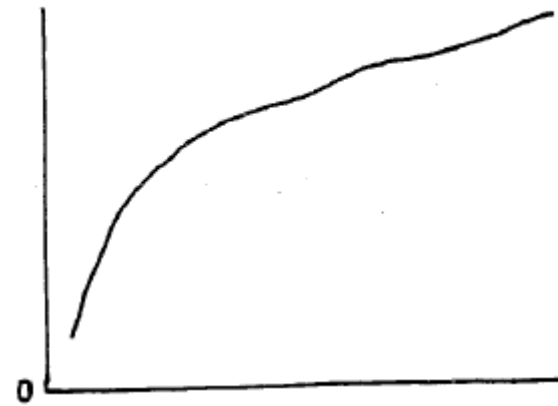
Source: Breeden, Douglas T., "Consumption, Production and Interest Rates: A Synthesis," *Journal of Financial Economics*, May 1986.

At the Bottom of a Recession

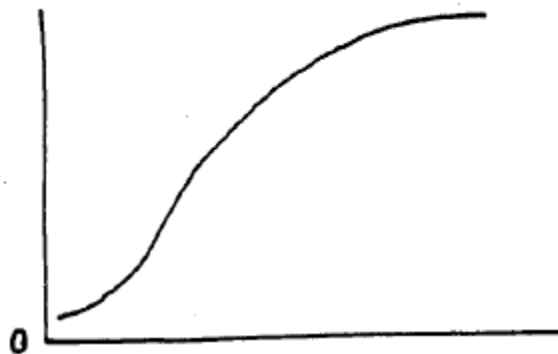
Expected Real Growth



Nominal Interest Rates



Inflation

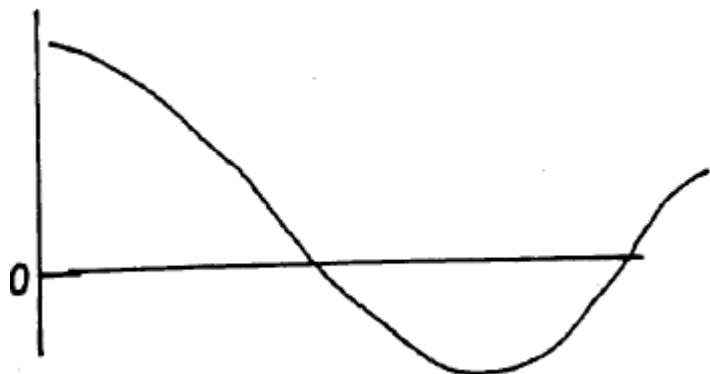


Real Interest Rates

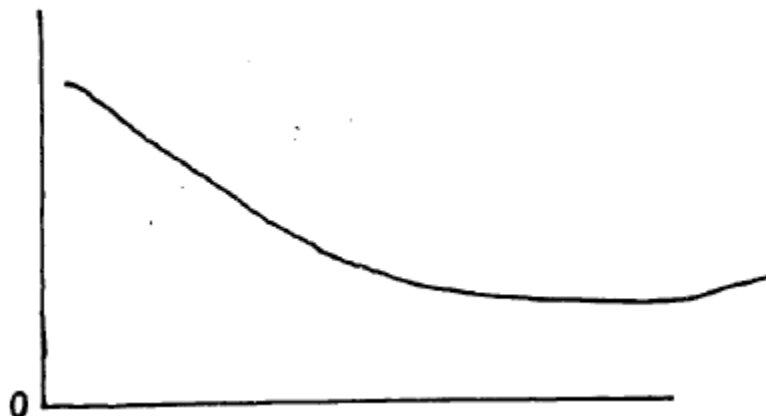


At a Peak, Anticipating Recession (or slower growth)

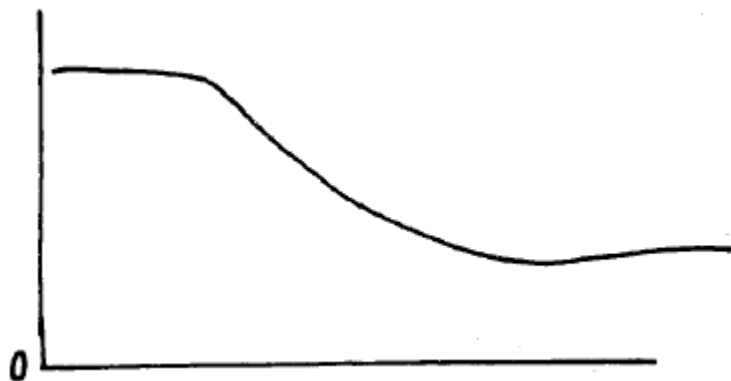
Expected Real Growth



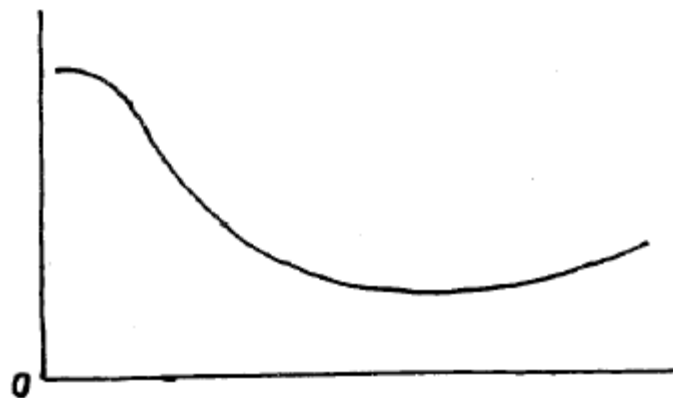
Nominal Term Structure of Interest Rates



Expected Inflation

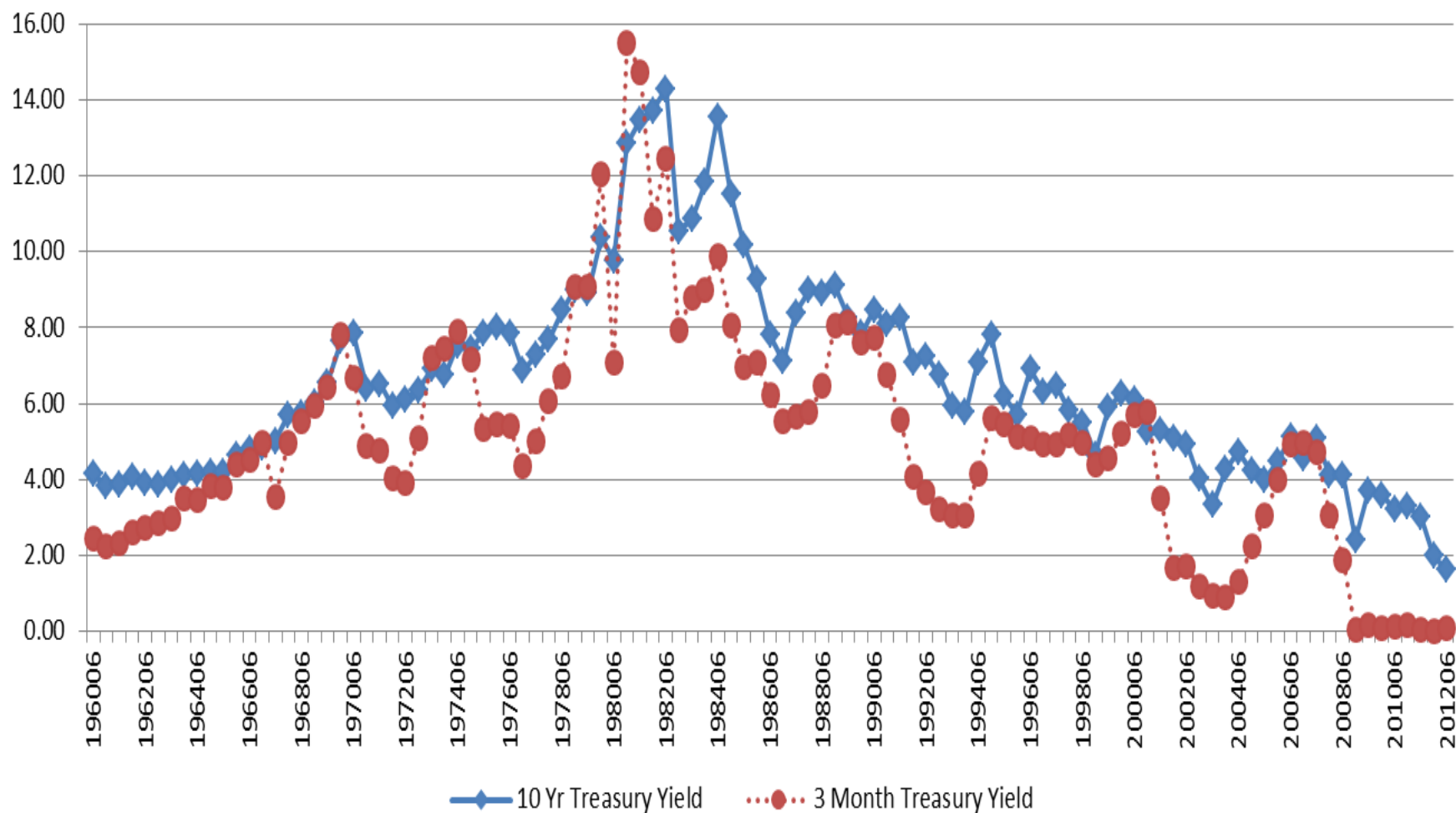


Real Term Structure



Fifty Years of 10-Year and 3 Month Treasury Yields:

Jun & Dec, 1960 to 2012 Jun (Month Average Yields)



Term Structure Slope and Unemployment Rate

Jun & Dec 1960-Jun 2012. Negative Slope, Recession Usually Follows

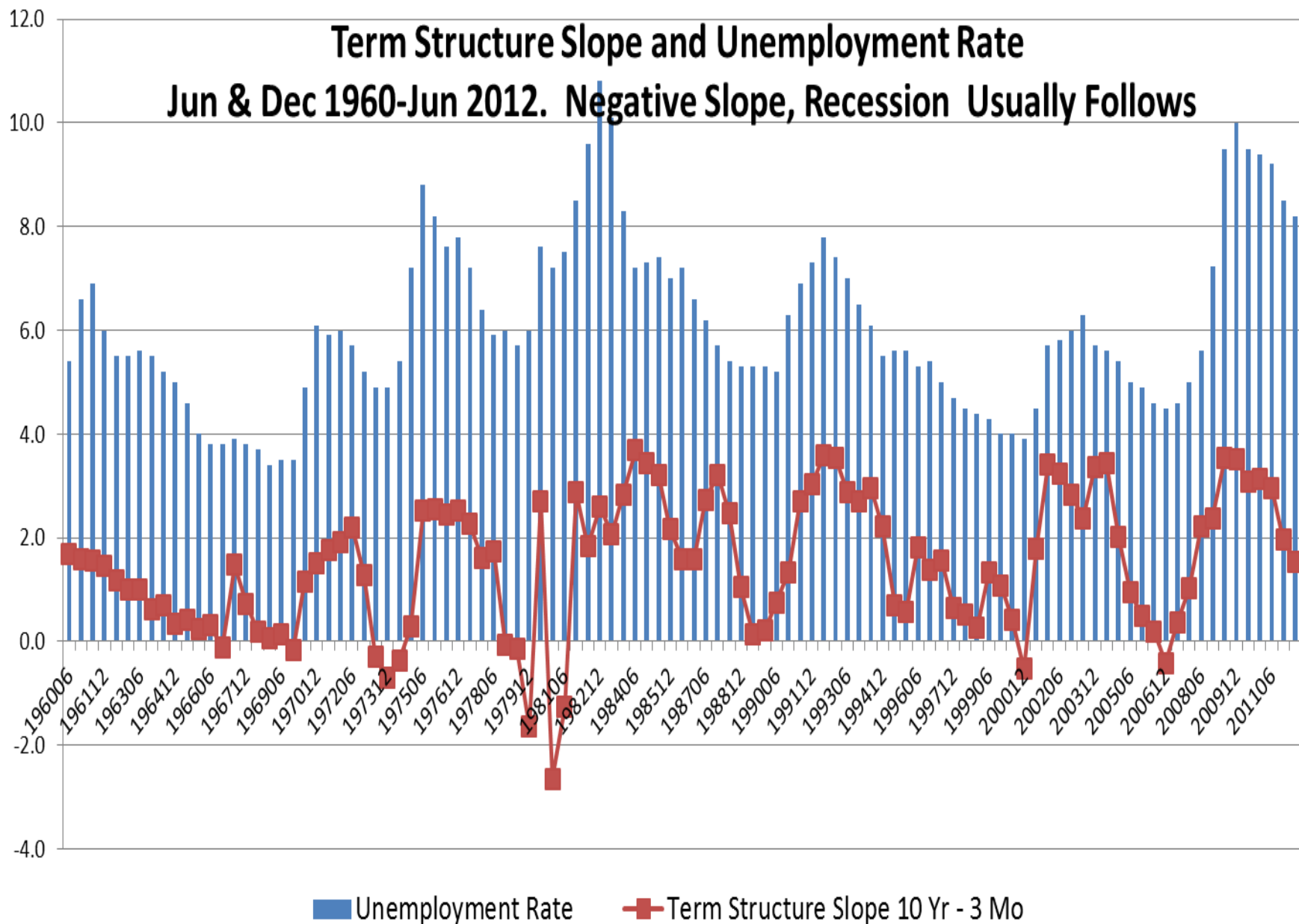
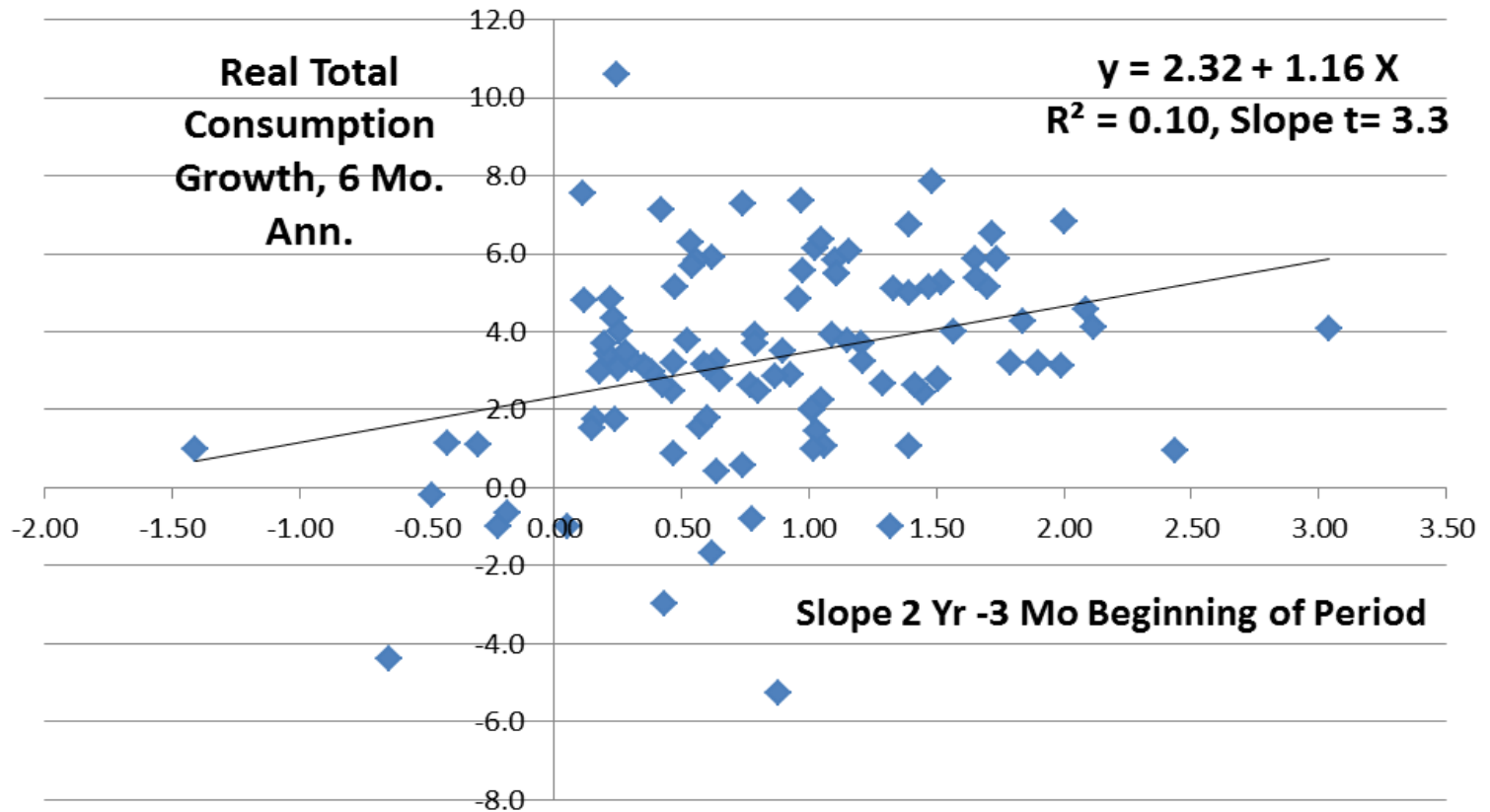


Figure 3

2 Year - 3 Month Slope Leads Real Total Consumption Growth (6mo, Ann.). Semiannually 1960-June 2011



C. Consumption Deviations from Wealth Predict
Jobs, Income Growth and Investment
Opportunities

Consumption Deviations from Wealth Predict Income and Investment Opportunities

- Following Merton and Rubinstein, Breeden (1979, 1984) studied consumer behavior in a model where consumers plan their lifetime consumption and investments. Investors' consumption levels largely depend upon wealth, income (jobs and wages) and investment opportunities (risk and return).
- Consumption fluctuations with wealth effects eliminated should be indicators of job and wage prospects and the attractiveness of investments.

