CalPERS Chief Investment Officer Total Fund Update

Appendix A: Market and Economic Update

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Investment Committee

May 2013

CalPERS Investment Office
Asset Allocation

Summary

US recovery remains slow but underlying fundamentals are solid

- Recent economic data has projected another modest easing in the US economy in the spring, similar to the past two years. Real GDP growth has averaged only 2.1% since the recession ended three and a half years ago and is unlikely to improve upon that in the near term.
- Government cutbacks and still-elevated policy uncertainty have delayed a take-off in growth despite underlying fundamentals that remain positive and encouraging.
- Private sector demand is moving forward. Strong points include multi-family starts, housing completions, job openings, utility production, and small business and consumer credit.
- Modest and stable growth with low and well behaved inflation is an environment that remains generally positive for asset markets, especially in light of ongoing balance sheet expansion and liquidity creation by the Federal Reserve (Fed) and Bank of Japan.
- International indicators predict that the world economy will grow at a similar pace to last year’s moderate 3.25%. China’s economy slowed in the first quarter of 2013 but partially due to measures to stem spending on luxury goods and property speculation.
- A number of risks remain and growth in the European periphery remains negative and it is possible that later this year the Fed starts to signal a tapering of its quantitative easing (QE) program.

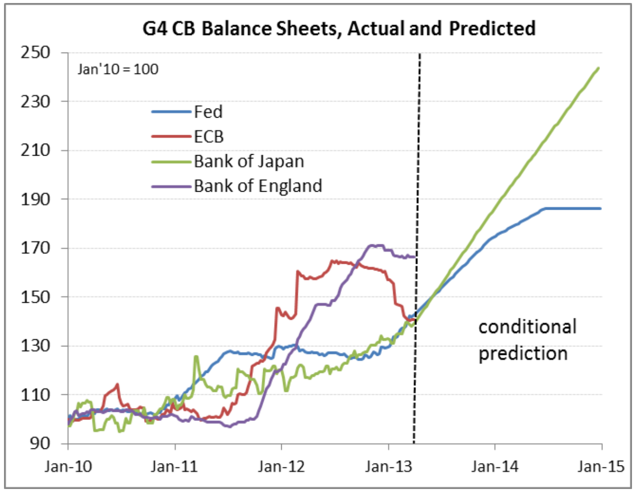
What is trending

- US data is showing the impacts of this year's budget cutbacks and perhaps some bad weather in March.
- New positives and negatives are about even right now.
- Global impetus to the US economy is also mixed. China's economy slowed in the first quarter of the year and the recent outbreak of avian flu clouds prospects for recovery in ensuing quarters. European periphery economies are still contracting. On the other hand, Japan's massive liquidity creation program will support asset markets.

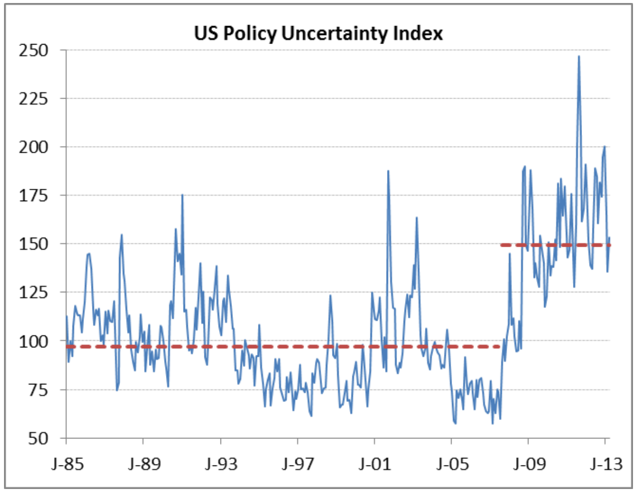
Positive	Same Trend	Negative
- Private demand *Growing at a 3 1/2% pace in 4Q12 and 1Q13* **- Credit conditions** *Strength in consumer and small business credit* **- Job openings** *Job openings (+11% YoY) are growing much faster than employment* **- Housing starts and completions** *Further surge in multi starts, and now completions are starting to catch up* **- Japanese QQE** *Massive prospective liquidity injection by Bank of Japan supports global mkts*	**- CPI inflation … steady and low** *Steady at just below 2% as energy and food prices and rents stabilize.* **- Global business conditions** *Global PMIs and Leading Indices still show modest but firming growth*	**- Jobs market** *March jobs growth only +88K and has leveled out in the household survey* **- Retail spending** *Surprisingly fell in March after solid start to the year* **- Consumer sentiment** *Both the Conference Board and Michigan readings have deteriorated* **- Manufacturing** *ISM dipped from 54.0 to 51.3 and 1Q13 manufacturing output subdued* **- Chinese growth slows** *Measures to slow property and luxury spending, combined with softer exports*

Chart Highlights

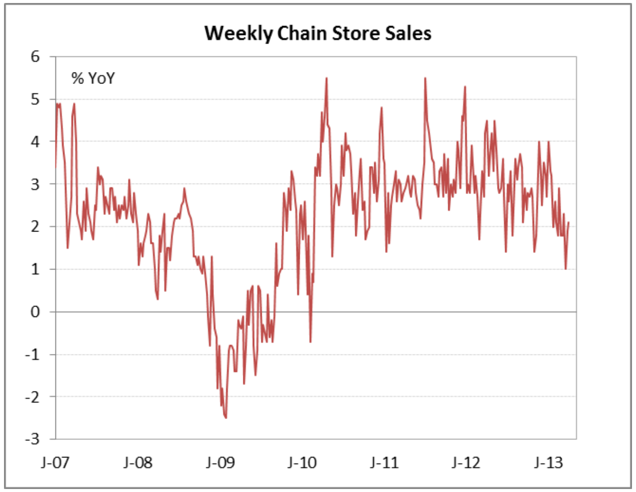
- World gets another liquidity burst.



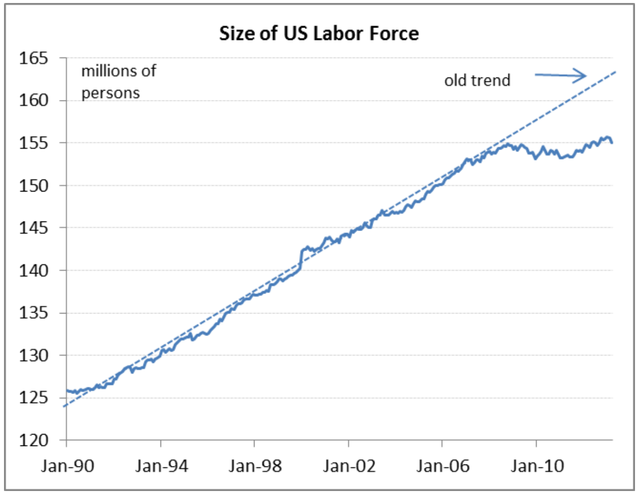
- Policy clarity in the US would help.



- Spending has softened into spring.



- Labor force growth remains weak.



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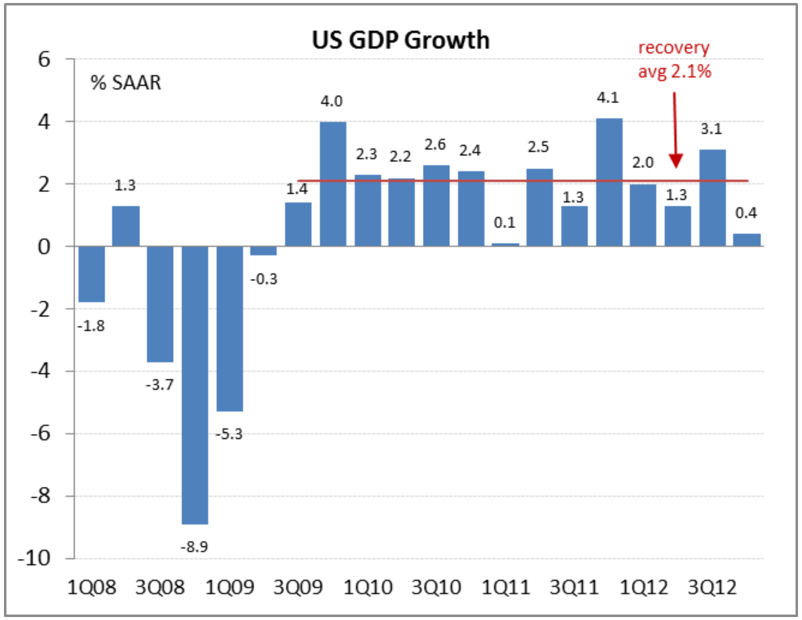
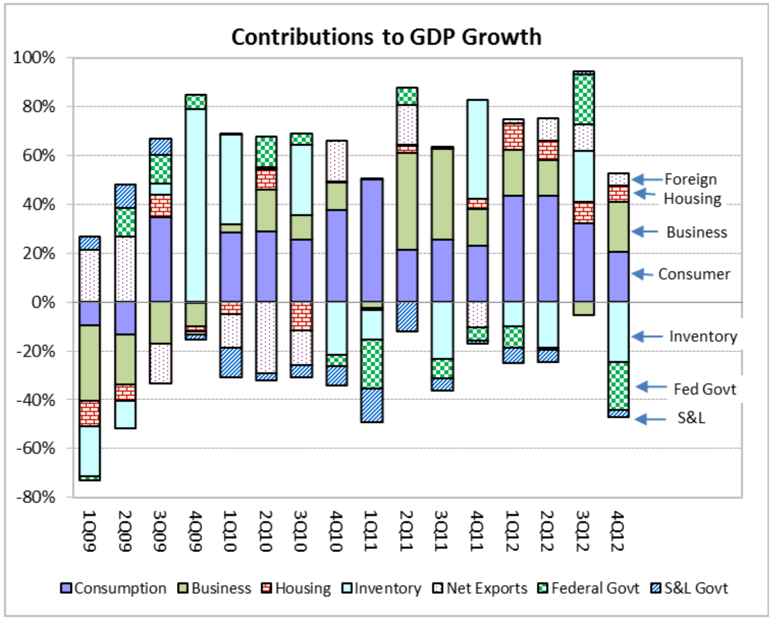
i. US Economy in Aggregate

US recovery remains tepid

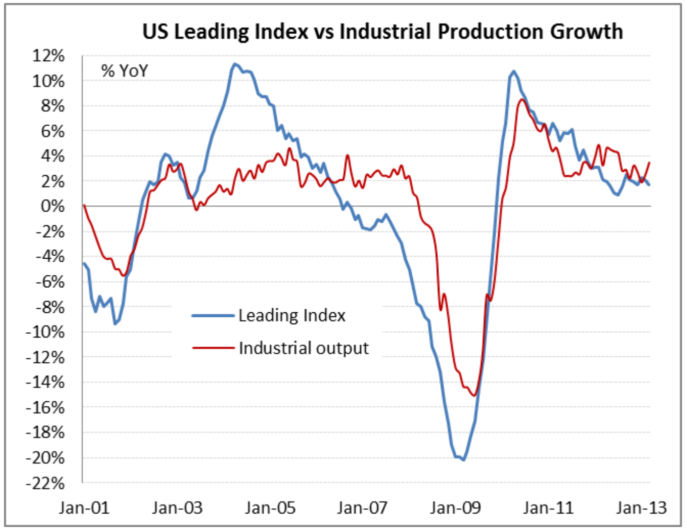
- The final reading for 4Q 2012 GDP growth was revised up marginally to +0.4%.
- In the three and a half years since the recession ended, growth averaged only 2.1%, well below recovery rates from the 2001 and 1991 recessions (2.9% and 3.3%)
- Private final demand growth was strong at 3.6% but the headline GDP result was suppressed by inventory drawdown and government spending.

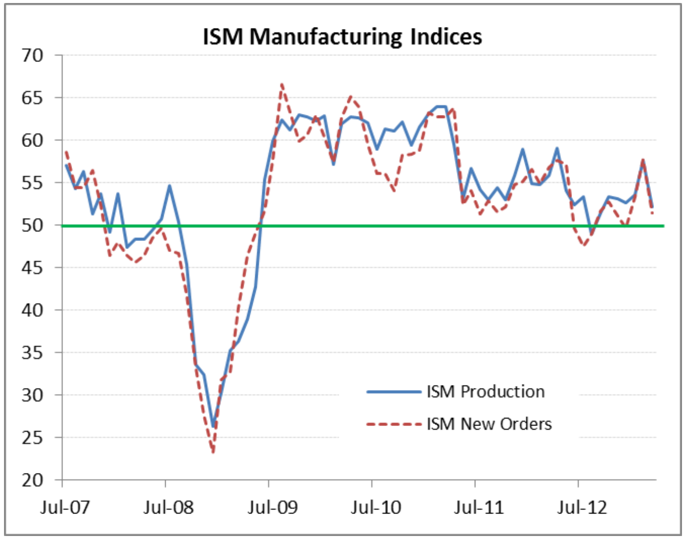


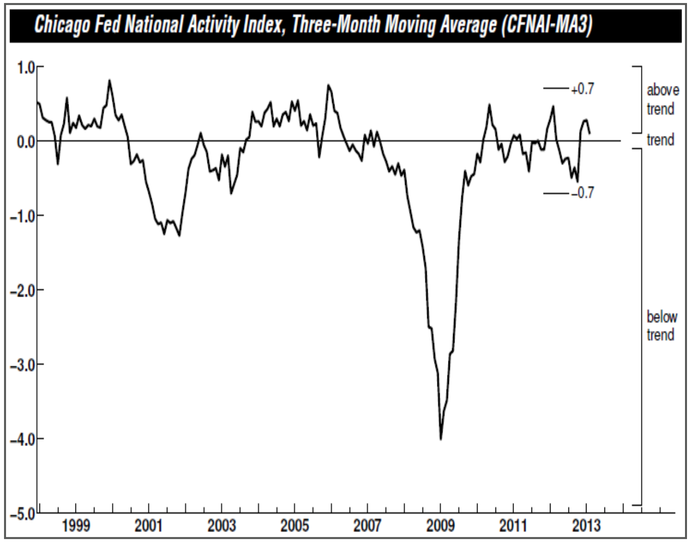


Industrial indicators soften again into Spring

- Yearly growth rate in the US leading index and industrial production (IP) remain subdued at around 2%.
- Much of the recent growth in IP has been in utility output, volatile and weather related.
- The manufacturing ISM has fallen back again.
- On the other hand, the Chicago Fed National Activity Index remains comfortably above zero and suggests that “growth in national economic activity was somewhat above its historical trend.”







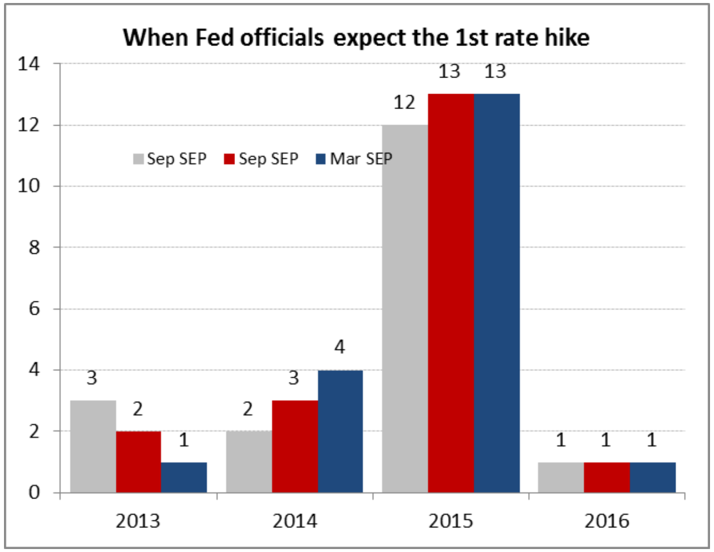
Fed stays accommodative

Highlights of the March 20 statement

- In its March 20 statement the Federal Open Market Committee (FOMC) retained its $85bn per month asset purchase program and was more encouraged by developments in the labor and housing markets, but on the other hand noted that "fiscal policy has become somewhat more restrictive."
- In its quarterly Summary of Economic Projections, the Fed revised down slightly its expectations for GDP growth and inflation, in large part because of this year's tax increases and budget cuts.

FOMC: Summary of Economic Projections, March 2013

	2012	2013	2014	2015	Longrun
Change in real GDP					
Sep	1.7 to 2.0	2.5 to 3.0	3.0 to 3.8	3.0 to 3.8	2.3 to 2.5
Dec	1.7 to 1.8	2.3 to 3.0	3.0 to 3.5	3.0 to 3.7	2.3 to 2.5
Mar	1.6	2.3 to 2.8	2.9 to 3.4	2.9 to 3.7	2.3 to 2.5
Unemployment rate					
Sep	8.0 to 8.2	7.6 to 7.9	6.7 to 7.3	6.0 to 6.8	5.2 to 6.0
Dec	7.8 to 7.9	7.4 to 7.7	6.8 to 7.3	6.0 to 6.6	5.2 to 6.0
Mar	7.8	7.3 to 7.5	6.7 to 7.0	6.0 to 6.5	5.2 to 6.0
PCE* inflation					
Sep	1.7 to 1.8	1.6 to 2.0	1.6 to 2.0	1.8 to 2.0	2.0
Dec	1.6 to 1.7	1.3 to 2.0	1.5 to 2.0	1.7 to 2.0	2.0
Mar	1.6	1.3 to 1.7	1.5 to 2.0	1.7 to 2.0	2.0
Core PCE* inflation					
Sep	1.7 to 1.9	1.7 to 2.0	1.8 to 2.0	1.9 to 2.0	n.a
Dec	1.6 to 1.7	1.6 to 1.9	1.6 to 2.0	1.8 to 2.0	n.a
Mar	1.5	1.5 to 1.6	1.7 to 2.0	1.8 to 2.1	n.a

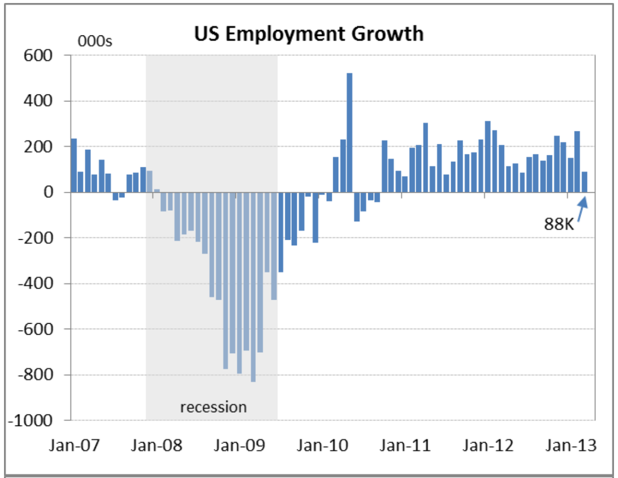


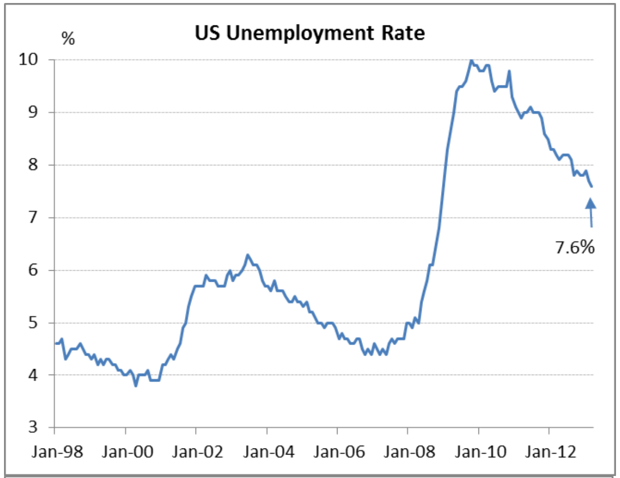
*Personal Consumption Expenditures (PCE)

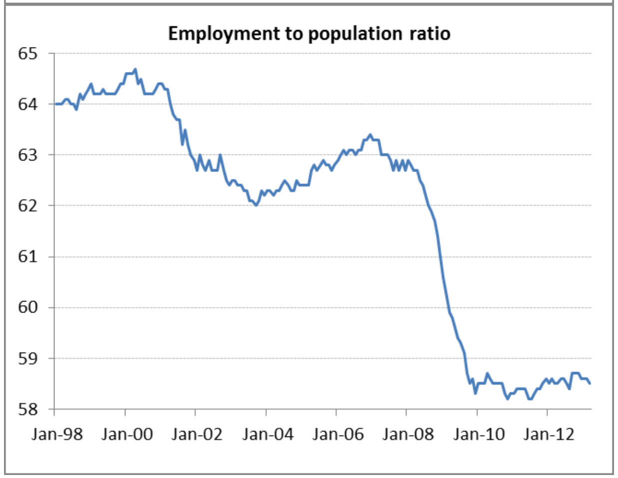
ii. US jobs market

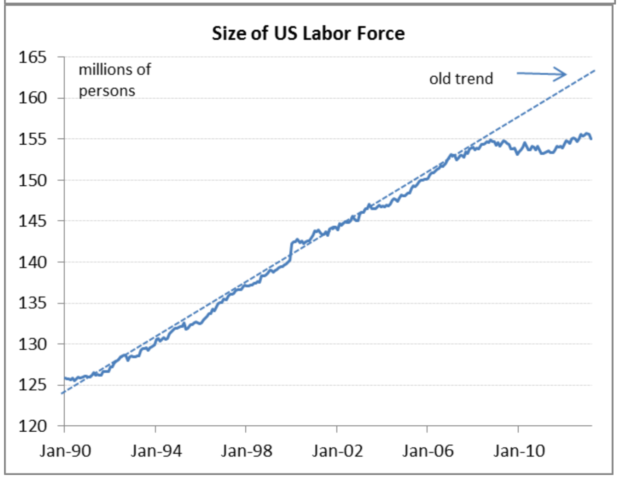
Employment report in detail

- US jobs growth slowed to 88K in March but with upward revisions to Jan-Feb the 1Q 2013 jobs growth average was a still respectable 168K per month, vs 183K per month in 2012 and 175K per month in 2011.
- The US unemployment rate fell from 7.74% to 7.57% largely because of another sharp drop in persons looking for work. The percentage of the population employed remains well below pre recession levels, largely because of a stagnation in # persons looking for work.