Sixteen Trillion Dollar Economies (GDP 2010)

Trillions of dollars based on *Foreign Exchange Conversions*

	GDP 2011 (\$Trillions)	2004 Rank		GDP 2010	2004 Rank
1. United States	\$15.3	1	9. India	1.9	11 +2
2. China	6.6	6 +4	10. Russia	1.7	16 +6
3. Japan	5.6	2 -1	11. Canada	\$1.7	9 -2
4. Germany	3.7	3 -1	12. Spain	1.6	8 -4
5. France	2.9	5	13. Australia	1.5	14 +1
6. U. K.	2.7	4 -2	14. Mexico	1.2	10 -4
7. Brazil	2.5	13 +6	15. South Korea	1.2	12 -3
8. Italy	2.3	7 -1			

Sixteen Trillion Dollar Economies (GDP 2010)

Trillions of dollars Based on *Purchasing Power Parity*

	GDP 2010 (\$Trillions)	2004 Forex Rank Chg		GDP 2010	2004 Rank
1. United States	\$ 15.3	1	9. France	\$2.2	5 -4
2. China	11.3	6 +4	10. Mexico	1.8	10 0
3. India	4.5	11 +8	10. Italy	1.9	7 -3
4. Japan	4.4	2 -2	12. South Korea	1.6	12 0
5. Germany	3.0	3 -2	13. Spain	1.4	8 -5
6. Russia	2.4	16 +10	14. Canada	1.3	9 -5
7. Brazil	2.3	13 +6	15. Indonesia	1.1	17 +2
8. U.K.	\$2.2	4 -4	16. Australia	0.9	14 -2

Three Global Mega-Economies

<u>1.</u> <u>Europe</u>	GDP Forex \$	GDP PPP \$	<u>2. Asia and Australia</u>	GDP Forex \$	GDP PPP \$	<u>3.</u> <u>Americas</u>	GDP Forex \$	GDP PPP \$
Germany	\$3.7	\$3.0	China	\$6.6	\$11.3	U.S.A.	\$15.3	\$15.3
France	2.9	2.2	Japan	5.6	4.4	Brazil	2.5	2.7
U.K.	2.7	2.2	India	1.9	4.5	Mexico	1.2	1.8
Russia	1.7	2.4	South Korea	1.2	1.6	Canada	1.7	1.3
Italy	2.3	1.9	Indonesia	0.8	1.1			
Spain	1.6	1.4	Australia	1.5	0.9			
Total	\$14.9	\$13.1	Total	\$17.6	\$23.8	Total	\$20. 7	\$21.1 26

3 Global Mega-Economy Composites: Percentage Weights Trillion Dollar Economies (TDEs) with GDP/Capita>\$US 10,000

	1970	1990	2010
<u>Advanced America TDEs</u>	100.0%	100.0%	100.0%
United States	90.3	89.8	90.0
Canada	9.7	10.2	10.0
<u>Advanced Europe TDEs</u>	100.0%	100.0%	100.0%
United Kingdom	47.3	20.8	22.4
Germany	18.5	27.2	28.2
France	14.8	22.1	21.1
Italy	11.6	19.9	16.9
Spain	7.9	9.9	11.3
<u>Advanced AustralAsia TDEs</u>	100.0%	100.0%	100.0%
Japan	90.4	77.7	63.6
Australia (added 1970)	9.6	8.2	14.4
South Korea (added 1990)	0.0	7.0	11.8
Hong Kong, Singapore, Taiwan	0.0	7.1	10.2 ²⁷

3 Mega-Economies: Removing the Wealth Effect from Consumption:

Real Consumption Growth Predicted by Stock Returns

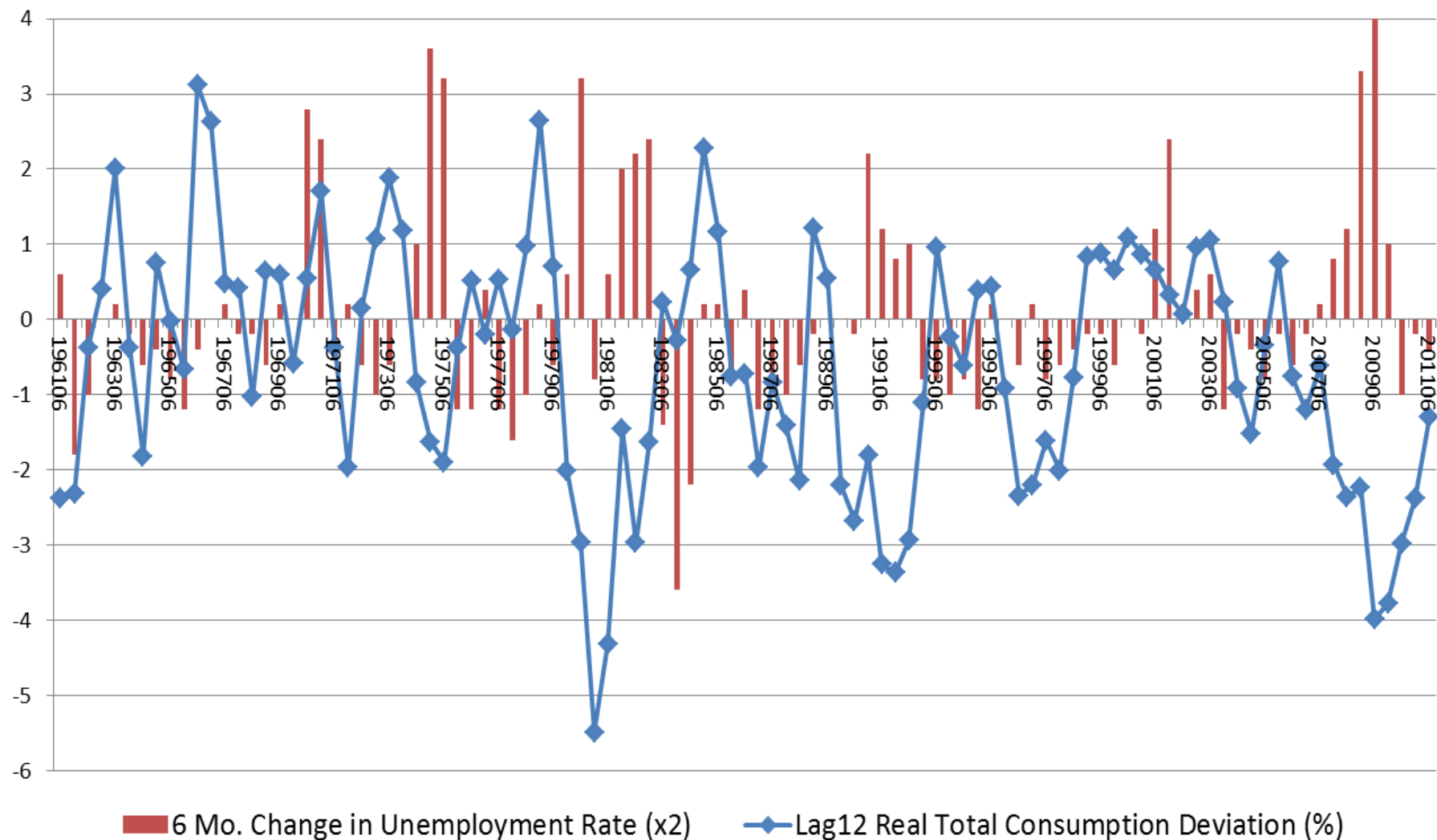
2 Quarter Changes (Q2-Q4-Q2). 50 Years: 1961 – Q2/2011

<u>Dependent Var</u> Real Total Consumption Growth (2Q%, Annlzd)	Real Stock Return 2Q% Curren t	Real Stock Retur n 2Q% Lag1	Real Stock Return 2Q% Lag 2	20 Yr Historic Trend Growth RI GDP	Corr RSQ
<i>Advanced Americas</i> 1961Q2-2011Q2	0.093 t=5.4	0.058 t=3.3	0.041 t=2.4	0.87 t=4.6	0.39 N=101
<i>Advanced Europe</i> 1962Q2-2011Q2	0.035 t=3.0	0.032 t=2.7	0.017 t=1.4	1.15 t=7.9	0.41 N=97
<i>Advanced AusAsia</i> 1961Q2-2010Q4	0.051 t=2.6	0.025 t=1.3	0.022 t=1.1	0.83 t=8.5	0.46 N=100

Consumption Growth Deviations and the Income and Investment Opportunity Set

- The lagged values of the residuals from the above regressions are examined for predictive ability with regard to income, wages, jobs and other macro variables.
- Specifically, we regress the growth rate of each variable on its own lag and the lagged consumption residuals, stock returns and term structure slope (reflecting information from the stock market, bond market, and consumers).

Consumption Deviations Lead Next 6 Months Change in Unemployment Rate. Strong (-) Relation (Slope t = -2.7, RSQ=0.06) 1961-2011 Q2



Advanced Americas: GDP, Employment Related to Stock Returns, Term Structure Slope, Consumption Deviations

Note: Coefficients of Trend and Lagged dependent variable not shown

Variable (Y_t)	Real Stock Return Lag 1	Real Stock Return Lag 2	Treas Slope 10y-3m, Lag 1	Total Real Consumption Deviation Lag 1 or *Lag 1,2 Avg	Corr. R^2
Real GDP 2Q Ann%Chg	0.12 (t=6.6)	0.06 (t=3.3)	0.73 (t=4.2)	0.36 (t=3.1)	0.56
Unemployment Rate* 2Q Change	-0.031 (t=-9.2)	-0.013 (t=-2.9)	-0.15 (t=-4.6)	-0.09* (t=-3.1)	0.70
Total Employment* 2Q Ann%Chg	0.065 (t=6.0)	0.042 (t=3.5)	0.27 (t=2.6)	0.35* (t=3.5)	0.63

Advanced Europe: GDP and Employment Related to Stock Returns, Term Structure Slope and Consumption Deviations

Variable (Y_t)	Real Stock Return Lag 1	Real Stock Return Lag 2	Treas Slope 10y-3m, Lag 1	Total Real Consumption Deviation Lag 1 or *Lag 1,2 Avg	Corr. R^2
Real GDP 2Q Ann%Chg	0.069 (t=6.0)	0.031 (t=2.7)	0.45 (t=3.2)	0.49 (t=4.7)	0.60
Unemployment Rate 2Q Change	-0.009 (t=-4.4)	-0.005 (t=-2.2)	-0.056 (t=-2.3)	-0.074 (t=-3.6)	0.60
Total Employment 2Q Ann%Chg	0.022 (t=3.1)	0.016 (t=2.3)	0.15 (t=1.7)	0.19 (t=2.8)	0.54

Advanced AustralAsia: GDP, Employment Related to Stock Returns, Term Structure Slope, and Consumption Deviations

Variable (Y_t)	Real Stock Return Lag 1	Real Stock Return Lag 2	Treas Slope 10y-3m, Lag 1	Total Real Consumption Deviation Lag 1 or *Lag 1,2 Avg	Corr. R^2
Real GDP 2Q Ann%Chg	0.078 (t=3.5)	0.007 (t=0.3)	-0.01 (t=-0.0)	0.28 (t=2.4)	0.45
Unemployment Rate* 2Q Change	-0.0054 (t=-4.0)	-0.0037 (t=-2.6)	-0.014 (t=-0.8)	-0.018* (t=-1.9)	0.29
Total Employment YoY %Chg	0.013 (t=3.5)	0.013 (t=3.2)	0.036 (t=0.7)	0.052 (t=2.6)	0.63

Out of Sample Global Stepwise Simulations: Implied R² of Macro Variables on Lagged Stock Returns, Term Structure Slope, and Real Consumption Deviations, Semiannual 1977-2011

Variable (Y _t)	Historic 20 Yr GDP Trend In all Regs	RIStock Return Only, Lg1,Lg2	Stock Lg12 + PCETot Dev Lg1	Stock L12 Slope Lg1 PCETot Devn, Lg1	Leading Economic Indicators, Lg1, Lg2
<u>Real GDP , 2Q% Chg</u>					
Advanced Americas 1977 Q2 - 2011 Q2	-0.04	0.26	0.41	0.47	0.41 OECD 0.37 USA
Advanced Europe 1977Q2 to 2011 Q2	0.02	0.20	0.40	0.47	0.52
Advanced AustralAsia 1977Q2 to 2010 Q4	0.28	0.38	0.44	0.39	0.39
<u>Indust. Prod'n, 2Q%Chg</u>					
Advanced Americas 1977 Q2 - 2011 Q2	-0.08	0.32	0.40	0.55	0.54 OECD 0.42 USA
Advanced Europe 1977Q2 to 2011 Q2	0.00	0.01	0.16	0.32	0.51
Advanced AustralAsia 1977Q2 to 2010 Q4	0.04	0.23	0.34 Lg1 0.39 Lg12	0.39 Lg1 0.42Lg12	0.42

Out of Sample Global Stepwise Simulations: Implied R² of Macro Variables on Lagged Stock Returns, Term Structure Slope, and Real Consumption Deviations, Semiannual 1977-2011

Variable (Y _t) (All employment and unemployment rate change regressions have lagged dependent var.)	Historic 20 Yr GDP Trend In all Regs	RIStock Return Only, Lg1,Lg2	Stock Lg12 + PCETot Dev Lg12	Stock L12 Slope Lg1 PCETot Devn, Lg12 Avg	Leading Economic Indicators, Lg1, Lg2
<u>Unemploy Rate , 2Q Chg</u>					
Advanced Americas 1977 Q2 - 2011 Q2	0.20	0.41	0.52	0.60	0.55 OECD 0.47 USA
Advanced Europe 1977Q2 to 2011 Q2	0.31	0.36	0.50 Lg1 0.48 Lg12	0.52 Lg1 0.50 Lg12	0.57
Advanced AustralAsia 1977Q2 to 2010 Q4	0.06	0.21	0.24	0.19	0.23
<u>Employmnt 2Q%Chg*</u>					
Advanced Americas 1977 Q2 - 2011 Q2	0.33	0.44	0.54	0.55	0.59 OECD 0.49 USA
Advanced Europe 1977Q2 to 2011 Q2	0.37	0.45	0.55 Lg1 0.48 Lg12	0.53 Lg1 0.47 Lg12	0.55
Advanced AustralAsia* 1977Q2 to 2010 Q4, YoY	0.59	0.68	0.69	0.66	0.64

USA Comparison of Out of Sample Forecasts for Real Personal Income and Real Wage Growth:
Implied R^2 (from RMSE Reduction) of Macro Variables on Stocks, Slope, and Consumption Deviations
 1961-2011 Q2 Semiannual data. Includes lagged Y.