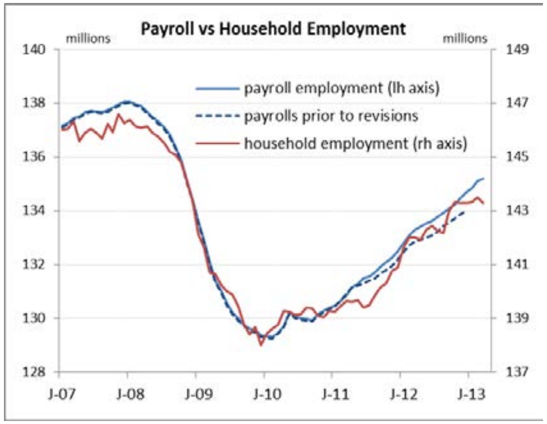




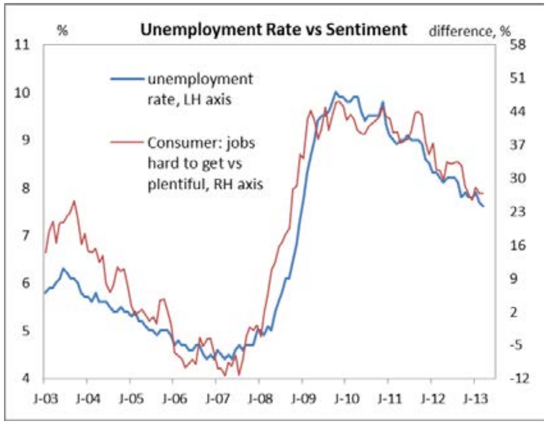


Employment report in detail

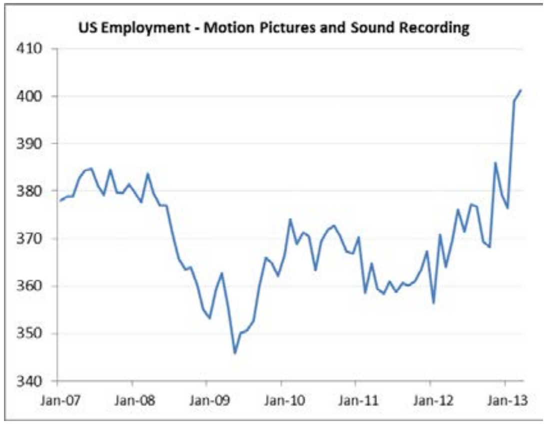
- Employment from the household survey has started to level off.



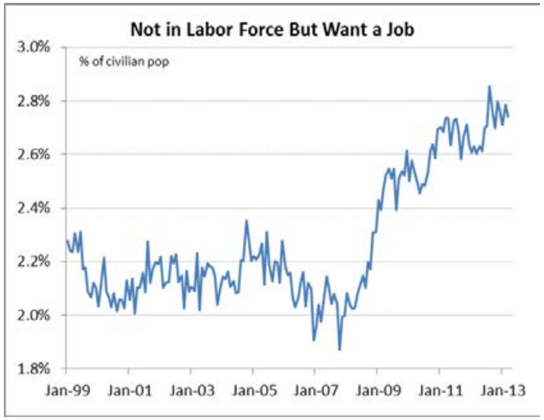
- Improvement in jobs mkt perception stalled in March



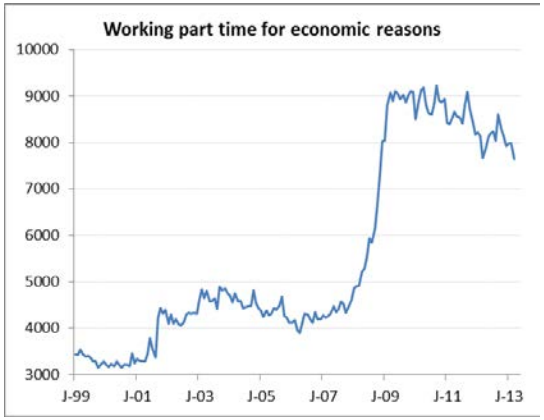
- Unexplained strength in entertainment related jobs.



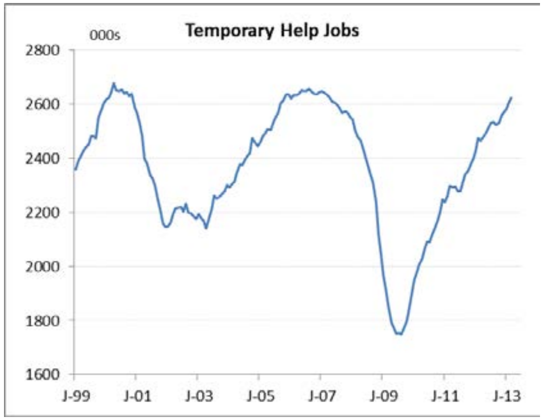
- This group is still ~7 mn but the subset of 'discouraged workers' has dropped.



- Less workers forced into part time

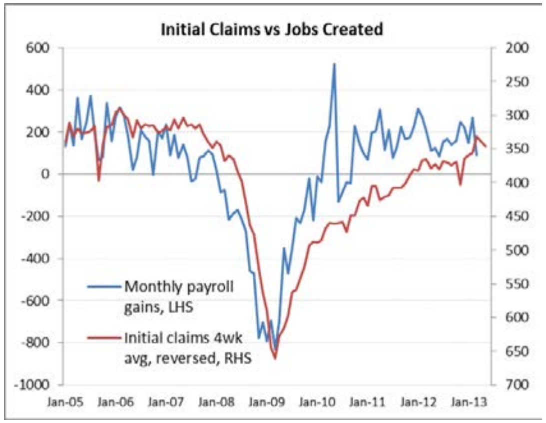


- Temporary help near past cycle highs

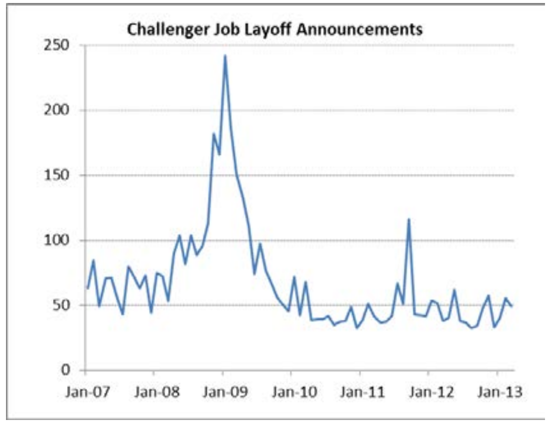


Employment report in detail

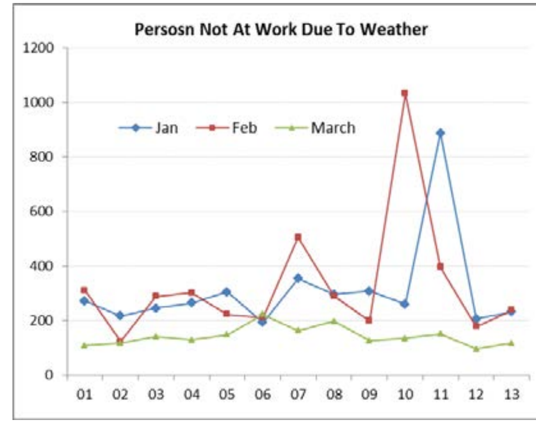
- Firing vs hiring



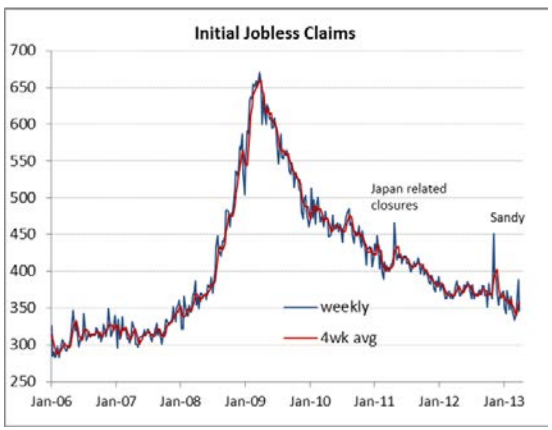
- Job layoff announcements steady



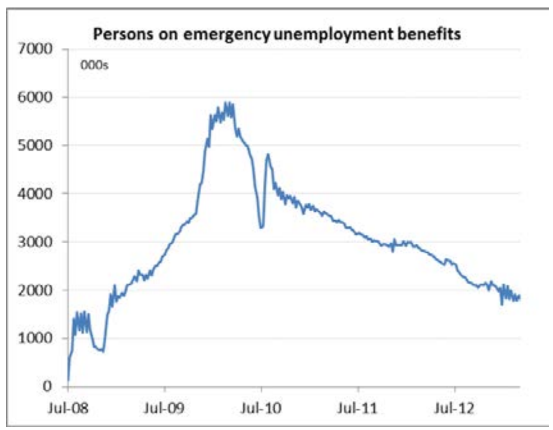
- Subdued weather effects this year



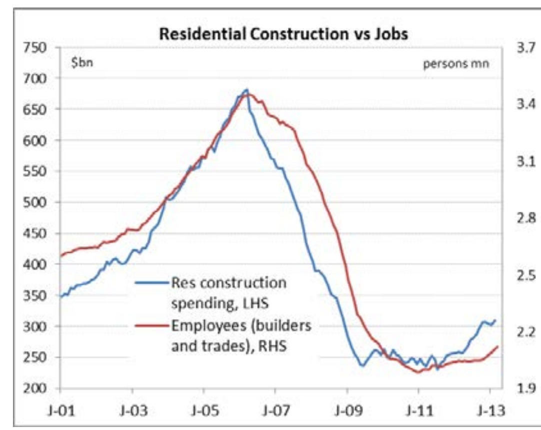
- Easter blip reverses



- Emergency benefits gradually receding



- Housing related trades jobs +5% YoY.



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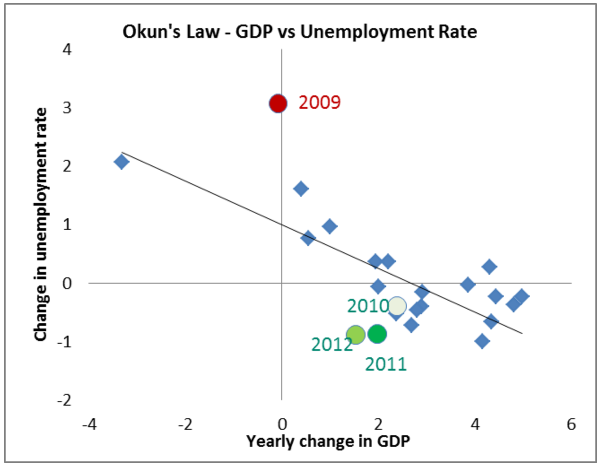
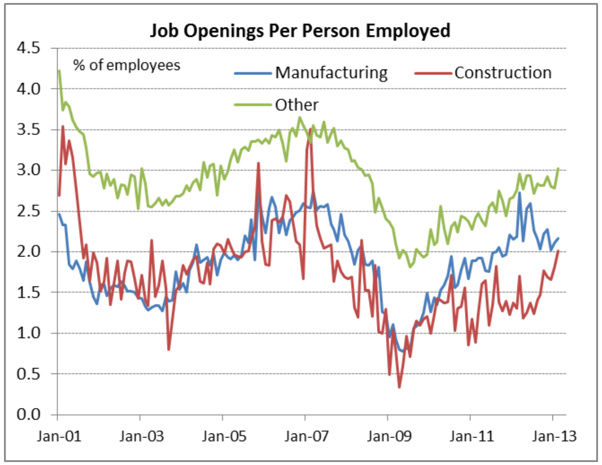
New relationships between jobs and economy

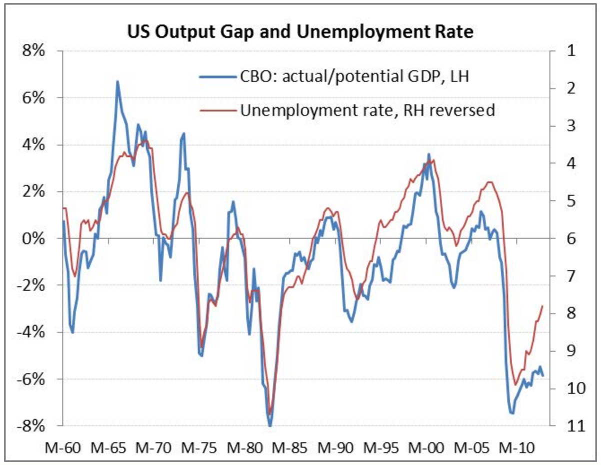
- Okun's Law: It now takes less GDP growth to produce a given drop in the unemployment rate.



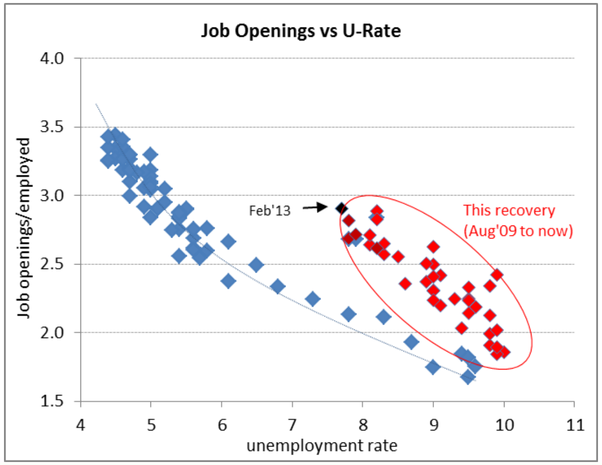
- Job openings per employee have largely recovered their recession slump



- Labor market suggests that there is less slack in the economy than implied by the level of GDP.

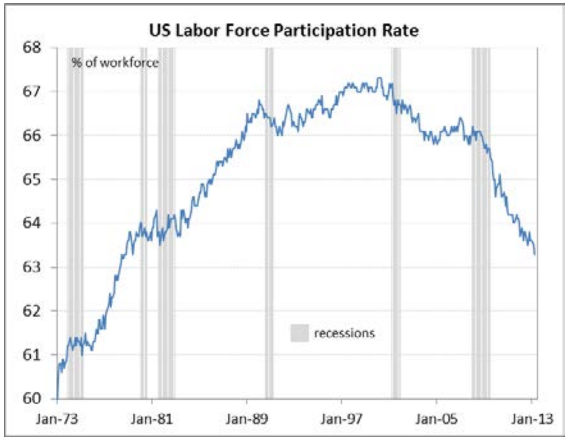


- Beveridge curve: However, the poorer tradeoff between openings and u-rate suggests a skills mismatch

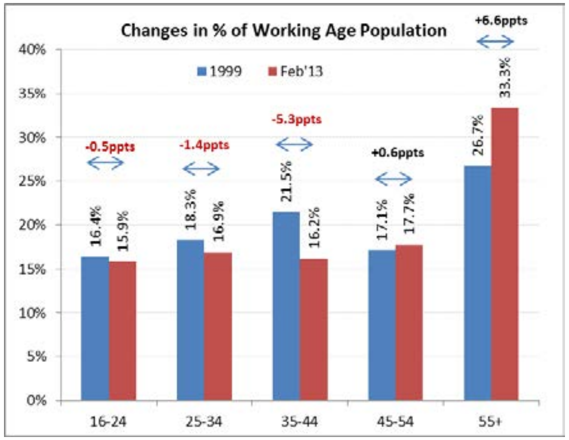


Labor force participation rate unlikely to rebound

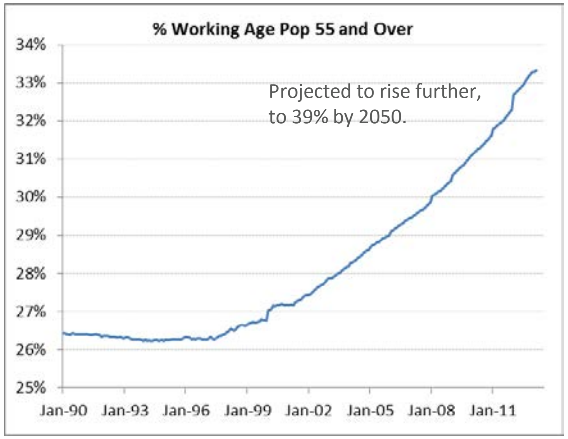
- Fall in participation steepened in 2008-09 recession but there is also structural element



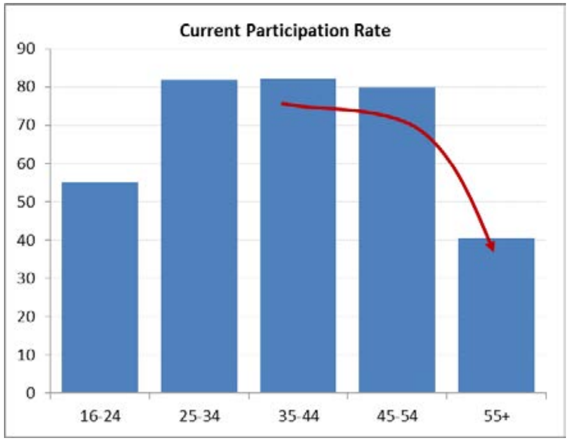
- Big shifts in composition of population



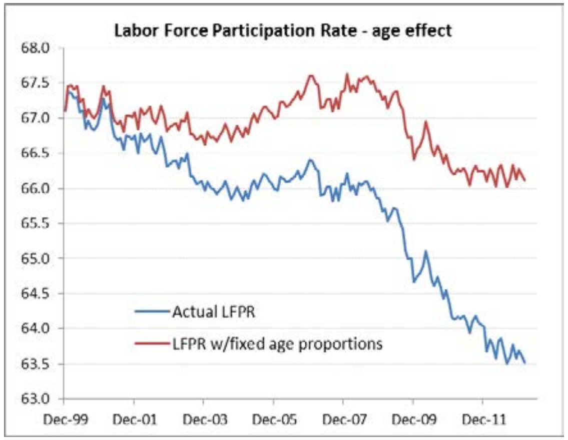
- Especially movement into the 55+ cohort



- Participation rate of 55+ cohort is lower



- About two thirds of the drop in participation since 1999 is the aging of the population.

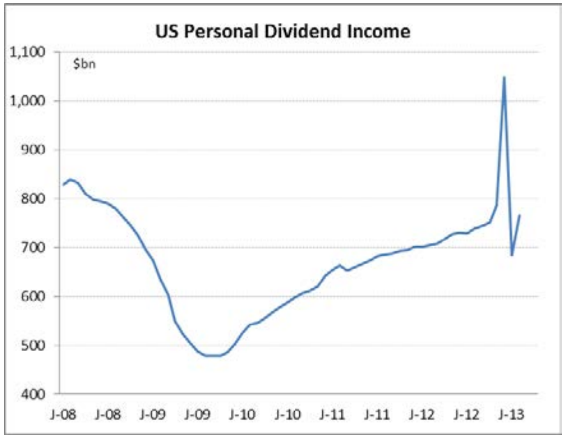


- Another factor is the younger cohort staying in education vs joining labor force.