Consumption Deviations Help Predict Future Wages and Personal Income

Variable (Y_t)	RIStock Return Only, Lg1,Lg2	Stock+ TS Slope 10y-3m Lag 1	Stock+ Slope+ PCETot Devn, Lg12	Stock+ Slope+ PCENDS DevnLg12	Leading Economic Indicators, Lg1, Lg2
Real Personal Income- Transfers, 6m % Growth	0.15	0.11	0.19	0.21	.11
Real Personal Income- Transfers, 2Q % Growth	0.35	0.31	0.36	0.37	.25
Real Wages, RMSE 6 mo % Grwth	-0.04	-0.08	0.04	0.06	.01
Real Wages, 2Q % Growth	0.40	0.38	0.44	0.45	.36

Conclusion on Consumption Deviations and Job and Income Opportunities

- Test results show that, as consumption and portfolio theory predict, consumption choices do reflect knowledge about future income and investment opportunities.
- High consumption relative to wealth is usually followed by high wage and personal income growth, and by higher employment growth and lower unemployment. Low consumption/wealth reflects weak income and job opportunities.
- Consumption deviations from wealth are a leading indicator.

A Stock, Bonds, Consumers Leading Indicator (SBCLI)

Standardized Z-Scores for Real Stock Returns, Term Structure Slope, & Consumption Deviations

- For key variable k (k = Stocks return, bond slope, consumer deviation) at time t :
- $$Z_{kt} = \frac{(x_{kt} - \mu_k)}{\sigma_k}$$

For a normal distribution, $Abs(Z) > 1$ about 1/3 time,
 $Abs(Z) > 2$ about 5% time

Stocks, Bonds, Consumers Leading Index (SBCLI)

- Using data from Advanced Americas, Advanced Europe and Advanced AustralAsia, found major macro variables most related to lagged stock returns, with weight on Z-score for stocks about 2x that for term structure slope and for consumption deviations.
- Simple Stocks, Bonds, Consumers (SBCLI) index proposed is:

$$\text{SBCLI} = 2 * Z(\text{RIStock}) + 1 * Z(\text{Slope}) + 1 * Z(\text{Cons Dev'n})$$

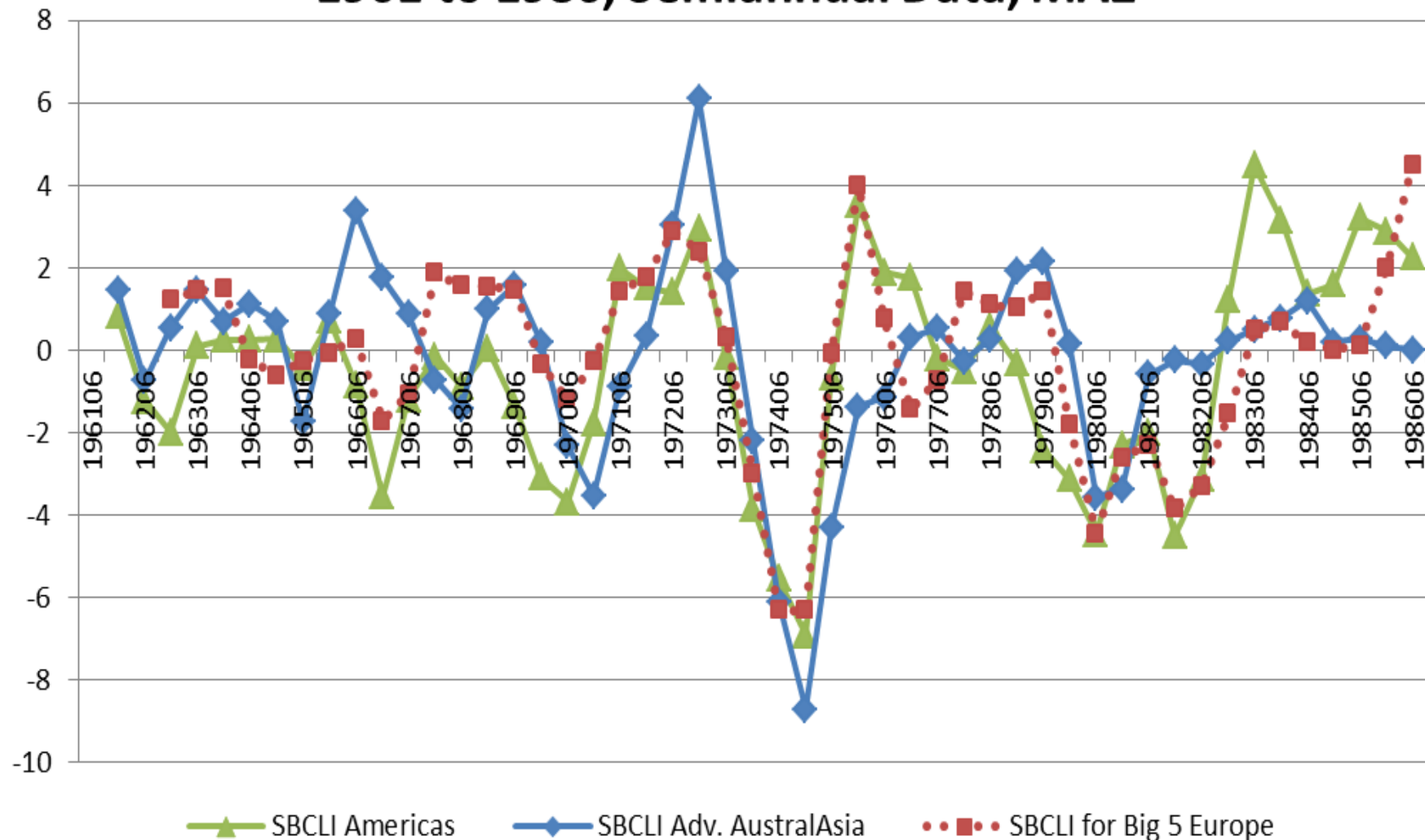
Scaled Coefficients from Regressions with Z-Scores (1962 Q2 or 1963 Q2 to 2011Q2)

Scaled so that total stock market effect has coefficient = 1.0

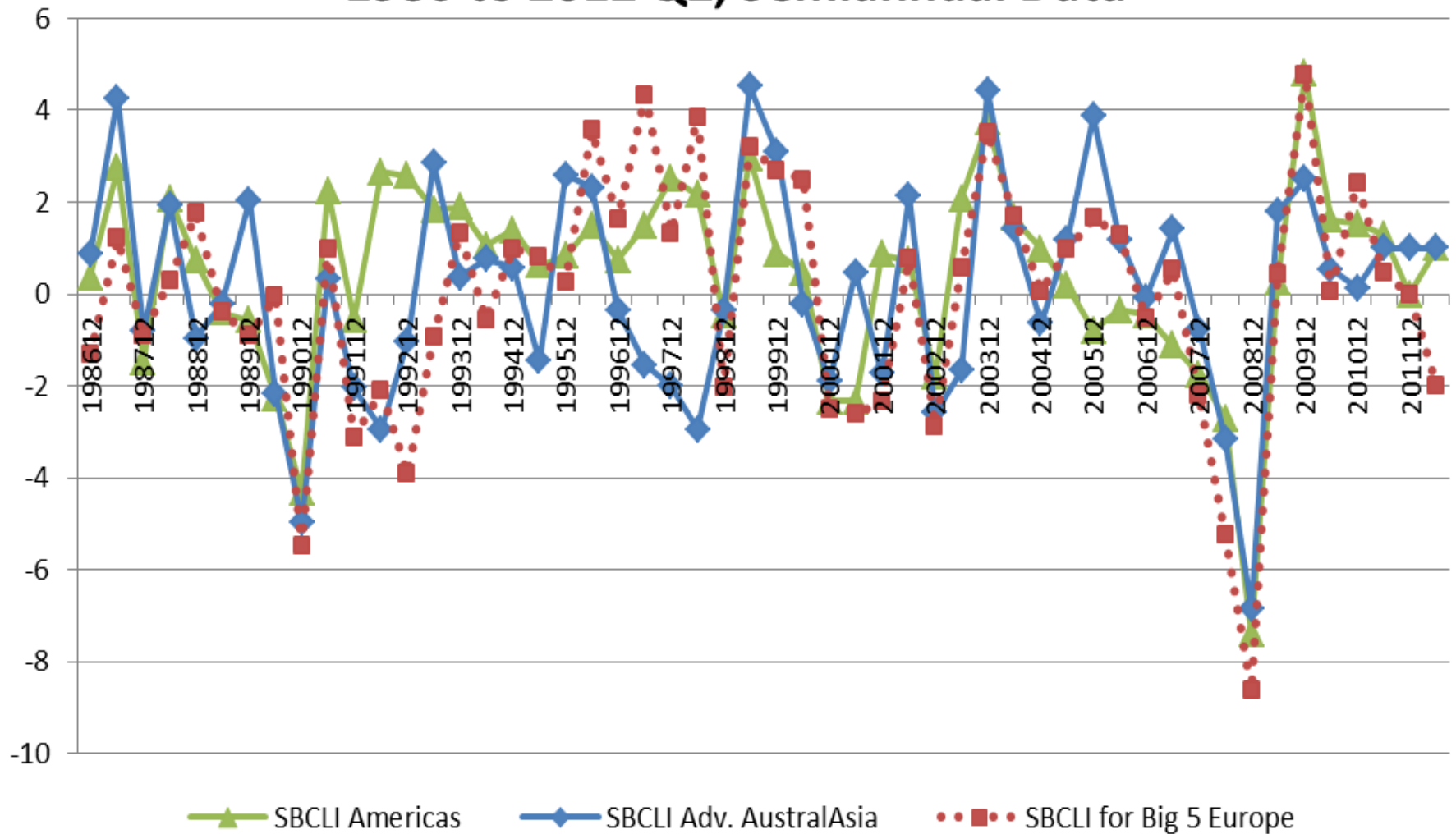
	<u>Advanced Americas</u>				<u>Advanced Europe</u>				<u>Advanced AustralAsia</u>			
	Lg1Stocks	Lg2Stocks	Lg1Slope	Lg1CPerp	Lg1Stocks	Lg2Stocks	Lg1Slope	Lg1CPerp	Lg1Stocks	Lg2Stocks	Lg1Slope	Lg1CPerp
<u>Scaled Coefficients Relative to Total Stock Market Coefficient</u>												
Real GDP Growth	1.00		0.48	0.34	1.00		0.39	0.54	1.00		-0.03	0.63
Industrial Production	1.00		0.48	0.21	1.00		0.58	0.43	1.00		0.43	0.65
Unemployment Rate Change	1.00		0.40	0.36	1.00		0.38	0.72	1.00		0.12	0.38
Employment Growth	1.00		0.30	0.56	1.00		0.39	0.61	1.00		0.08	0.42
Average Scaled Coefficients	1.00		0.41	0.37	1.00		0.43	0.57	1.00		0.15	0.52
Grand Means of Scaled Coeffs	1.00		0.33	0.49								
	Stocks		Slope	Cperp								

Stocks, Bonds, Consumers Leading Indicator (SBCLI)															United States					
Douglas T. Breeden, July 2012													1 Quarter Prior SBCLI Forecast Correlations							
Massachusetts Institute of Technology and Duke University													SBCLI Correl=		0.79		0.84			
													SBCLI MA2		0.80		0.89			
1961 to 2007													2 Quarters Prior SBCLI Forecast Correlations							
Mean													SBCLI Correl=		0.68		0.81			
StdDevn													SBCLI MA2		0.58		0.71			
Stock Market					Bond Market				Consumers (Total)				SBCLI		Macroeconomic Data					
					Yield	Yield	Yield	Yield	RealTot	20 Yr	Expecte	Consumption		SBCLI	SBCLI	Real				
		Inflation	Stocks	Real	Treasy	Treasy	Curve	Curve	Consum	Real	RIGrowt	Deviatio	PCETotal			GDP	Indust	Employr	Unempl	
	OECD	OECD	RealRet	StkRet	Short	LongRa	Slope	Slope	Growth	Growth	PCETot	PCETotal		Total	Total	Growth	Prodn	Growth	Rate	
Quarter	QAvg	YoY	L 2Qtrs	Zscore	MoAvg	MoAvg		Zscore	2Q%Anr	Trend	FromStk	2Q%Anr	Zscore	Zscore	Zscore	2QAnn%	2QAnn%	2QAnn%	%	
200612	120.6	1.9	6.8	0.4	5.32	4.63	-0.69	-1.5	3.1	3.0	3.8	-0.8	-0.4	-1	-1	1.4	1.4	2.2	4.4	
200703	125.2	2.4	10.2	0.7	5.31	4.68	-0.63	-1.5	3.0	3.0	3.9	-0.9	-0.5	-1	-1	1.6	2.7	2.2	4.5	
200706	132.8	2.7	8.7	0.6	5.32	4.85	-0.47	-1.3	1.9	3.0	4.1	-2.2	-1.3	-1	-1	2.1	4.5	0.4	4.5	
200709	132.5	2.4	4.6	0.2	5.42	4.73	-0.69	-1.5	1.7	3.0	3.7	-2.0	-1.2	-2	-1	3.3	2.8	-0.2	4.7	
200712	134.7	4.0	-0.5	-0.2	5.02	4.26	-0.76	-1.6	1.5	3.0	3.3	-1.8	-1.1	-3	-2	2.3	0.6	0.6	4.8	
200803	122.4	4.1	-9.7	-1.0	3.23	3.66	0.43	-0.6	0.1	2.9	2.3	-2.2	-1.3	-4	-3	0.0	-0.5	0.4	5.0	
200806	125.2	4.4	-9.3	-1.0	2.76	3.89	1.13	0.0	-0.6	2.9	1.9	-2.5	-1.5	-4	-3	-0.2	-4.0	-0.4	5.3	
200809	111.9	5.3	-11.2	-1.2	3.06	3.86	0.81	-0.3	-2.0	2.8	1.0	-3.0	-1.8	-4	-4	-1.2	-9.7	-1.4	6.0	
200812	77.9	1.6	-38.5	-3.6	2.82	3.25	0.44	-0.6	-4.5	2.7	-1.9	-2.7	-1.6	-9	-6	-6.4	-14.5	-2.7	6.9	
200903	69.3	0.0	-38.1	-3.5	1.08	2.74	1.65	0.4	-3.4	2.5	-2.5	-0.9	-0.5	-7	-6	-7.9	-18.1	-5.1	8.3	
200906	77.8	-1.2	0.4	-0.1	0.62	3.31	2.70	1.2	-1.7	2.4	-0.5	-1.2	-0.7	0	-5	-3.8	-15.9	-5.1	9.3	
200909	88.2	-1.6	28.2	2.3	0.30	3.52	3.22	1.7	0.2	2.4	2.0	-1.8	-1.0	5	-1	0.5	-3.5	-3.2	9.6	
200912	96.3	1.4	23.1	1.9	0.22	3.46	3.24	1.7	1.4	2.4	2.6	-1.2	-0.7	5	2	2.7	5.4	-2.8	9.9	
201003	97.8	2.4	9.7	0.7	0.21	3.72	3.51	1.9	1.6	2.4	3.0	-1.4	-0.9	2	4	3.8	6.7	-1.0	9.8	
201006	97.0	1.8	-0.2	-0.2	0.42	3.49	3.07	1.5	2.8	2.4	3.4	-0.6	-0.3	1	3	3.8	7.5	1.4	9.6	
201009	94.7	1.2	-3.7	-0.5	0.34	2.79	2.45	1.0	2.8	2.5	3.4	-0.7	-0.4	0	1	3.1	6.8	1.0	9.5	
201012	104.0	1.3	6.6	0.4	0.28	2.86	2.58	1.1	3.1	2.5	3.7	-0.6	-0.4	2	1	2.4	4.8	-0.4	9.6	
201103	112.2	2.1	17.4	1.3	0.28	3.46	3.18	1.6	2.8	2.6	4.0	-1.2	-0.7	4	2	1.3	3.9	0.4	9.0	
201106	113.4	3.4	7.3	0.5	0.22	3.21	2.99	1.5	1.4	2.6	3.2	-1.9	-1.1	1	1	0.8	2.7	0.8	9.0	
201109	103.2	3.8	-10.0	-1.0	0.29	2.43	2.14	0.8	1.2	2.6	2.1	-0.9	-0.5	-2	1	1.6	3.4	0.2	9.1	
201112	99.7	3.3	-13.7	-1.4	0.42	2.05	1.62	0.4	1.9	2.6	1.6	0.3	0.2	-2	0	2.3	5.0	1.4	8.7	
201203	108.7	2.8	4.0	0.2	0.33	2.04	1.71	0.4	2.3	2.6	2.7	-0.4	-0.3	1	-1				8.3	
201206	105.7	1.7	5.1	0.3	0.30	1.82	1.52	0.3	2.1	2.6	2.2	-0.1	0.0	1	-1					
201207					0.30	1.47	1.17	0.0											42	

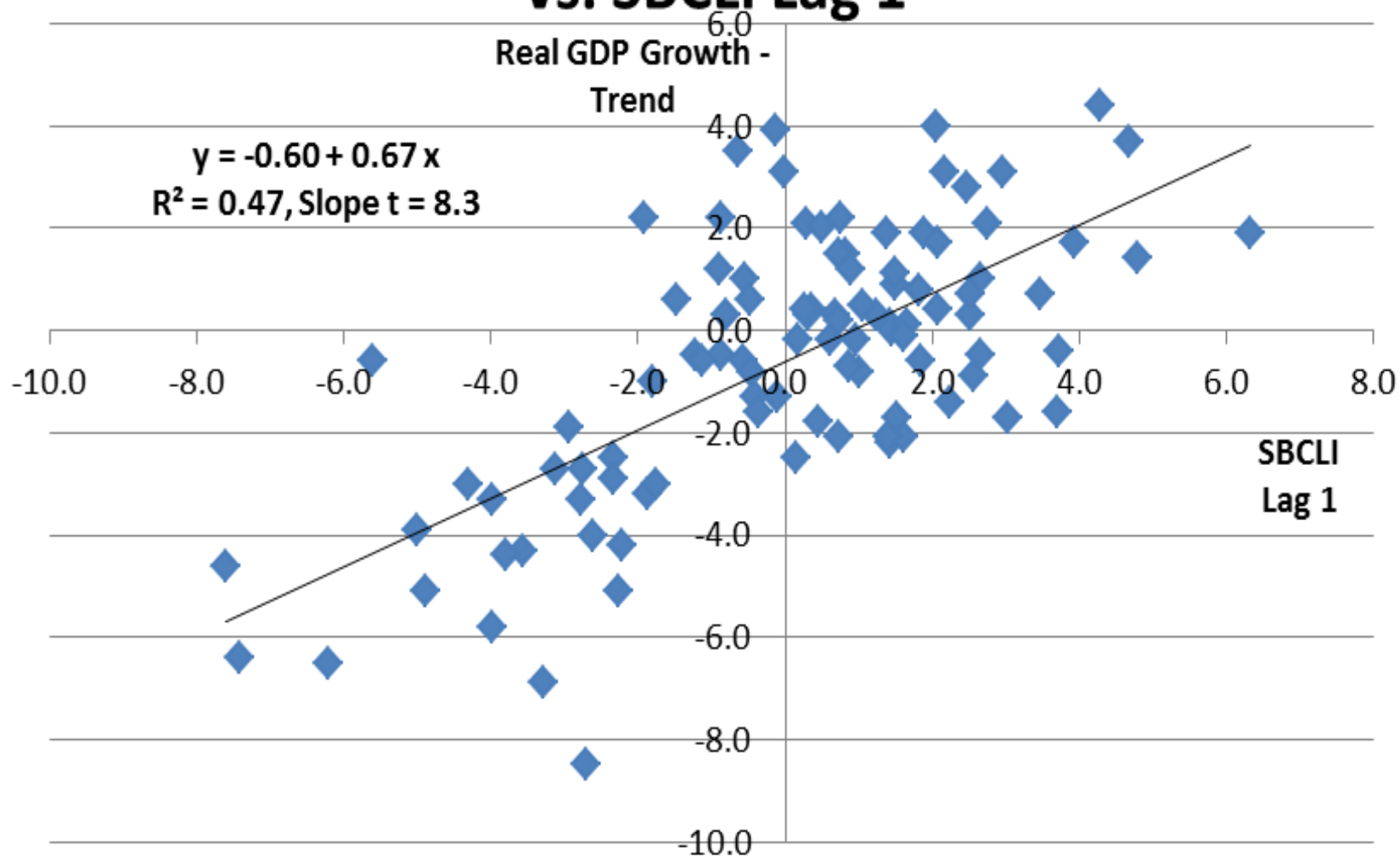
SBCLI for Advanced Americas, Europe, AustralAsia 1961 to 1986, Semiannual Data, MA2



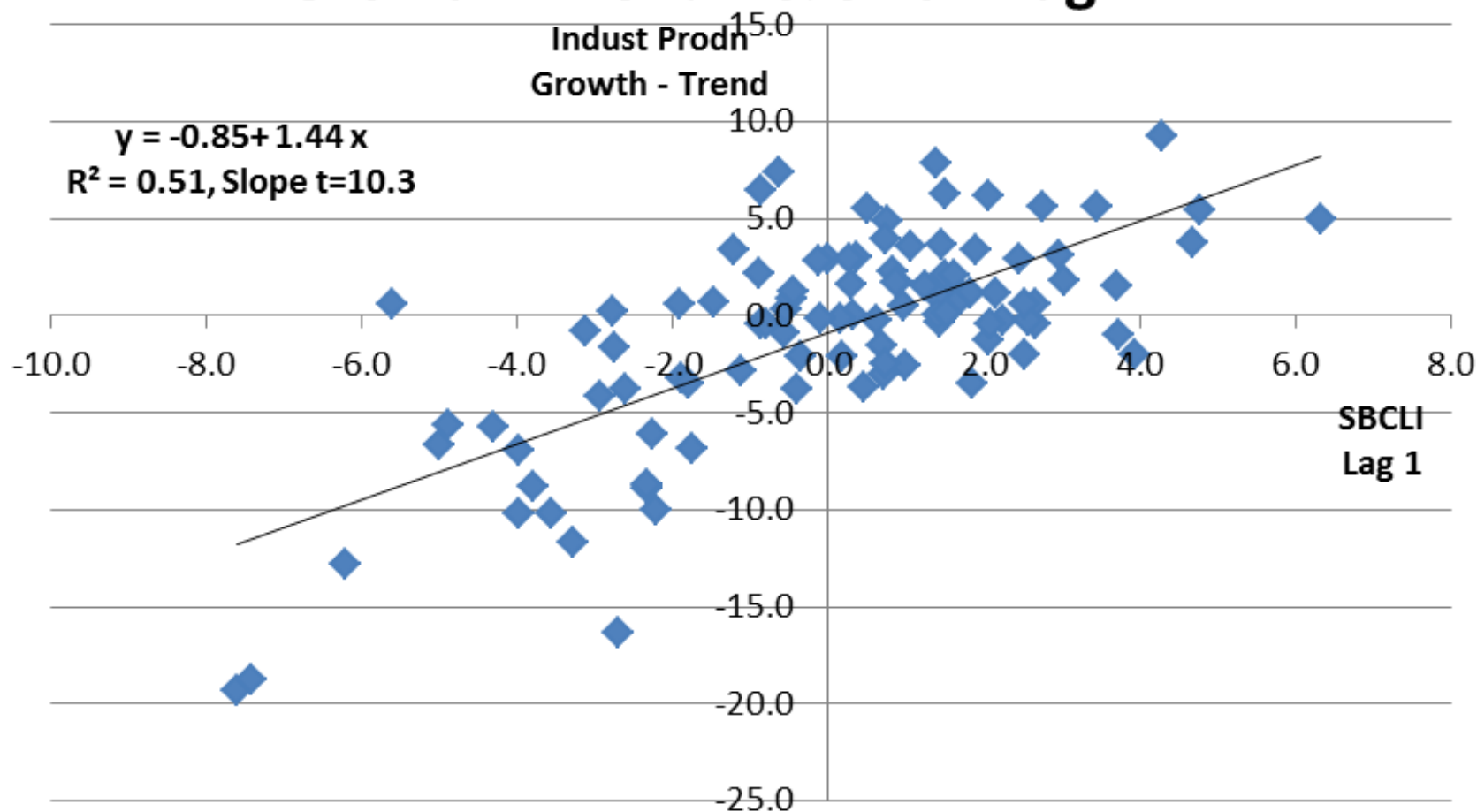
SBCLI for Advanced Americas, Europe, AustralAsia 1986 to 2012 Q2, Semiannual Data



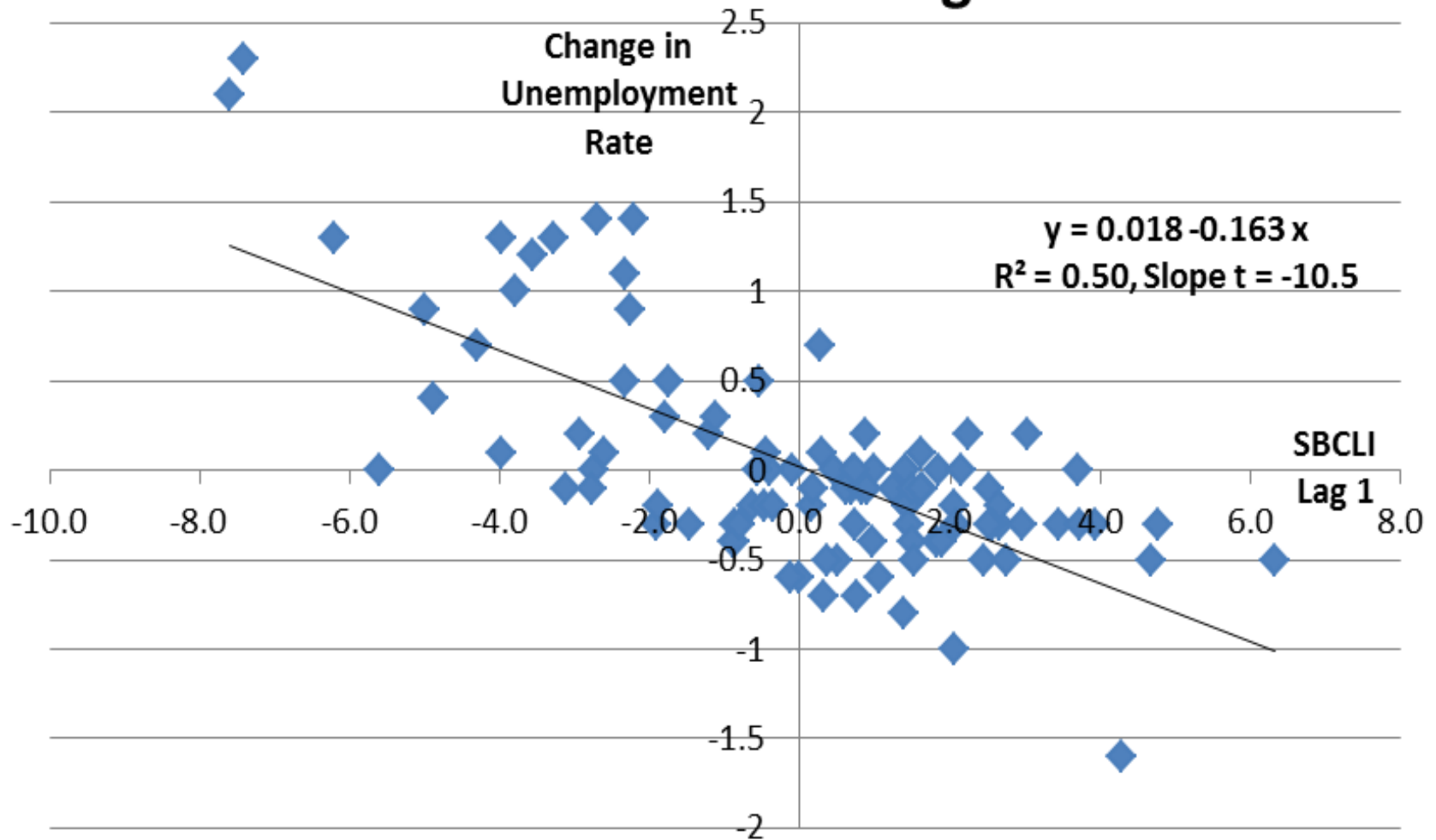
AAmericas: Real GDP Growth - Trend vs. SBCLI Lag 1



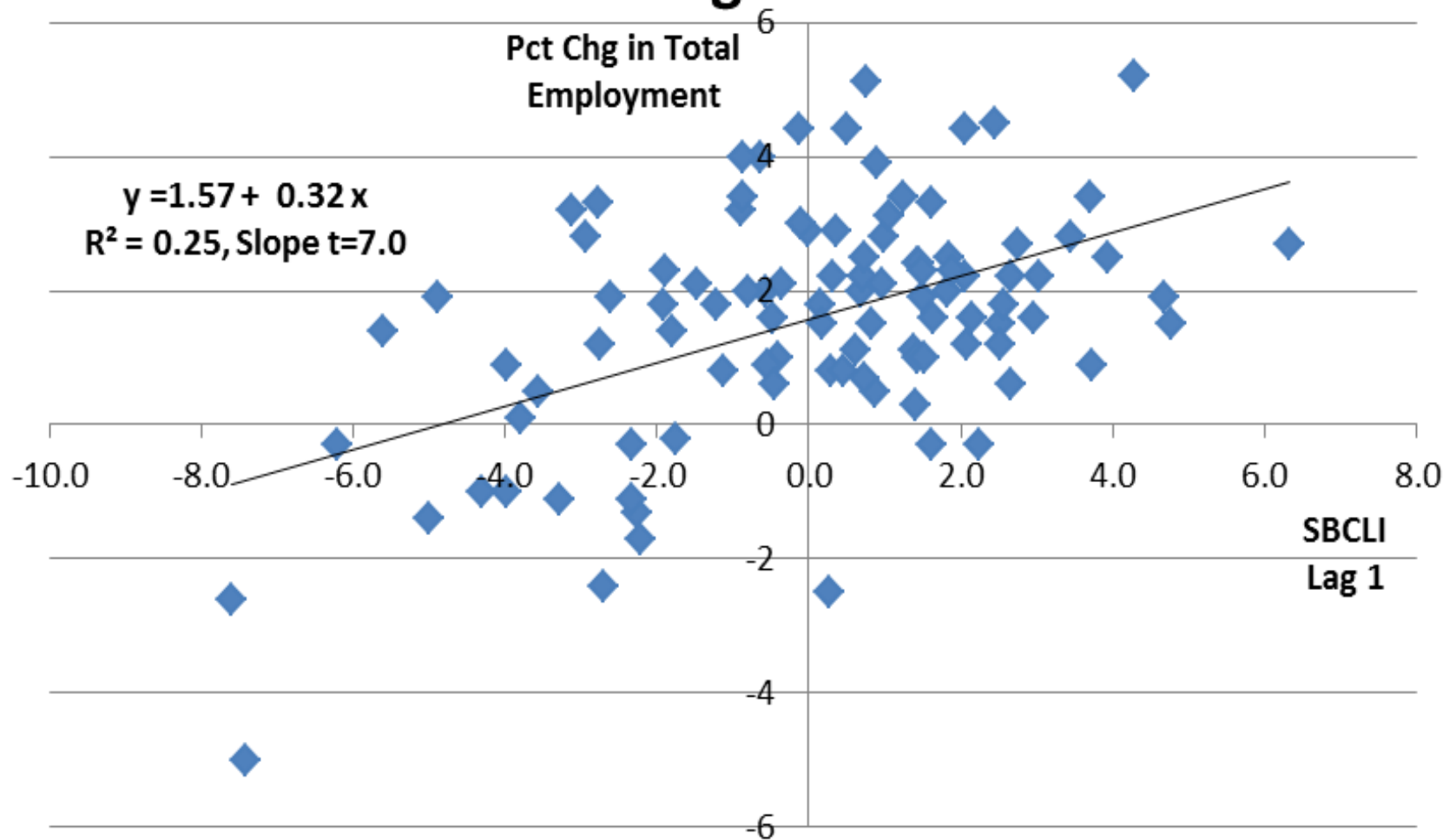
AAmericas: Industrial Production Growth - Trend vs. SBCLI Lag 1



Adv Americas: Unemployment Rate Change vs. SBCLI Lag 1



Adv Americas: Total Employment Growth vs. SBCLI Lag 1



Comparisons with OECD Leading Indicators:

*Contemporaneous Correlations of SBCLI with
OECD Indexes of Leading Economic Indicators
(2Q% Change), 1961-2011 Q2*

Advanced Americas correlation = 0.74

Advanced Europe correlation = 0.74

Advanced AustralAsia correlation = 0.67

Out of Sample “Implied R-Squareds” 1977-2011 Q2

Simulation Performance of SBCLI vs. LEI

First 15 years of data for training regressions.

Expanding windows of data thru time.