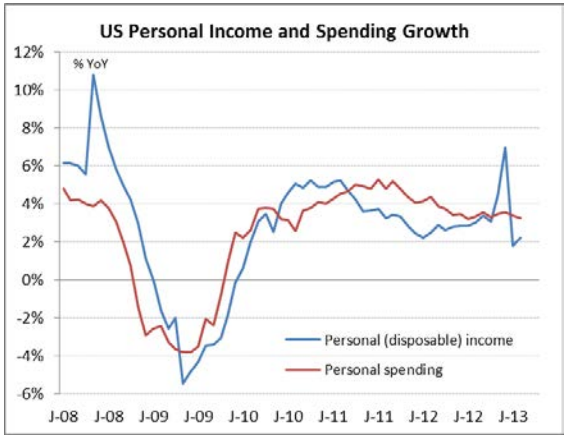
iii. Consumer and Retail

Moderation in sentiment income and spending

- Volatility in dividend income around year end tax changes

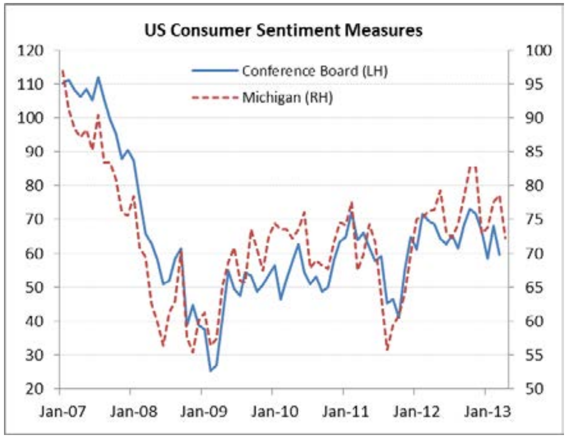


- Spending more stable than disposable income

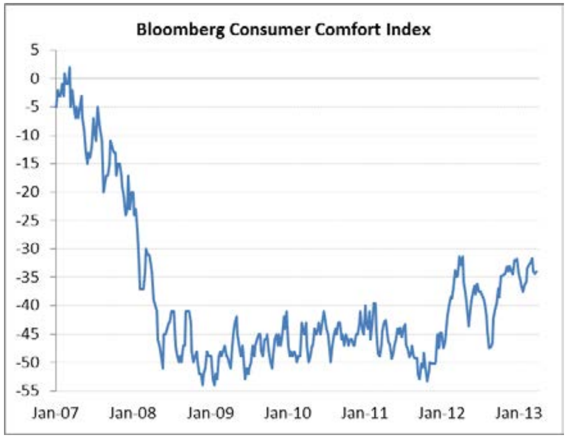


- Strong growth in net worth leads to lower savings rate

- Last sentiment reading for Conference Board and University of Michigan show a dip



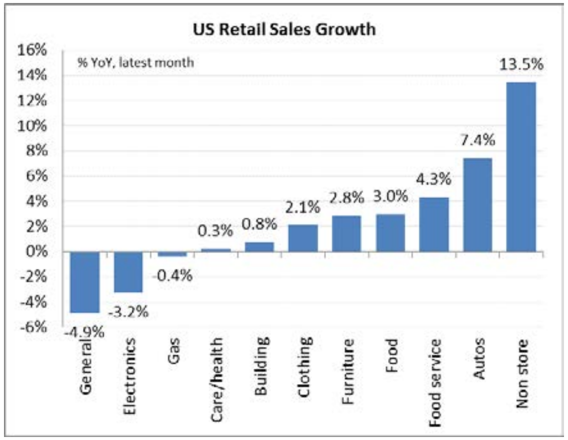
- The Bloomberg consumer comfort measure holds up better



Reflected in softer retail, esp. on electronics and dept. stores

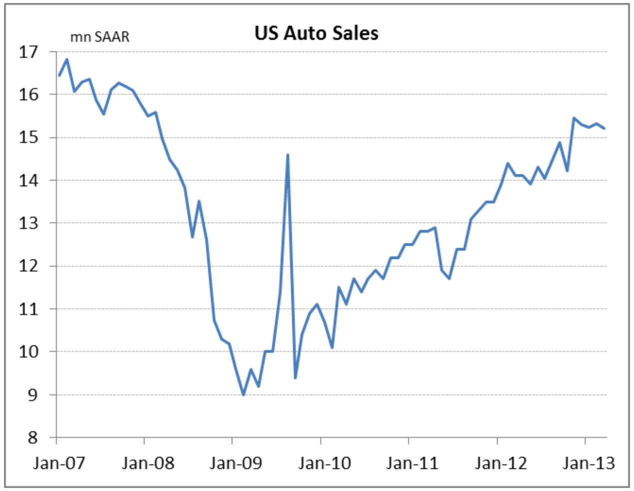
- Retail sales +1.0% in 1Q, strength in cars and building

- Weak sales of gas, electronics and general (department stores etc) in the past year

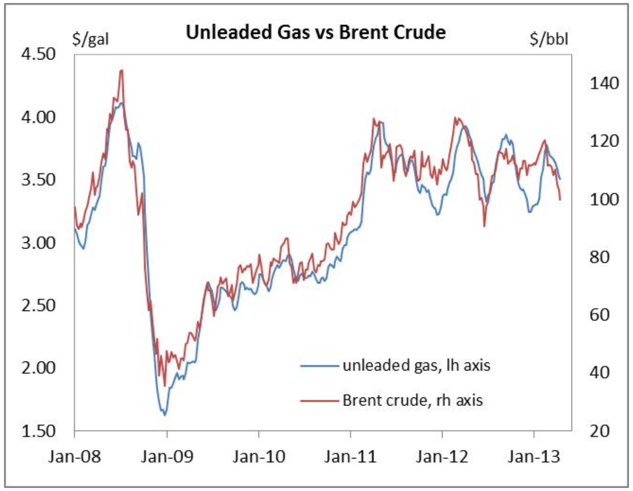


- Slowed to a 2% growth pace

- Car unit sales level out at high rate

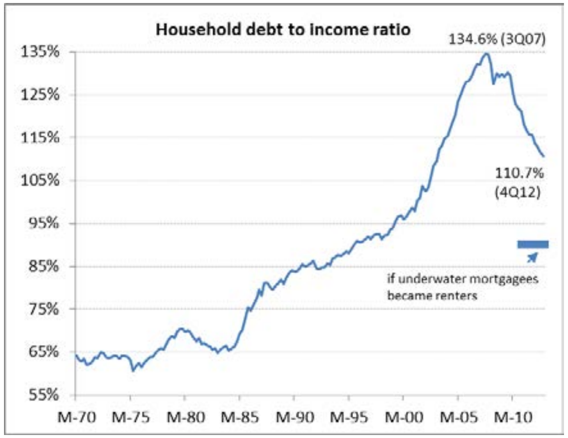


- Some recent relief at the gas pump

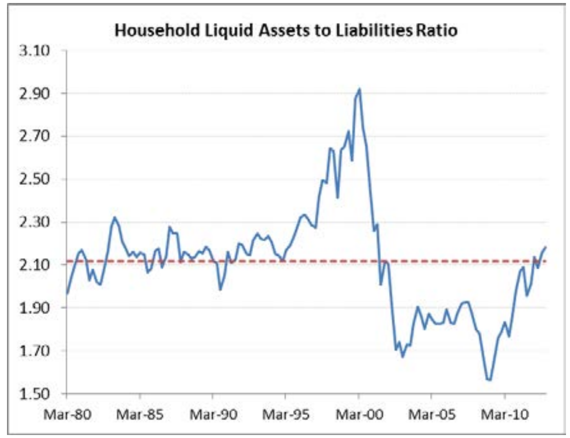


Households balance sheets improve again

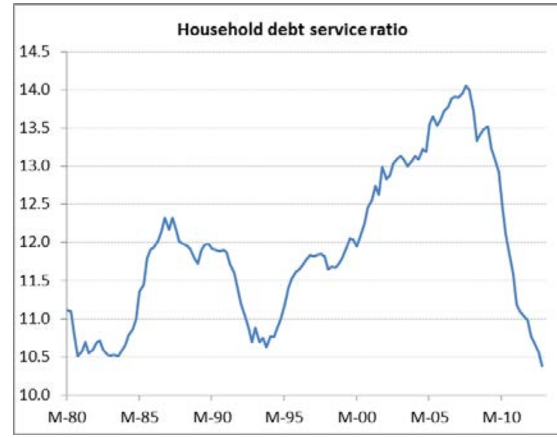
- US household deleveraging continues



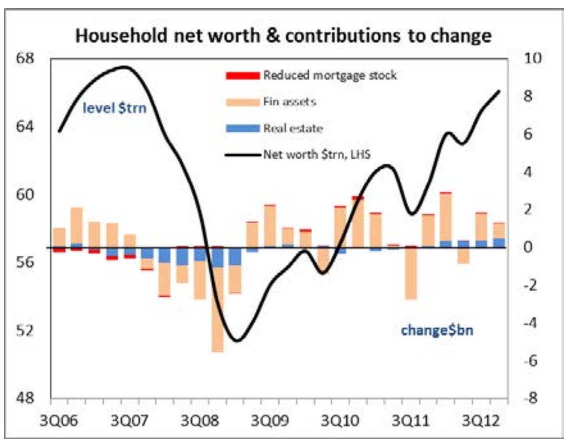
- and they are liquid again



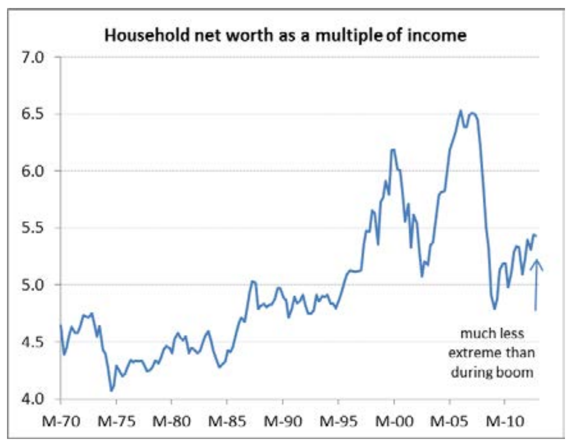
- Record low on debt service



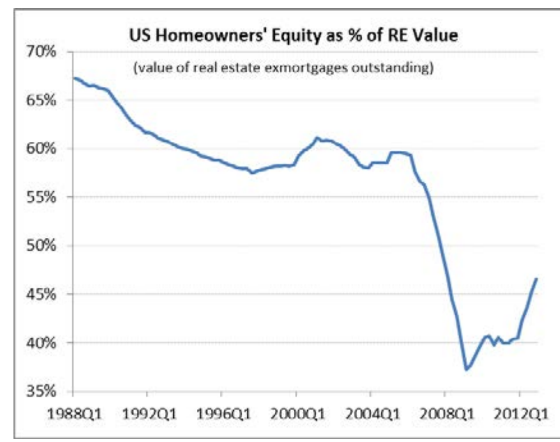
- Since 1Q 2009 assets +22%, liabilities -3%



- By this measure, asset prices are NOT extreme

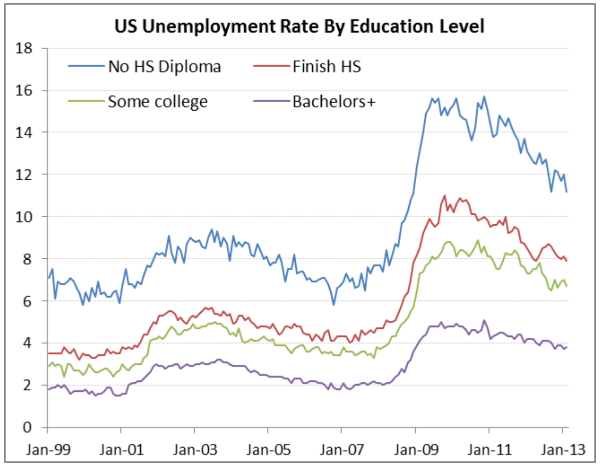


- Gradual rebound in aggregate home equity

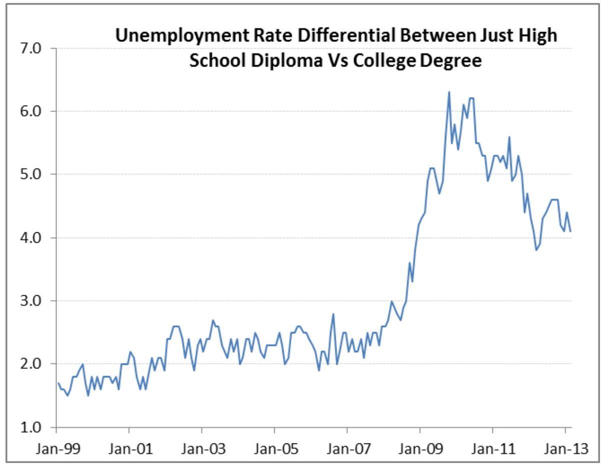


Student loans continue to drive debt growth

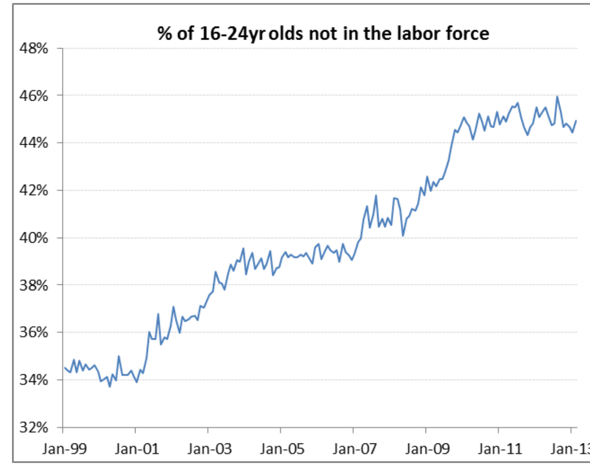
- Unemployment rates by education



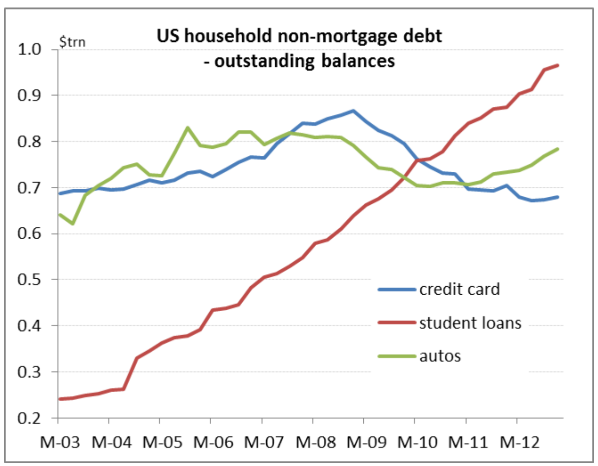
- More jobs returns to higher education



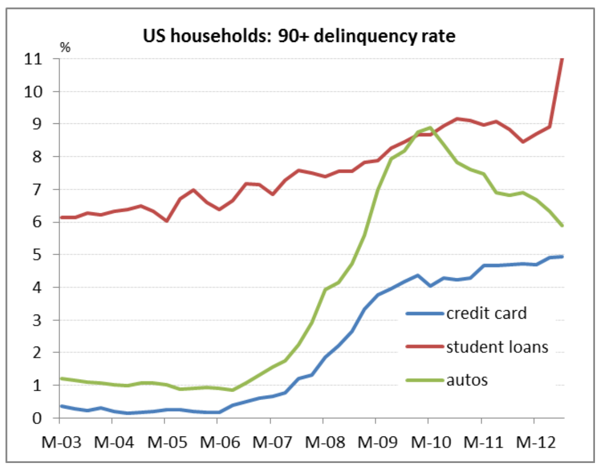
- Less 16-24 year olds enter labor force



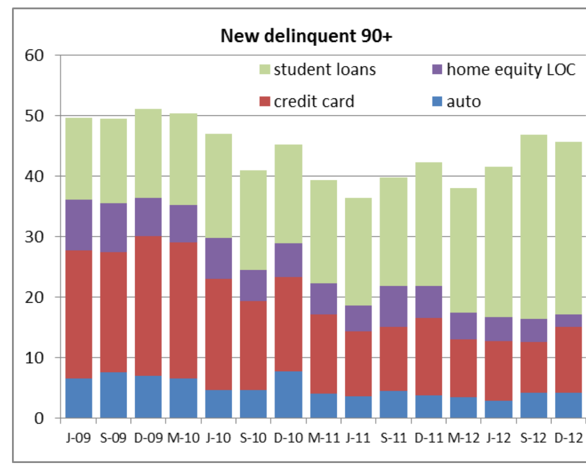
- Student debt approaches $1trn



- Student debt delinquency rate is rising



- Disproportionate delinquency share



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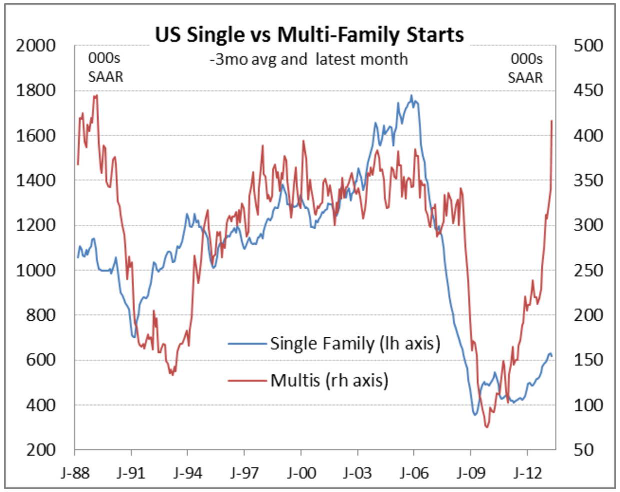
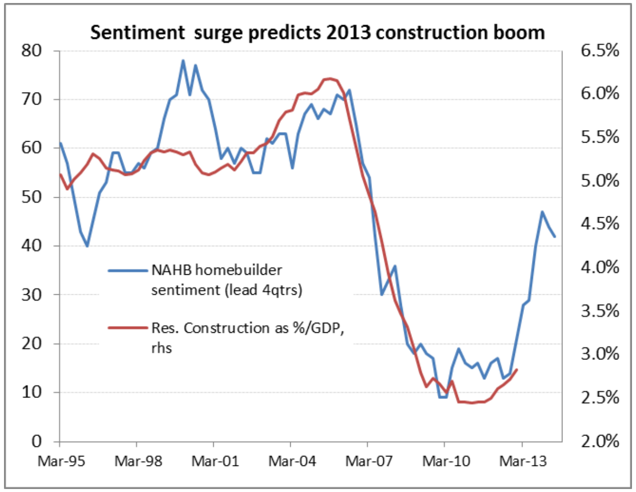
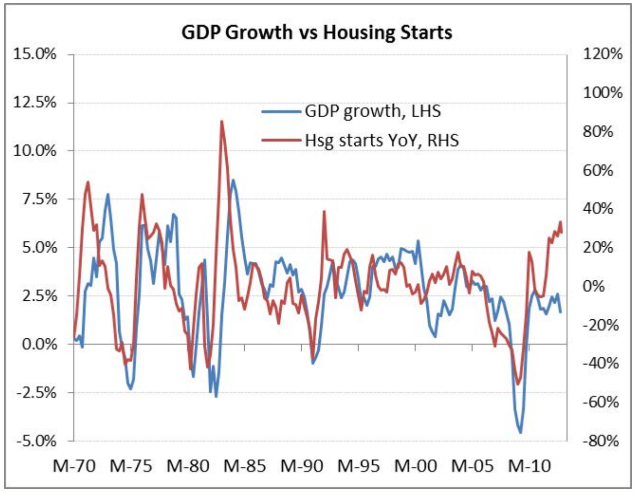
iv. US housing market

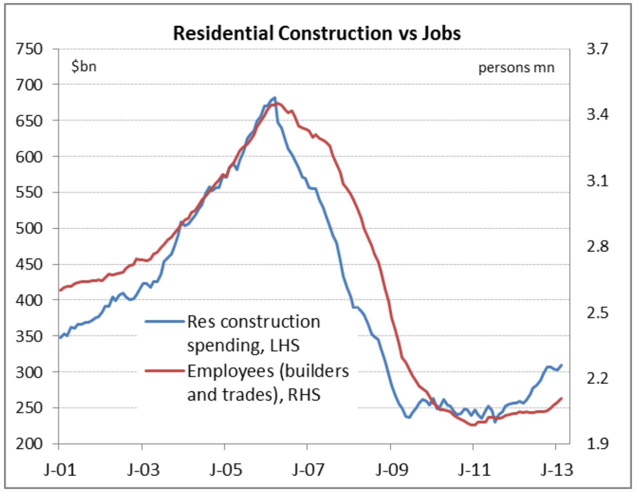
The housing market recovery continues

- US housing starts are surging, especially for multi-family units.
- Strength in housing has a good read-through for jobs and GDP in past cycles.



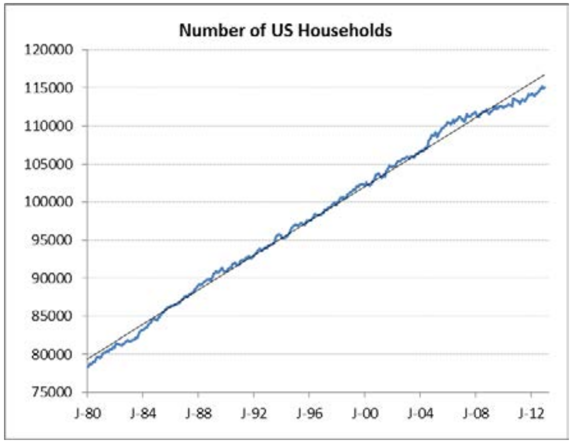




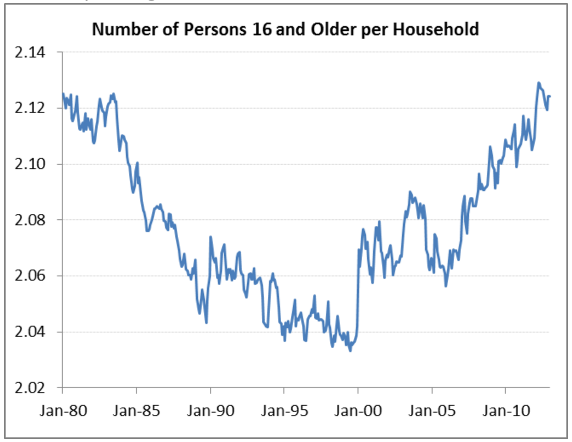


Supply-demand conditions have improved

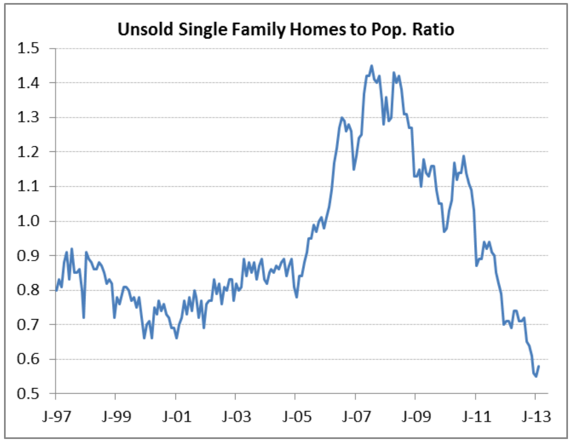
- Household formation improving but below trend line