	Real GDP 2Q %Change	Ind. Prodn 2Q%Change	2Q Change in Unemployment Rate	Employment Growth, 2Q%
Adv Americas:				
SBCLI	0.55	0.54	0.63	0.59
USA LEI	0.37	0.42	0.47	0.49
OECD LEI	0.41	0.54	0.55	0.59
Advanced				
Europe SBCLI	0.57	0.43	0.58	0.65
OECD LEI	0.52	0.52	0.59	0.58
Adv AustralAsia				
SBCLI	0.40	0.42	0.21	0.21
OECD LEI	0.40	0.43	0.24	0.13

Recent Behavior of the SBCLI

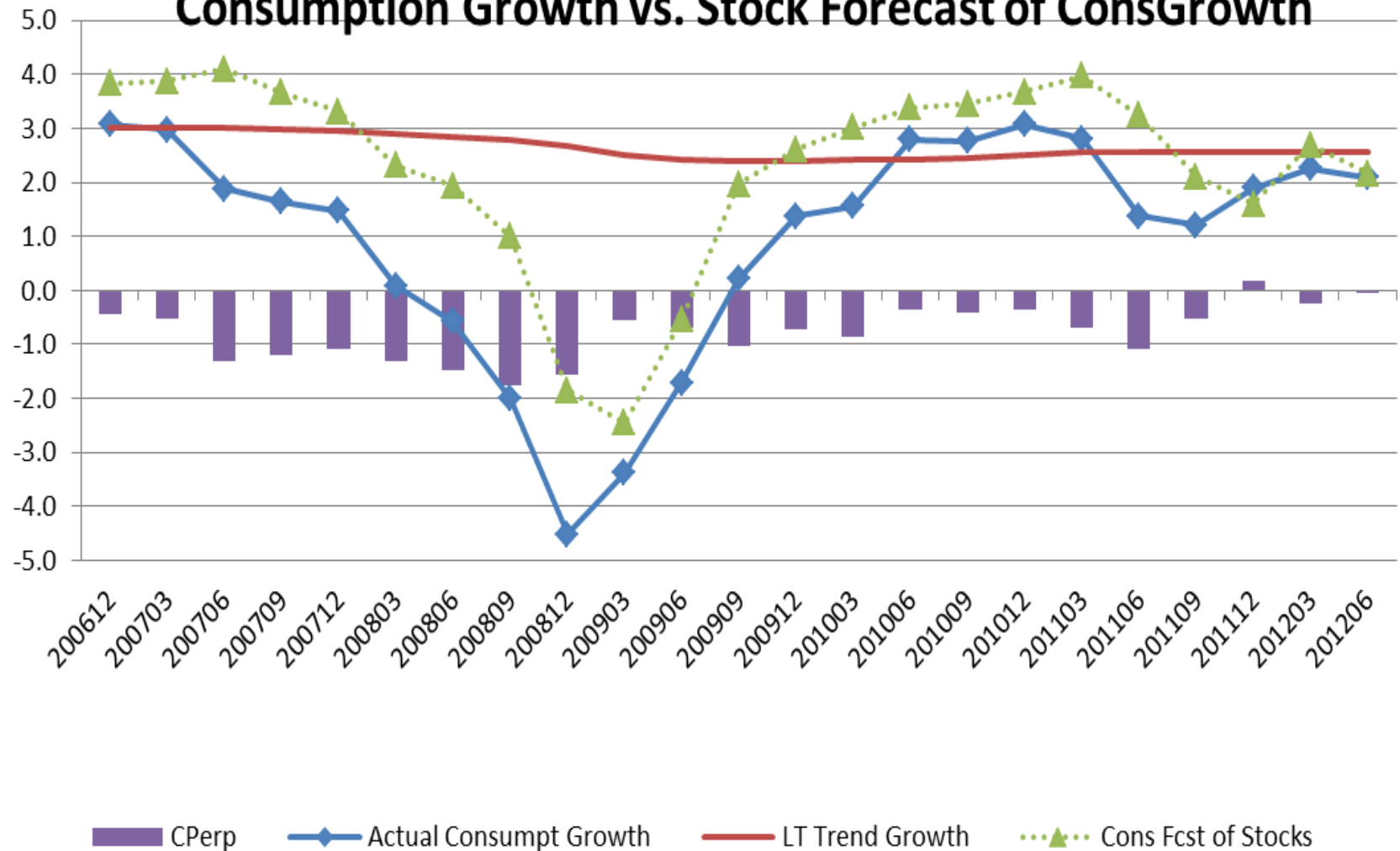
Q1: What readings did the SBCLI give during the last 5 years, including the “Financial Panic of 2008/9”?

Q2: What are the readings of the SBCLI at present?

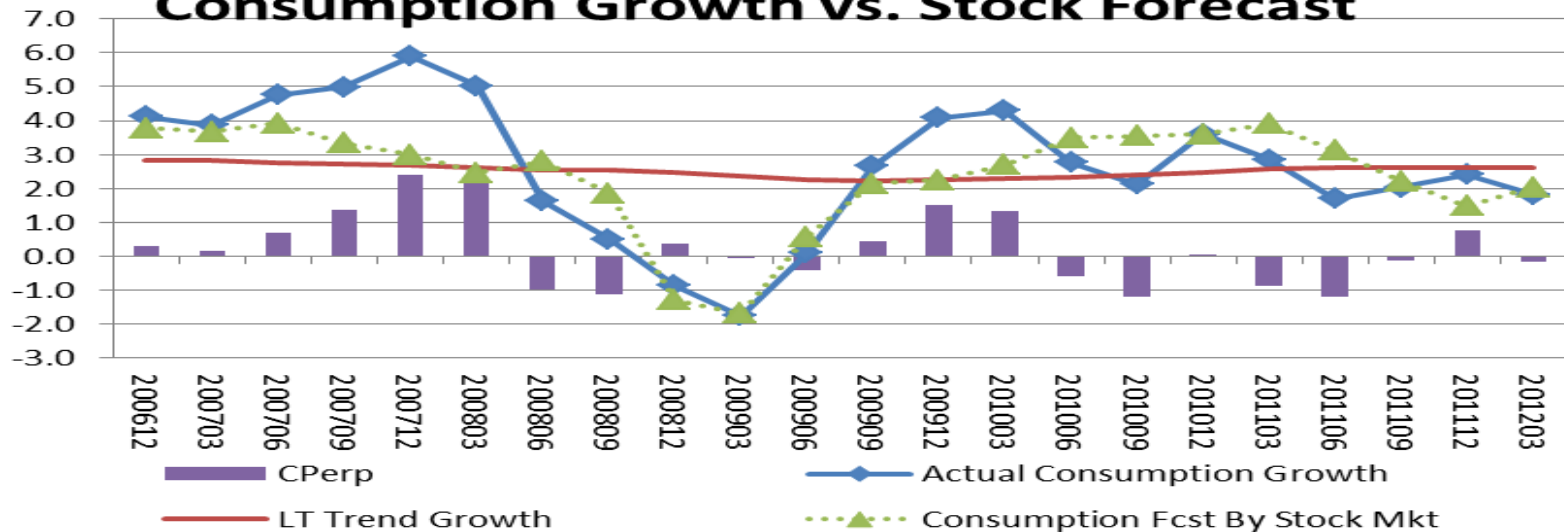
Q3: What signals are consumers sending in various countries?

USA Consumer Signal Improved to Neutral in 2011-2012, After 5 Years Negative:

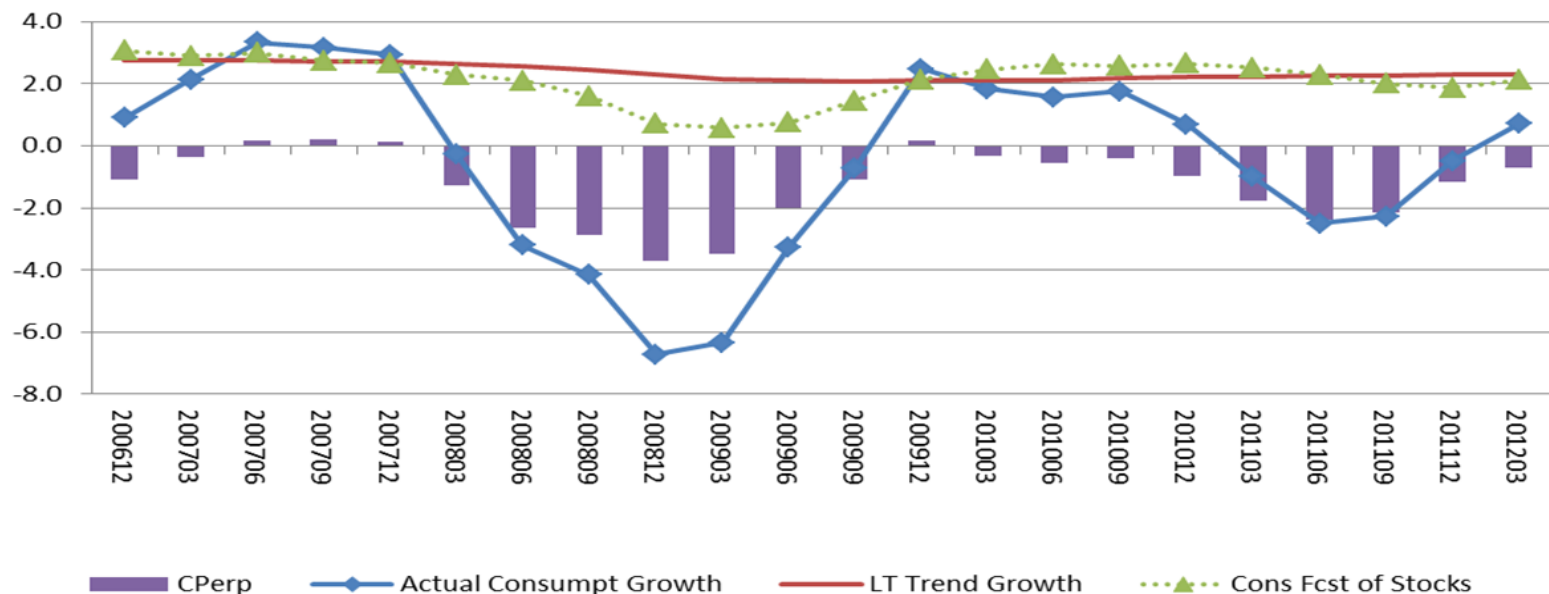
Consumption Growth vs. Stock Forecast of ConsGrowth



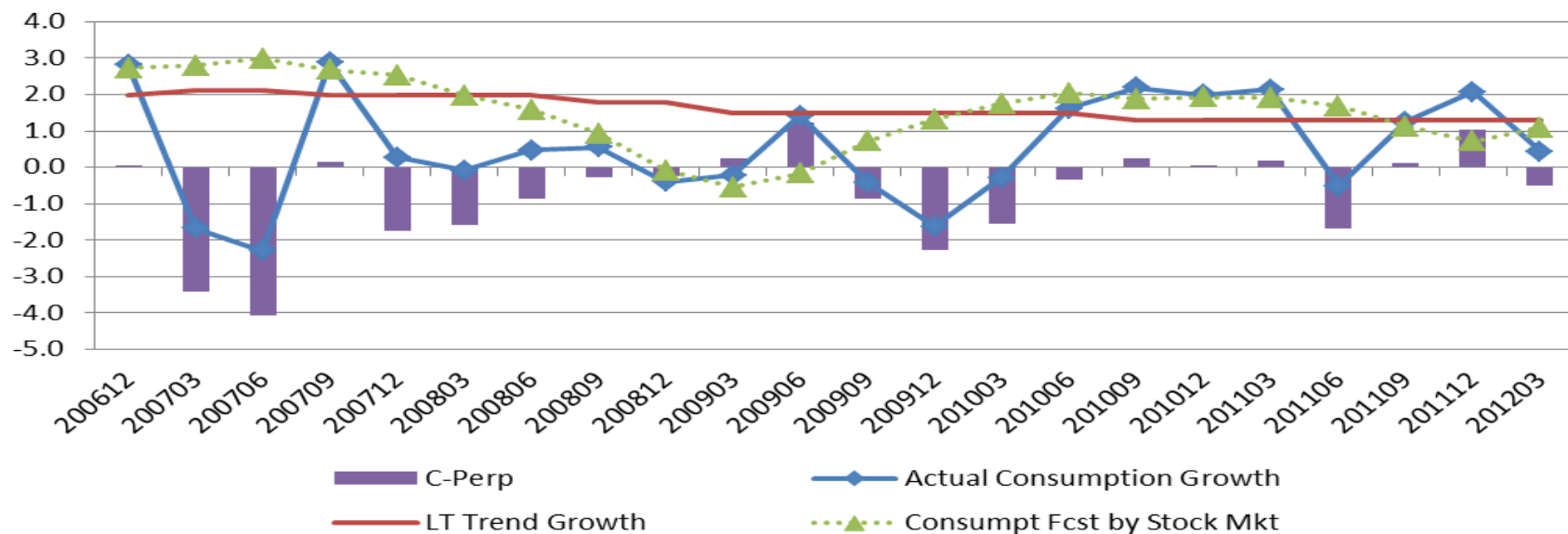
Canada: After Holding Back, Consumer Signal Improves to Neutral Consumption Growth vs. Stock Forecast



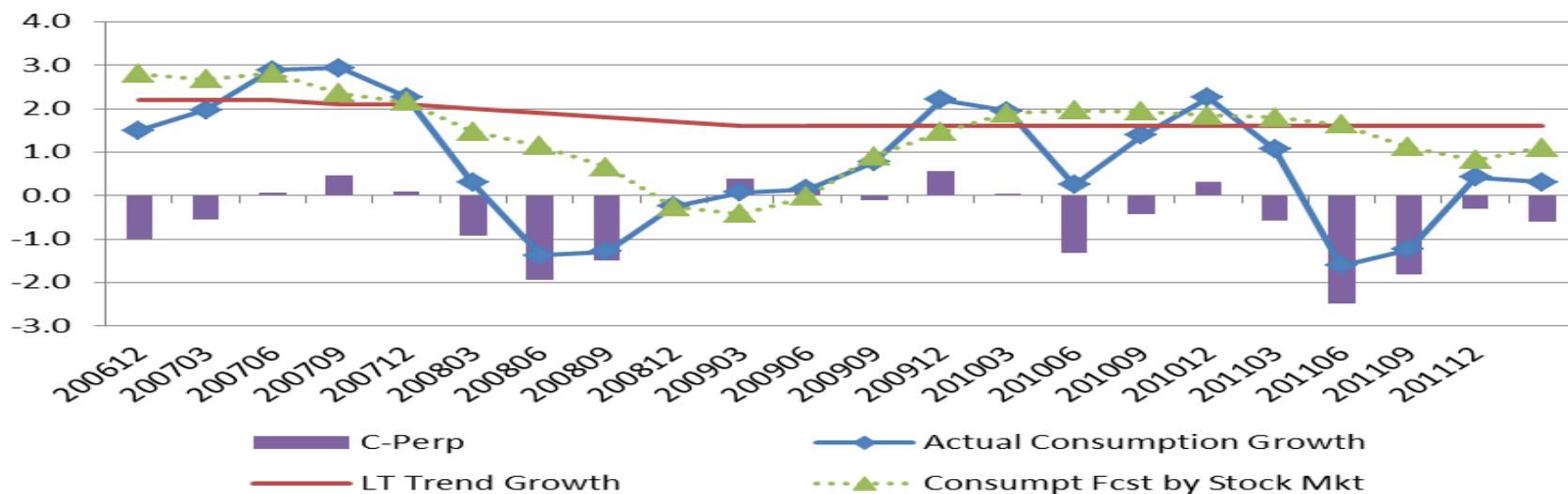
UK Consumers Still Negative, But Improving After Double Dip: Consumption Growth vs. Stock Forecast



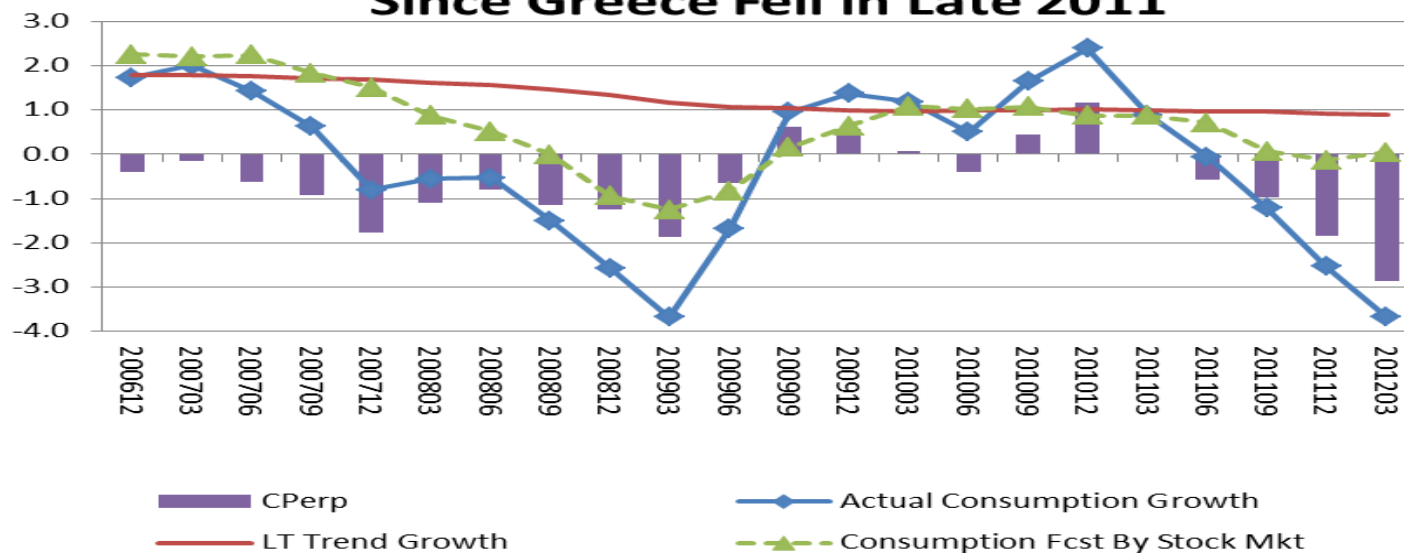
German Consumer Was Positive; Recently Dropped Back: Consumption Growth vs. Stock Forecast



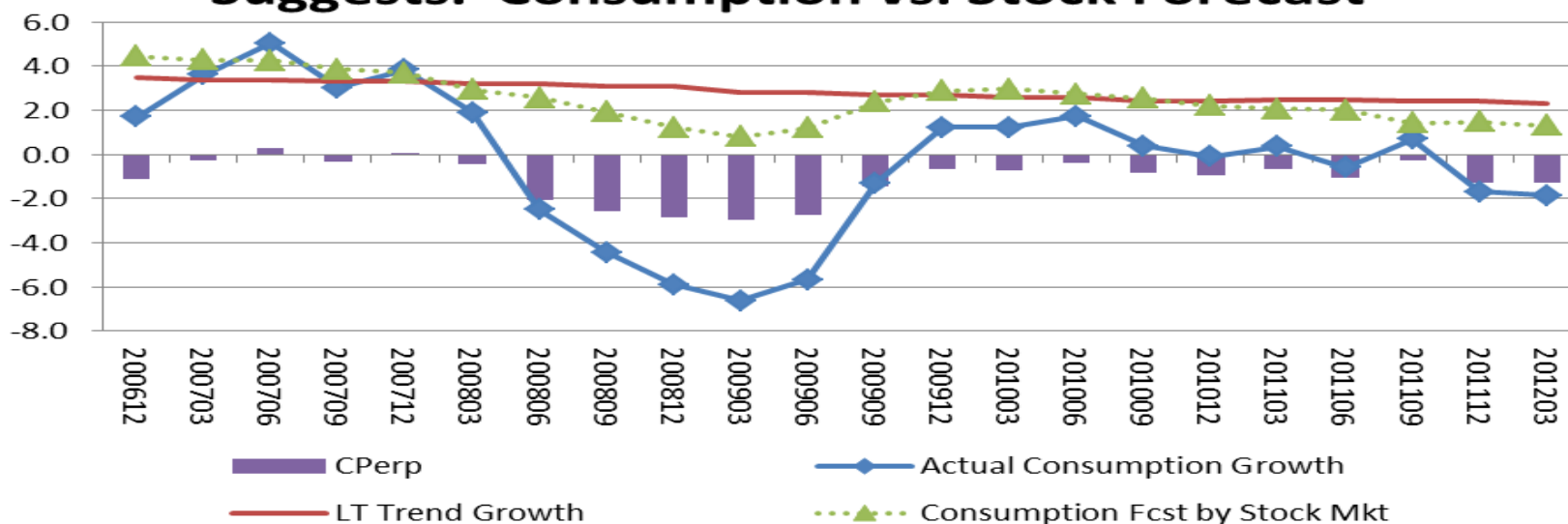
French Consumers Give Negative Signals Consumption Growth vs. Stock Forecast



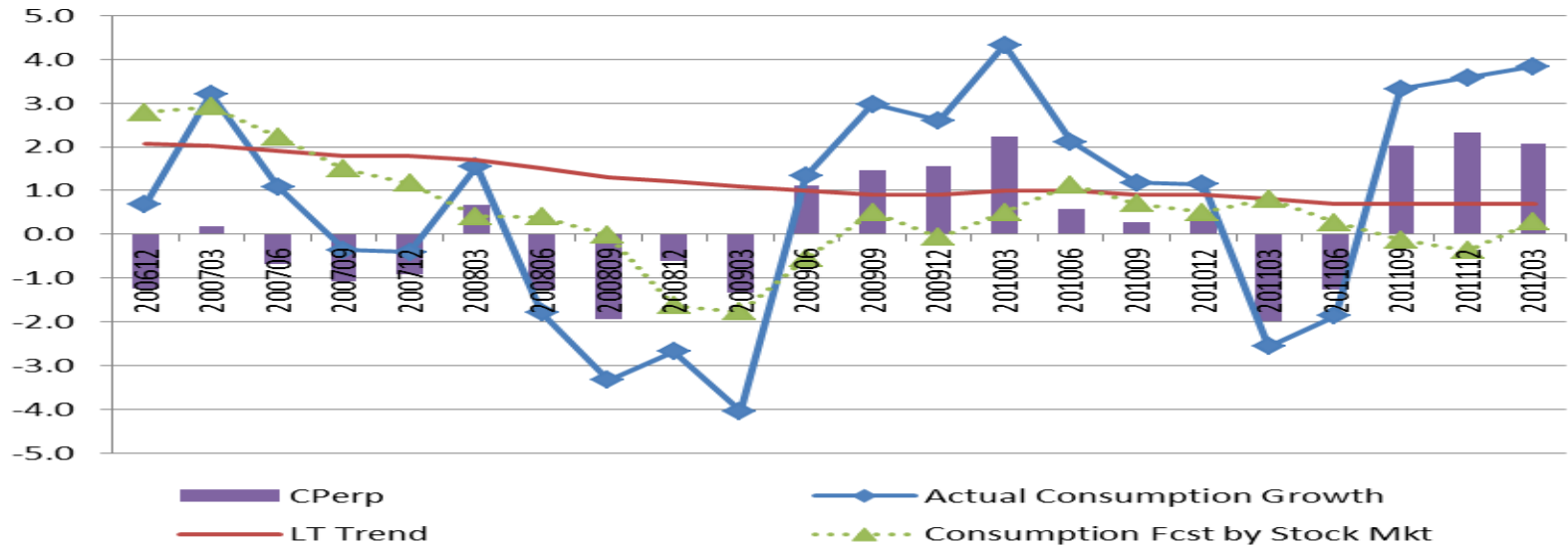
Italy's Consumers Sending Very Negative Signals Since Greece Fell in Late 2011



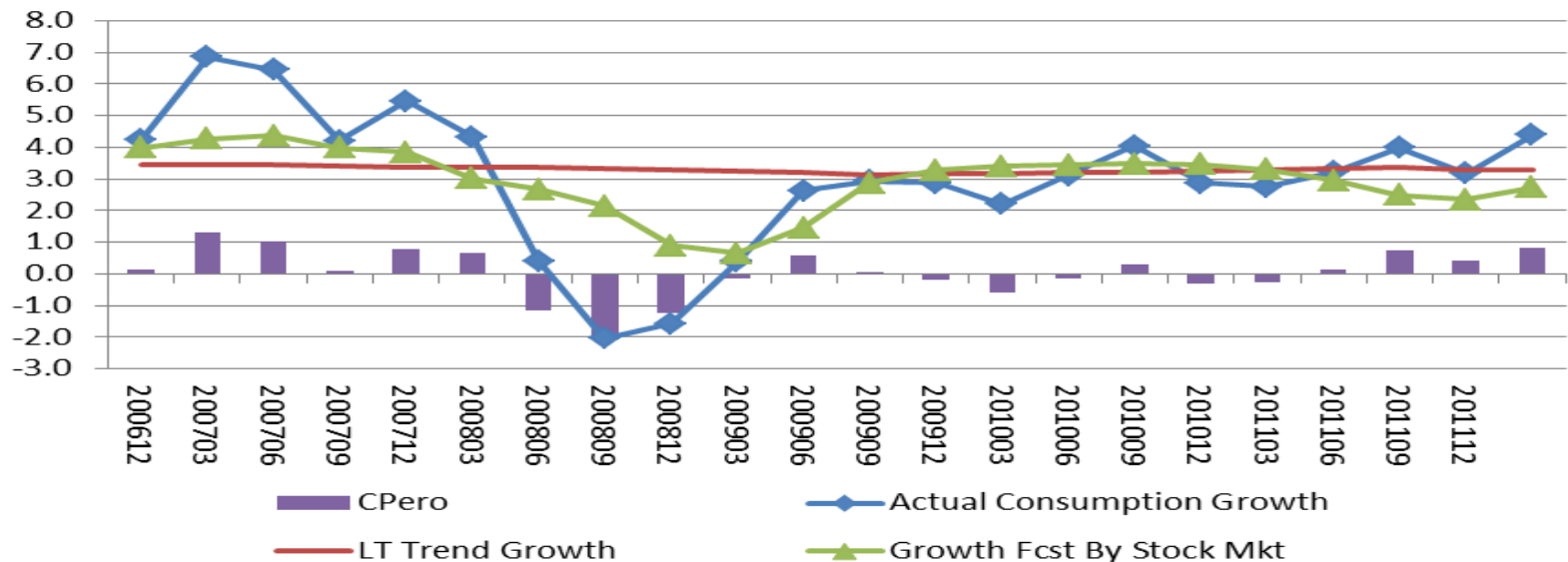
Spain's Consumers Still Consistently Negative, But Not As Extreme As 24% Unemployment Suggests. Consumption vs. Stock Forecast



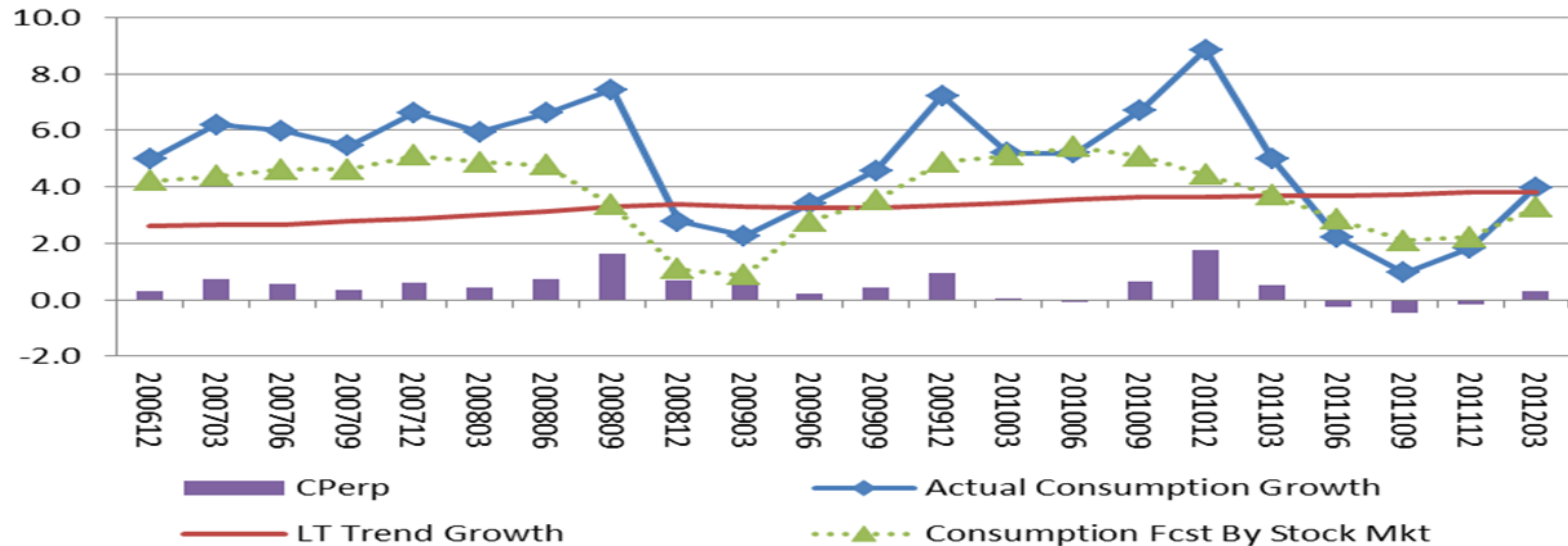
Japanese Consumer Signal Very Positive: Consumption Growth vs. Stock Forecast



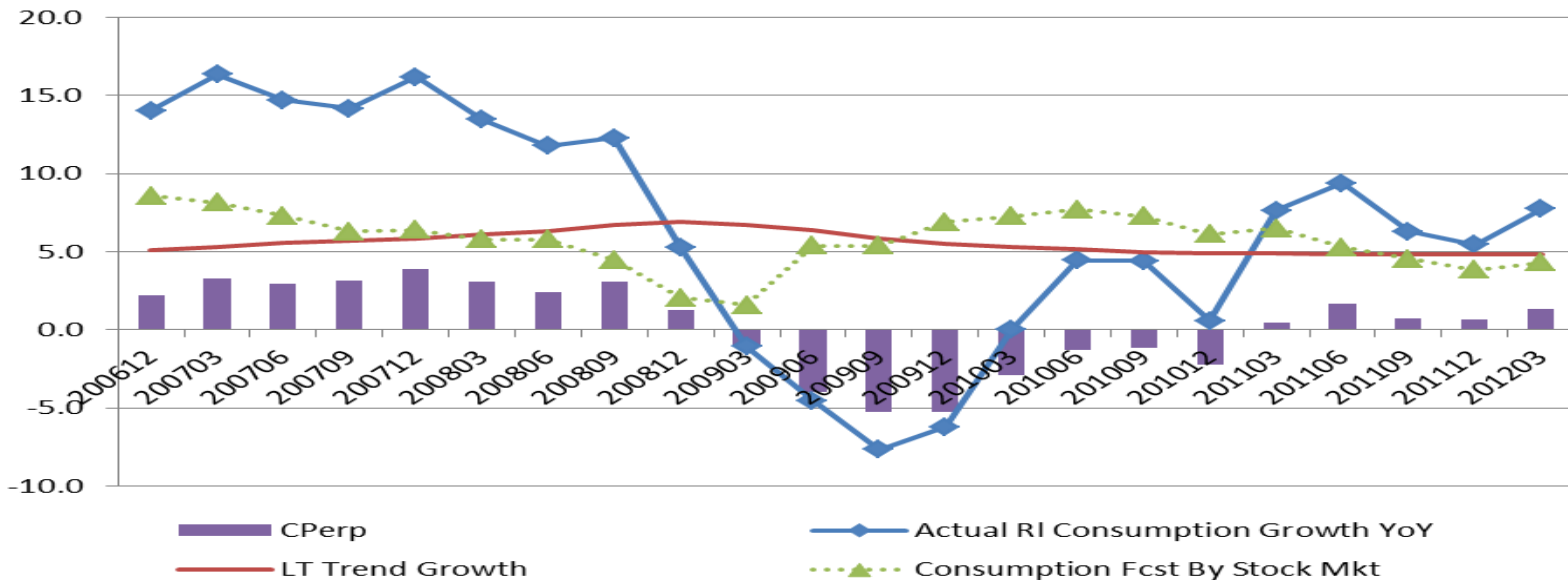
Australian Consumer Spending Looks Robust Consumption Growth vs. Stock Forecast