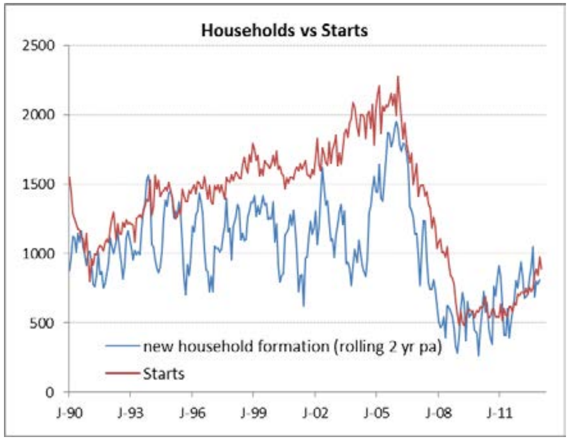
- Cheaper housing might unwind the trend of improving household formation



- Low number partly reflects larger household size

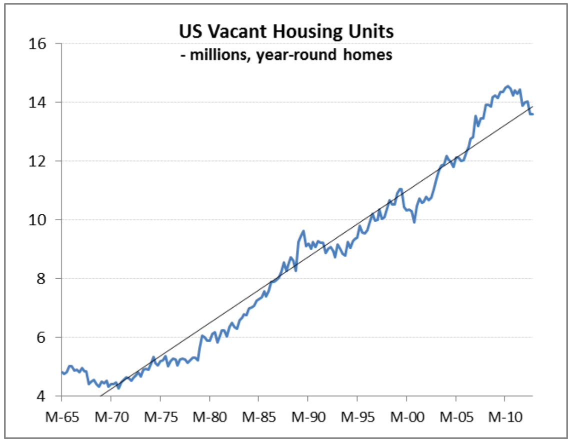


- Housing starts to pick up consistent with formation



- Low inventories of new and resale homes

- Vacant year round homes also below trend line



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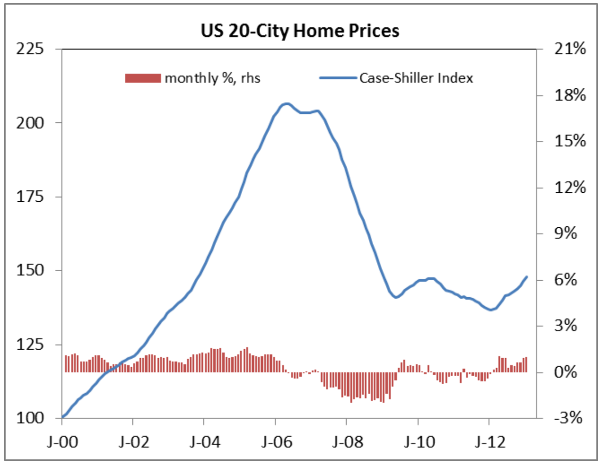
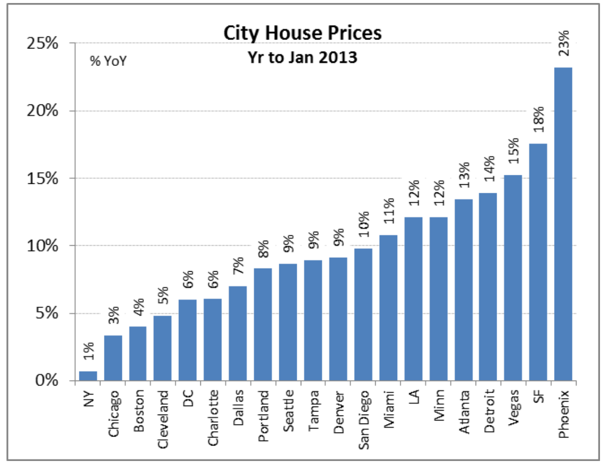
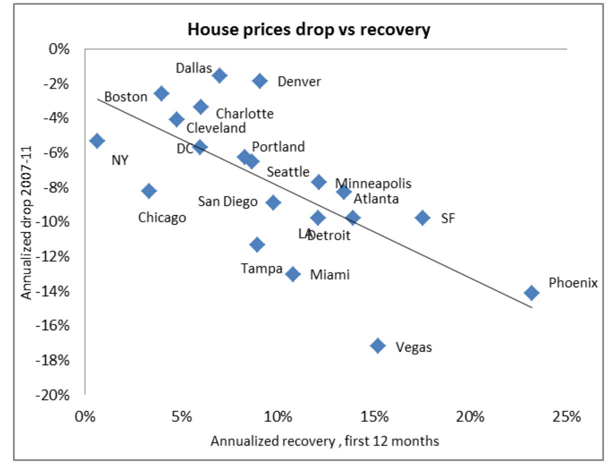
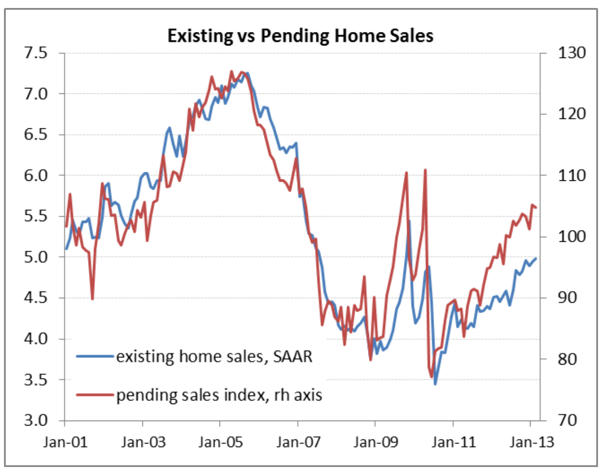
Modest rising trend in house prices

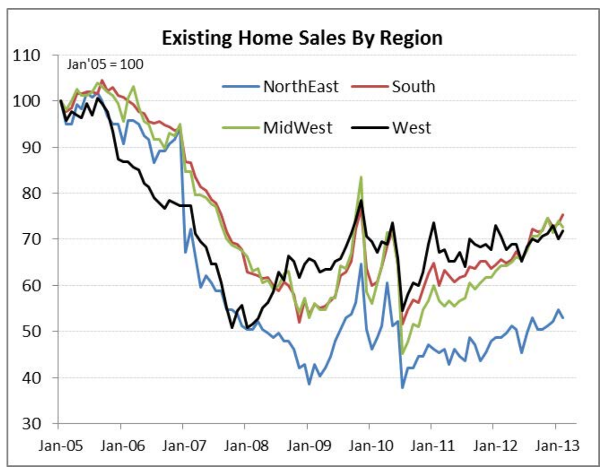
- Wide regional variation in house price recovery during 2012.
- Existing home sales recovery less evident in the North East

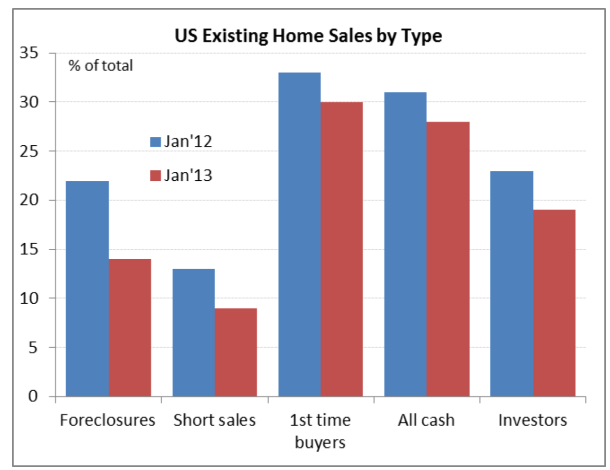












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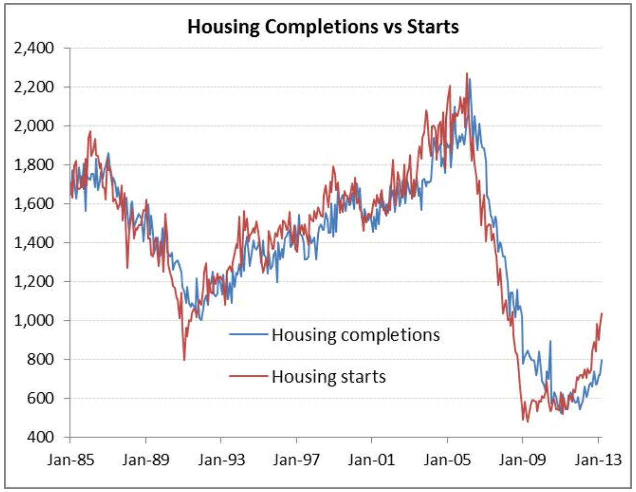
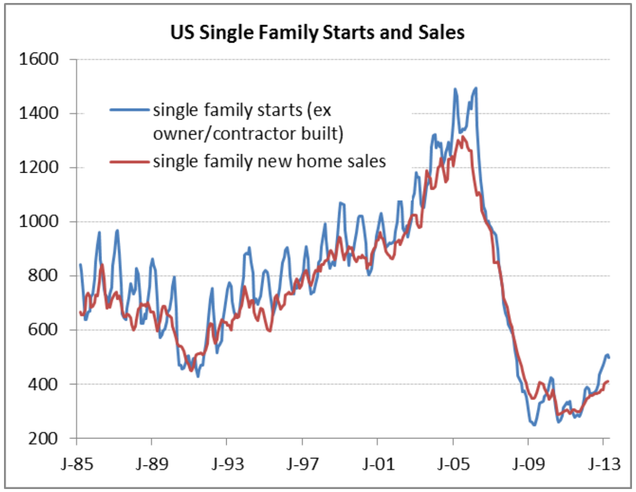
Gradual and orderly recovery, still in early stages

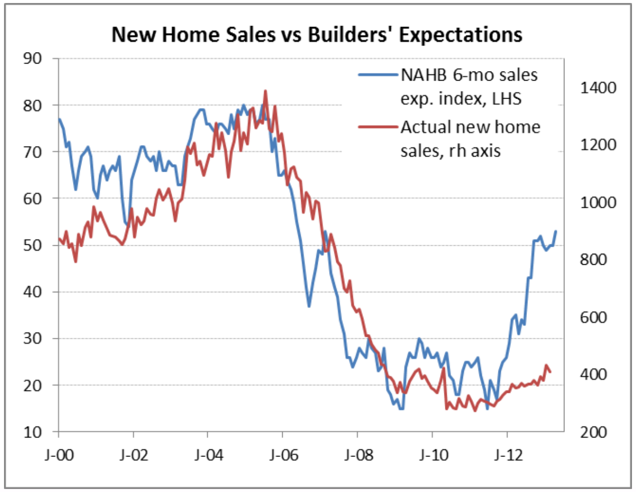
- Completions (lagging 9 months) may alleviate supply stresses during this summer.