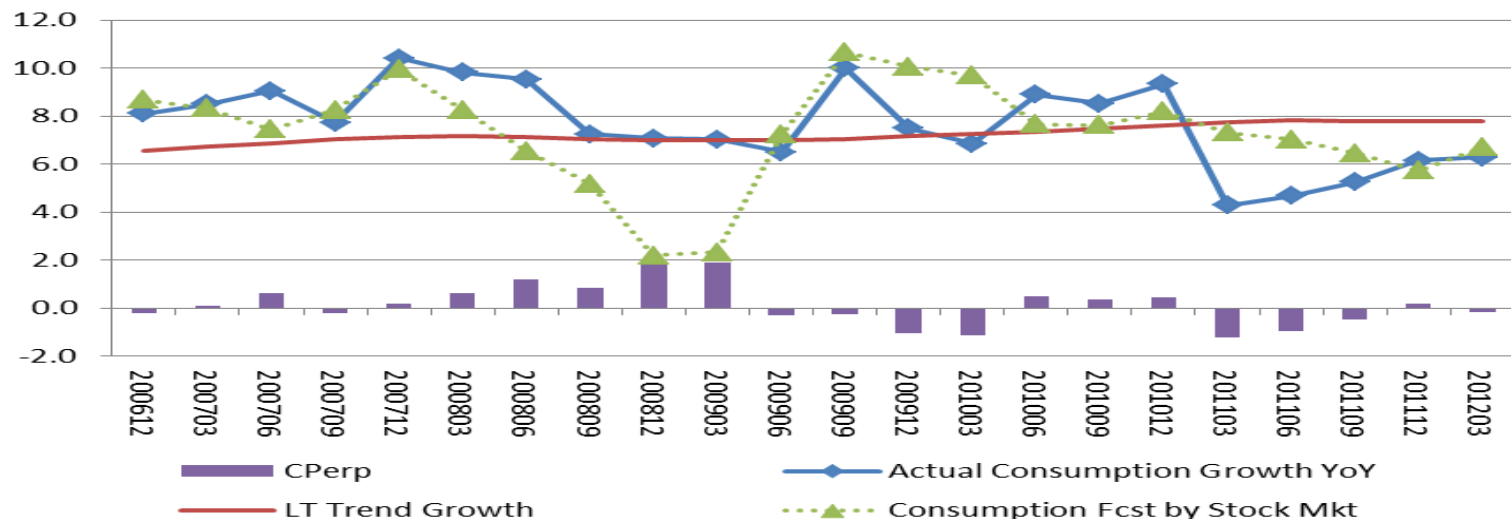
Brazil Real Consumption Growth Near Trend Adjusted for Stock Market Returns



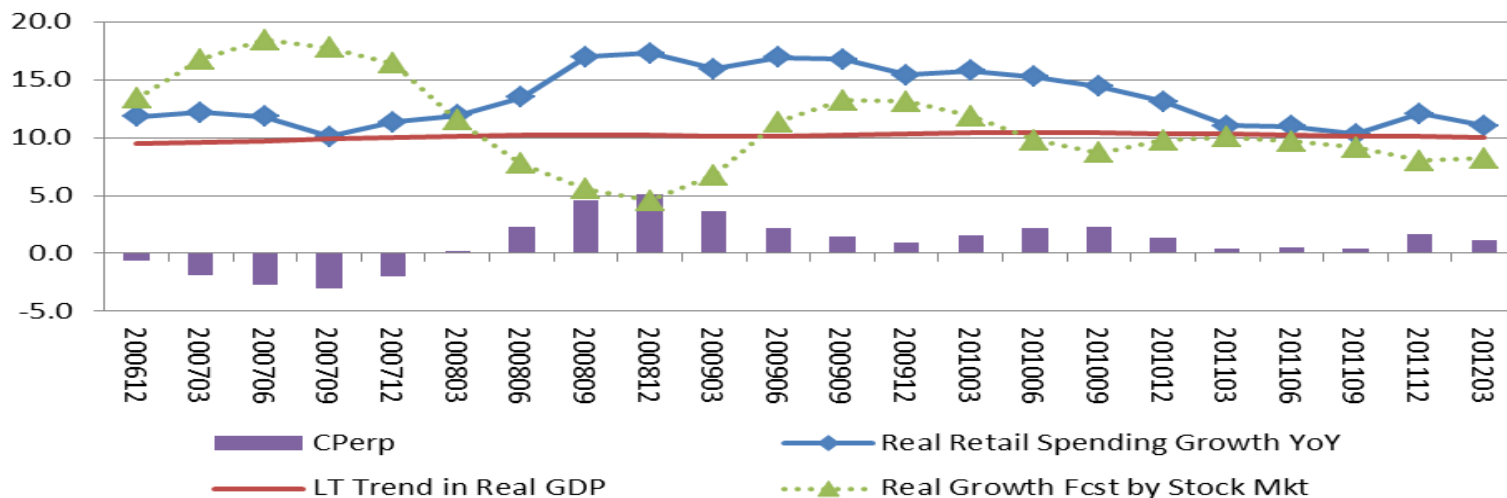
Russian Consumers Sensitive to Oil Price More Than Stock Market? Strong Consumption Now



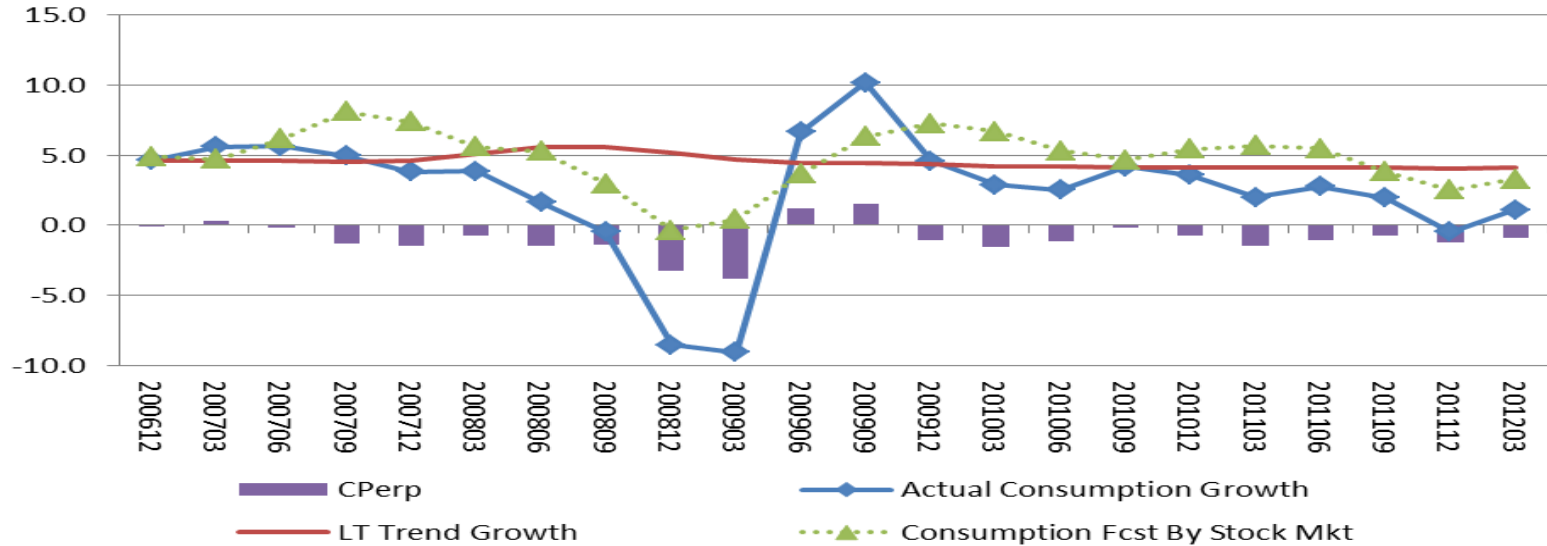
India Real Consumer Spending Growth After Holding Back, Now As Expected vs Stock Market Forecast



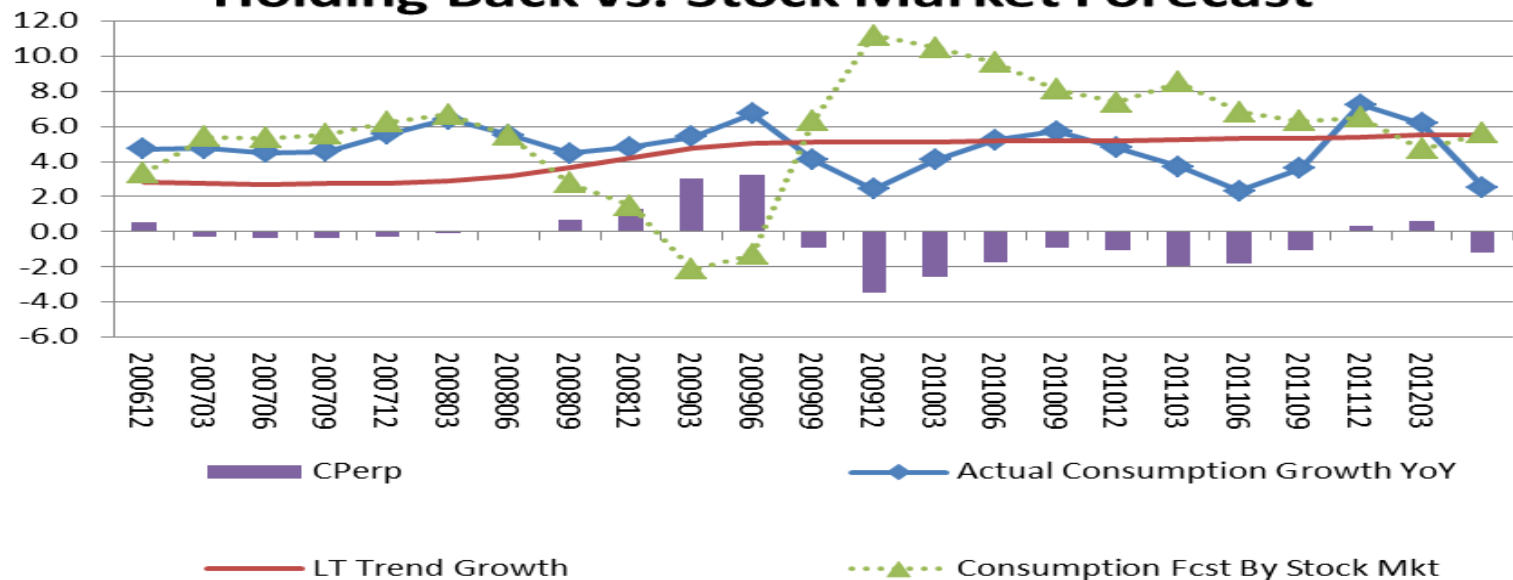
China Real Retail Sales Growth Moderates, But Still Very Fast Consistently Positive Consumer Signal vs Stocks



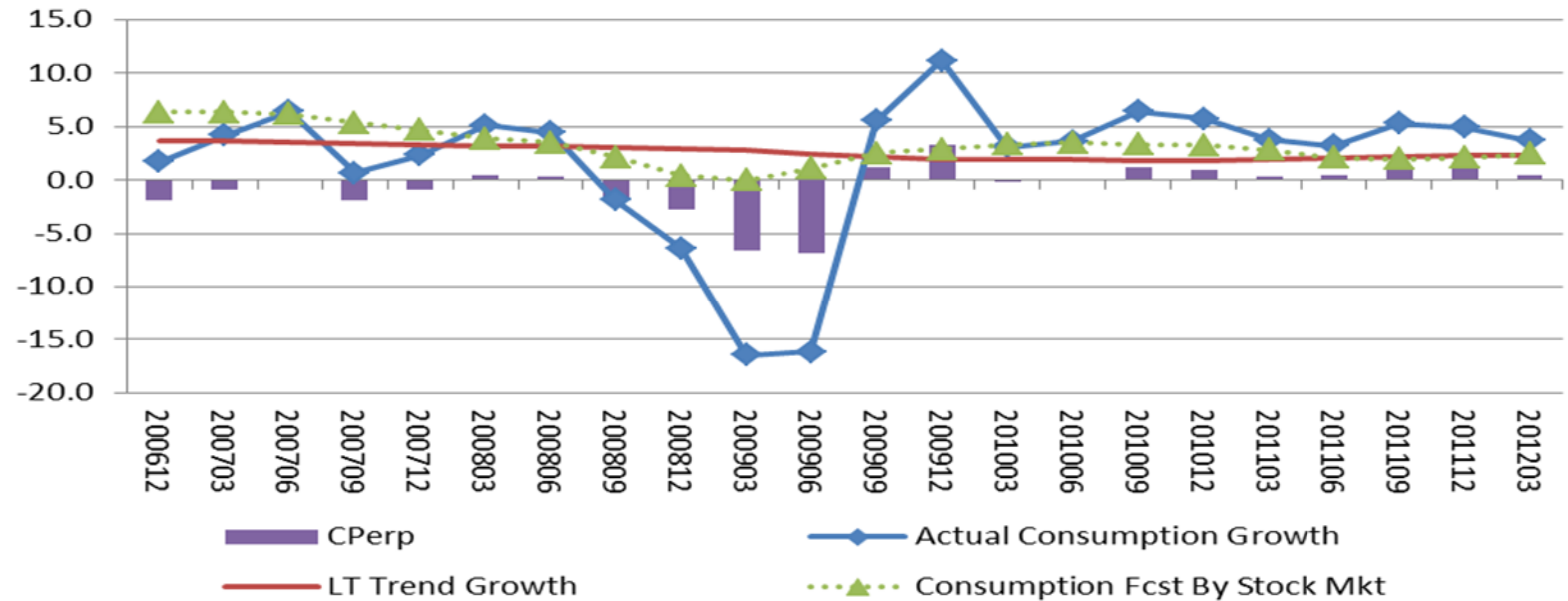
Korean Consumers Are Holding Back. Consumption Growth vs. Stock Market Forecast



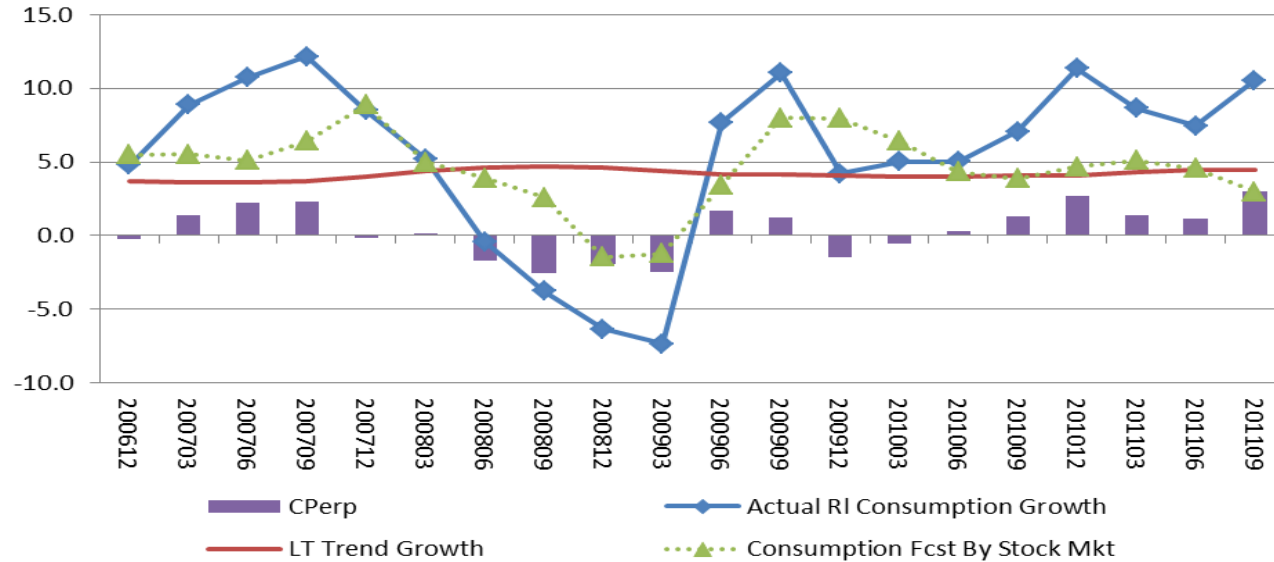
Indonesia Real Consumer Spending Growth Holding Back vs. Stock Market Forecast



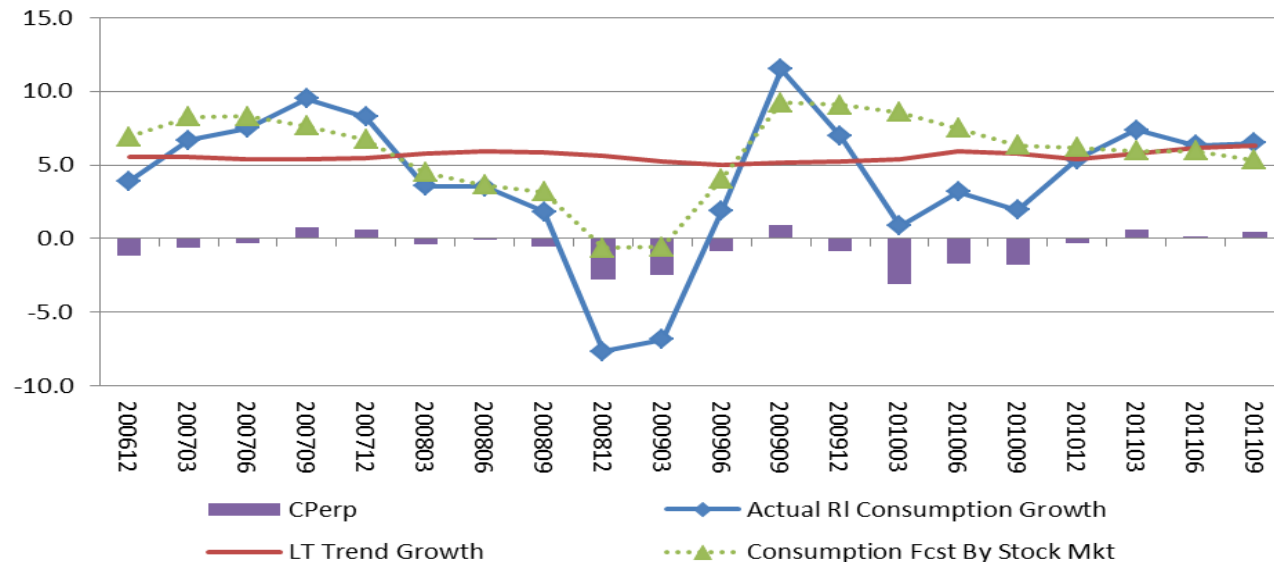
Mexico Real Consumption Growth Signal Positive Since Mid-2009



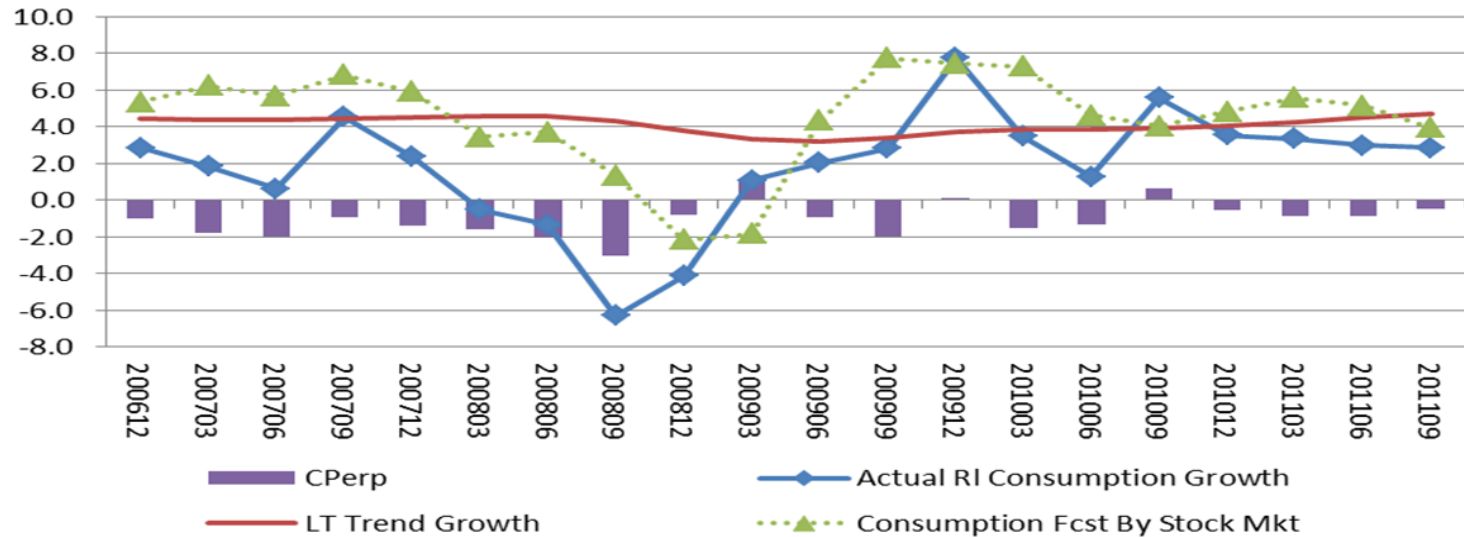
Hong Kong Consumer Spending Growth Very Strong in 2010-2011 vs. Stock Forecast



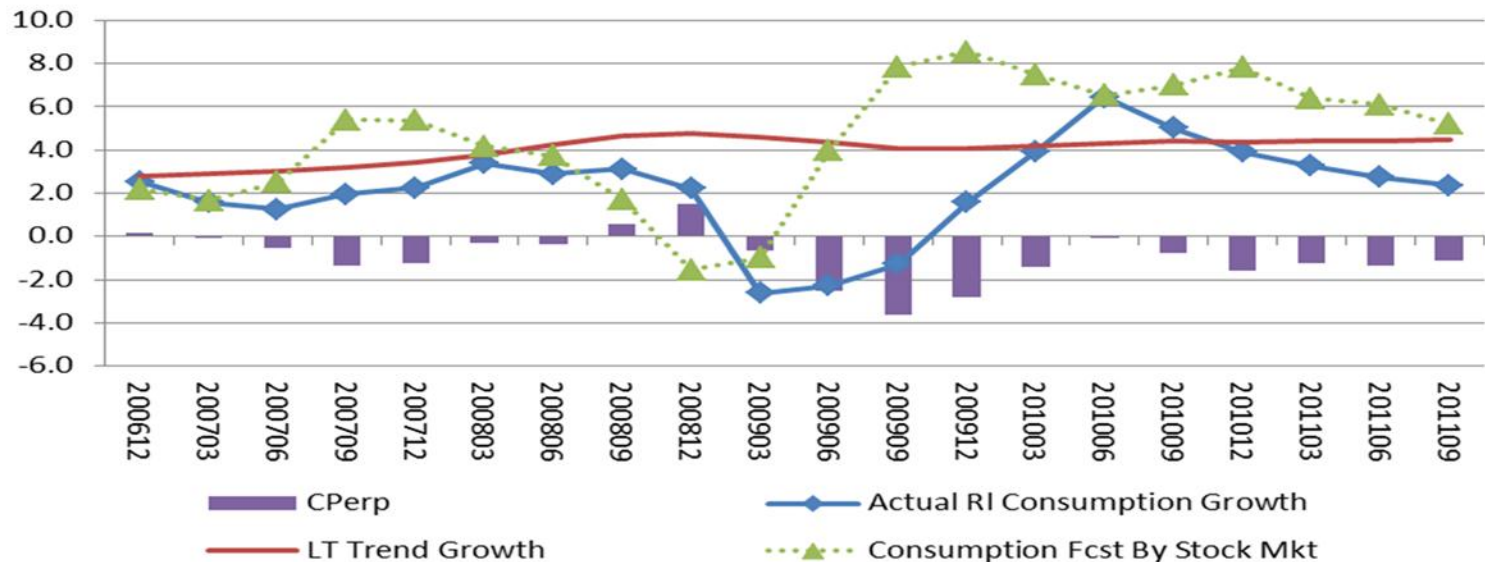
Singapore Consumer Spending Strengthened in 2011. Consumption Growth vs. Stock Forecast



Taiwan Consumers Hold Back. Consumption Growth vs. Stock Forecast



Thailand Consumers Held Back Before Flood. Real Consumption Growth vs. Stock Forecast



Big Three Developed Economies: USA, Japan, Germany

Time Series of Stocks, Bonds, Consumers Leading Indexes

	USA	USA	USA	USA	USA	Japan	Japan	Japan	Japan	Japan	Germany	Germany	Germany	Germany	Germany
	Stocks	Bonds	Consumer	SBCLI	MA2 SBCL	Stocks	Bonds	Consumer	SBCLI	MA2 SBCL	Stocks	Bonds	Consumer	SBCLI	MA2 SBCL
	2Z	Z	Z	Total	MA2 Total	2Z	Z	Z	Total	MA2 Total	2Z	Z	Z	Total	MA2 Total
200612	1	-2	0	-1	-1	-1	0	-1	-1	-1	1	-1	0	0	0
200703	1	-1	-1	-1	-1	1	0	0	1	-1	2	-1	-3	-2	-2
200706	1	-1	-1	-1	-1	1	0	-1	0	0	2	-1	-4	-3	-1
200709	0	-2	-1	-2	-1	-1	0	-1	-2	0	1	-1	0	0	-1
200712	0	-2	-1	-3	-2	-2	0	-1	-3	-1	0	-2	-2	-4	-3
200803	-2	-1	-1	-4	-3	-3	0	1	-3	-2	-2	-2	-2	-5	-3
200806	-2	0	-1	-4	-3	-2	0	-1	-3	-3	-3	-2	-1	-5	-4
200809	-2	0	-2	-4	-4	-1	0	-2	-3	-3	-2	-2	0	-4	-5
200812	-7	-1	-2	-9	-6	-6	0	-1	-6	-5	-5	-2	0	-7	-6
200903	-7	0	-1	-7	-6	-6	0	-1	-7	-5	-5	0	0	-5	-5
200906	0	1	-1	0	-5	0	0	1	1	-3	-1	1	1	1	-3
200909	5	2	-1	5	-1	3	0	1	4	-1	3	1	-1	3	-1
200912	4	2	-1	5	2	0	0	2	2	1	2	1	-2	1	1
201003	1	2	-1	2	4	0	0	2	2	3	1	1	-2	1	2
201006	0	2	0	1	3	0	0	1	1	1	0	1	0	1	1
201009	-1	1	0	0	1	-2	0	0	-1	0	0	0	0	1	1
201012	1	1	0	2	1	-1	0	0	-1	0	1	0	0	2	1
201103	3	2	-1	4	2	1	0	-2	-1	-1	2	1	0	3	2
201106	1	1	-1	1	1	-1	0	-1	-2	-1	0	0	-2	-1	0
201109	-2	1	-1	-2	1	-2	0	2	0	-1	-3	0	0	-3	0
201112	-3	0	0	-2	0	-2	0	2	0	-1	-3	-1	1	-3	-2
201203	0	0	0	1	-1	0	0	2	2	1	0	0	0	0	-2
201206	1	0	0	1	-1	0	0	2	2	1	1	0	0	0	-2
				Long Fcst	Short Fcst				Long Fcst	Short Fcst				Long Fcst	Short Fcst

Global Summary for 16 Trillion Dollar Economies

Stocks, Bonds, Consumers Leading Indicators (SBCLI)

Note: For developing countries, just stocks and consumers indicators are used, no bonds. Italy and Spain use Germany slope.

	USA	Canada	Mexico	Brazil	Germany	France	UK	Italy	Spain	Russia	Japan	Australia	S. Korea	China	India	Indonesia
200612	-1	-1	0	1	0	-1	-2	-1	0	3	-1	0	0	2	1	1
200703	-1	0	2	2	-2	0	-1	0	1	4	1	3	1	5	2	2
200706	-1	1	2	2	-3	1	-1	-1	0	3	0	2	1	6	1	1
200709	-2	1	-1	2	0	-1	-2	-3	-2	3	-2	0	1	3	0	2
200712	-3	1	-1	2	-4	-3	-3	-5	-2	4	-3	0	0	1	3	2
200803	-4	0	0	1	-5	-5	-5	-6	-4	2	-3	-2	-2	-1	2	1
200806	-4	-2	0	1	-5	-6	-6	-5	-6	1	-3	-5	-3	-2	-1	-1
200809	-4	-2	-3	0	-4	-5	-7	-6	-7	1	-3	-5	-3	0	-2	-1
200812	-9	-6	-7	-4	-7	-6	-11	-8	-9	-4	-6	-6	-7	1	-3	-2
200903	-7	-5	-10	-2	-5	-4	-8	-7	-7	-6	-7	-4	-6	2	-2	-1
200906	0	2	-6	3	1	1	-1	-1	-3	0	1	1	3	6	2	2
200909	5	5	5	4	3	4	3	5	4	-1	4	4	5	6	6	3
200912	5	5	6	4	1	5	5	4	4	-3	2	3	0	3	1	0
201003	2	4	1	2	1	3	4	2	0	-1	2	1	-1	1	-1	-1
201006	1	1	0	-1	1	-1	1	-1	-2	-1	1	0	-1	1	0	0
201009	0	-1	1	0	1	-1	0	-1	-2	-2	-1	-1	0	0	1	0
201012	2	1	2	2	2	1	1	1	-1	-2	-1	0	0	1	1	0
201103	4	2	1	0	3	2	1	2	0	2	-1	0	0	1	-2	-1
201106	1	0	0	-1	-1	-1	-1	0	-1	2	-2	0	-1	0	-2	-1
201109	-2	-2	0	-2	-3	-4	-4	-5	-3	-1	0	-1	-2	-1	-2	1
201112	-2	-2	1	-2	-3	-3	-3	-6	-5	-1	0	-2	-3	0	-2	0
201203	1	-1	1	1	0	0	0	-4	-2	1	2	0	-1	0	-1	-1
201206	1	-1	1	0	0	-1	-1	-5	-4	1	2	0	-1	0	-1	-1

Conclusions

- Real consumer spending growth, with the stock market effect removed, adds to the ability of real stock market returns and the term structure slope to forecast growth of real GDP, industrial production, employment growth and unemployment rate changes.
- Growth for the coming year looks weak globally. Pluses: Japan's consumers are strong and several emerging markets still have decent growth. USA and Germany's consumers, while not as strong as recently, have underlying strength. Minuses are very sharp contractions in Spain and Italy, as well as the potential of the USA "fiscal cliff" to disrupt consumption spending and the stock market.

Douglas T. Breeden

Douglas T. Breeden is the William W. Priest Professor of Finance and former Dean of Duke University's Fuqua School of Business. He is also the Fischer Black Visiting Professor of Financial Economics at the Sloan School of Management at the Massachusetts Institute of Technology for 2011- 2013 . He has served on faculties at the University of Chicago, Stanford, and North Carolina, where he was the Dalton McMichael Professor of Finance.



Breeden has published well-cited research on the consumption capital asset pricing model (CCAPM), as well as on mortgage securities and hedging. His 1979 article on intertemporal portfolio theory and the CCAPM was one of the Top 10 most-cited articles in the Journal of Financial Economics in two decades. He was the Distinguished Speaker at the Western Finance Association Annual Meeting in 2005. His current research is on "Consumption as A Leading Indicator."

He was the Founding Editor and Editor for 10 years of The Journal of Fixed Income, and served as Associate Editor of The Journal of Finance, The Review of Financial Studies, The Journal of Financial and Quantitative Analysis, The Journal of Financial Economics and The Journal of Money, Credit and Banking. In 1988, he was elected to the Board of Directors of the American Finance Association and in 2010 was elected a lifetime Fellow.

As Dean (2001-2007) at Duke's Fuqua School of Business, Breeden led a large growth in faculty, distinguished professors, and the Ph.D. program, as well as construction of a new library and classroom building, now named Breeden Hall. As a teacher, Breeden won an "Outstanding Teacher" award at MIT Sloan in 2012, and was a runner-up at Duke in 2011.

Breeden holds a Ph.D. in Finance from Stanford and an S.B. from M.I.T. He served on the President's Council for MIT and on the MIT Corporation's Visiting Committee for the Sloan School of Management. He was a member of the Stanford Business School Advisory Council. He served on the Board of Goethe Business School in Frankfurt, Germany and was an Honorary Professor at the Chinese Academy of Sciences in Beijing.

Breeden is Co-founder, was Chairman from 1982-2005, and now is Senior Research Consultant of Smith Breeden Associates, a money management firm. He is Chairman of Community First Financial Group, the holding company for Harrington Bank of North Carolina. He is on the Board of Trustees of Commonfund and of the Financial Management Association. He is active in philanthropic endeavours and community development in his birthplace in Southern Indiana.