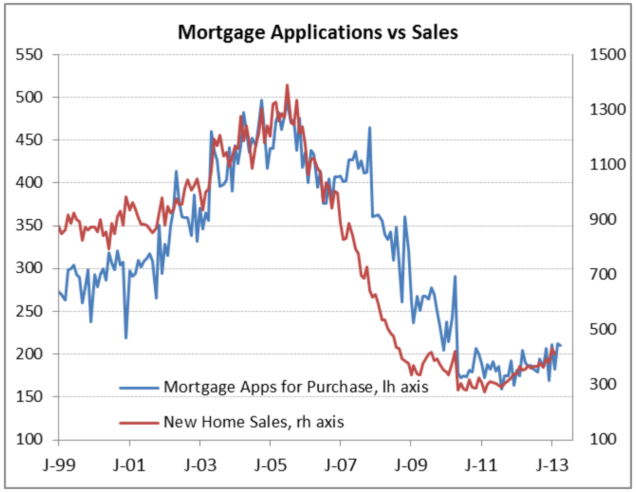
- Single family new sales and starts are only back to the trough of the early 1990s



- Builder expectations well ahead of actual sales.



- Mortgage apps for purchase remain low partially due to higher renting rate



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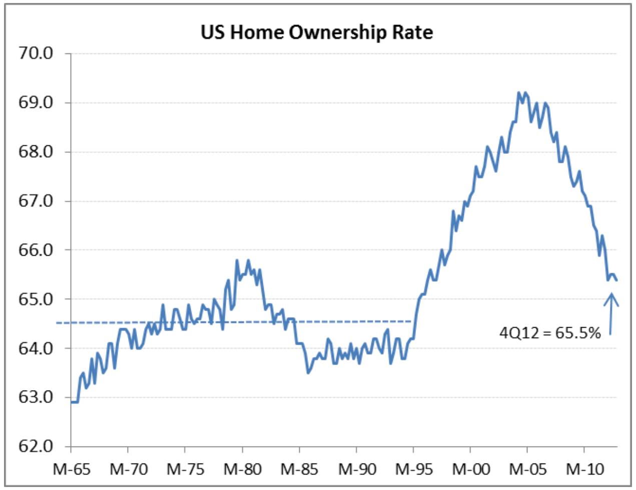
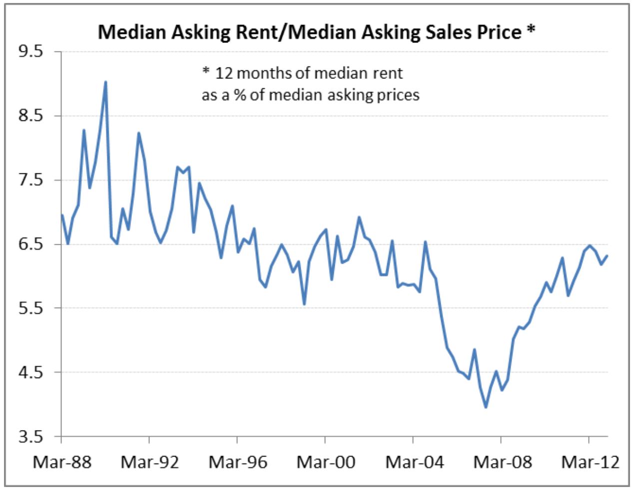
Rentals market dynamics may level out

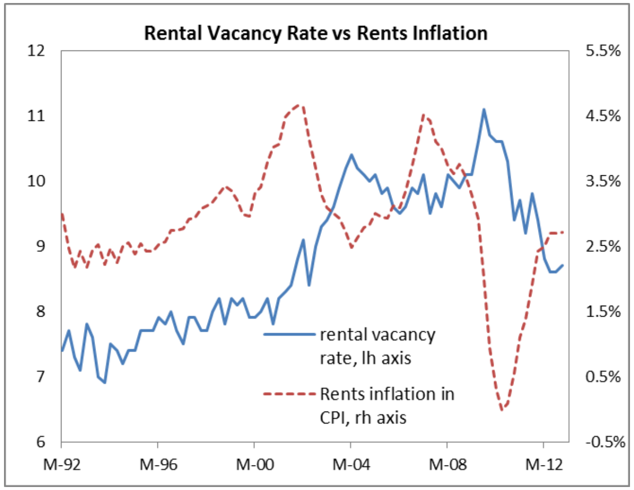
- Ownership gravitates back toward pre-bubble rate



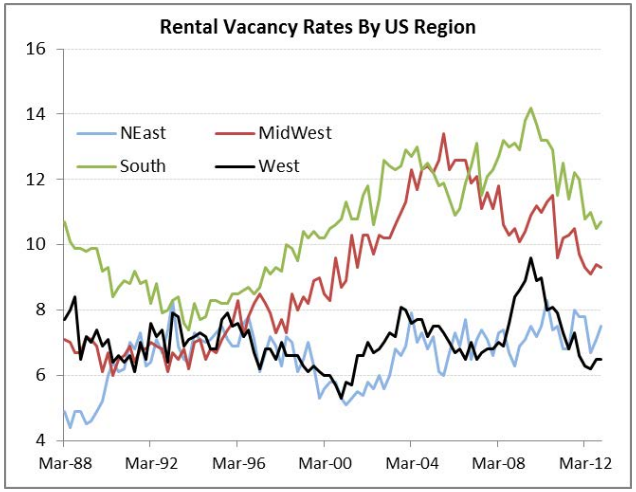
- Median rent to price s reverts to pre bubble ratio



- Rents inflation normalizes



- Rental markets' regional disparity



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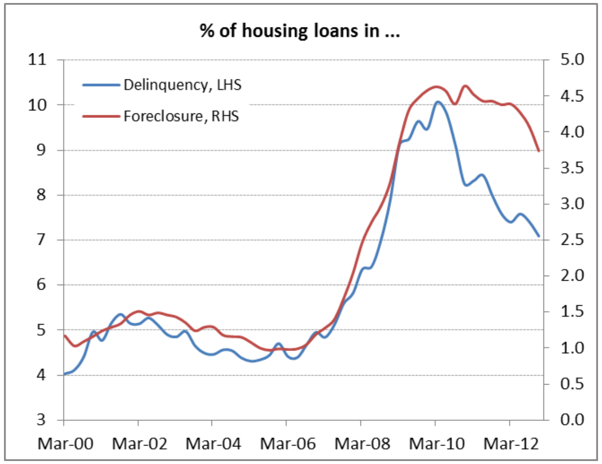
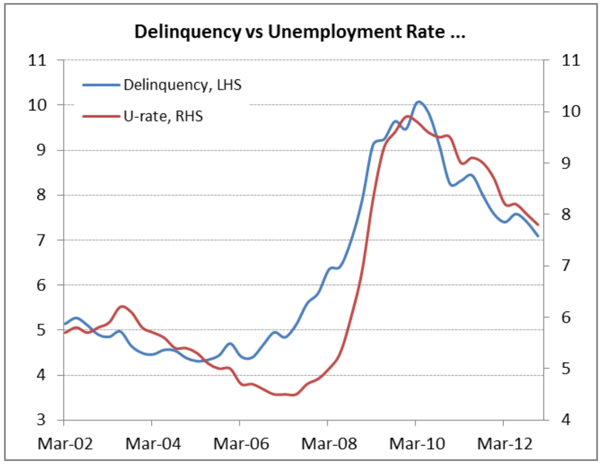
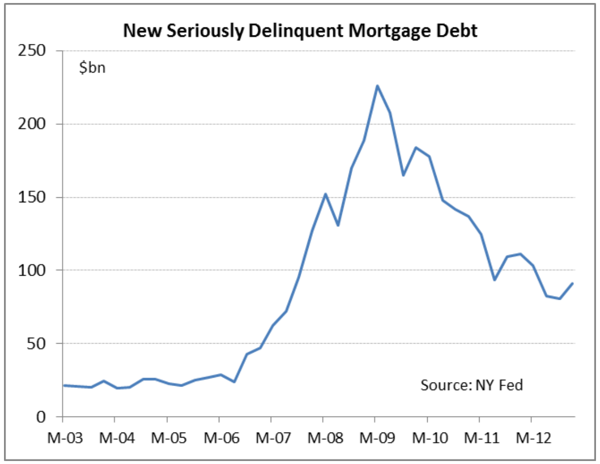
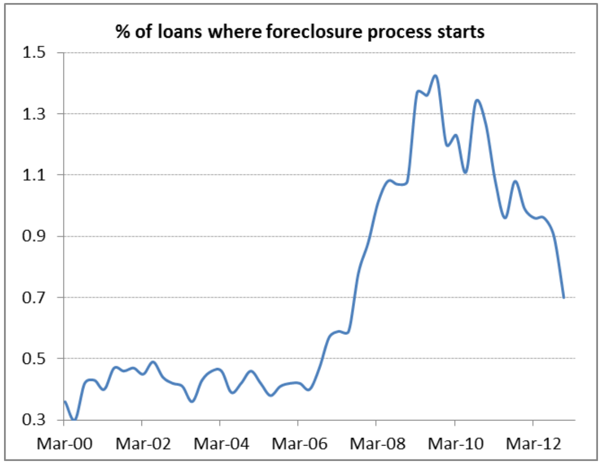
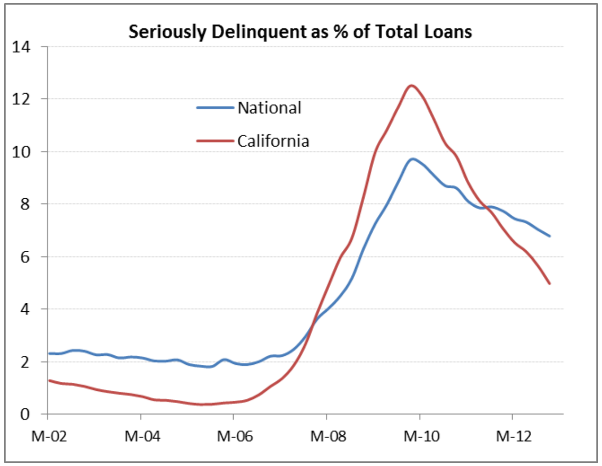
New data on mortgages

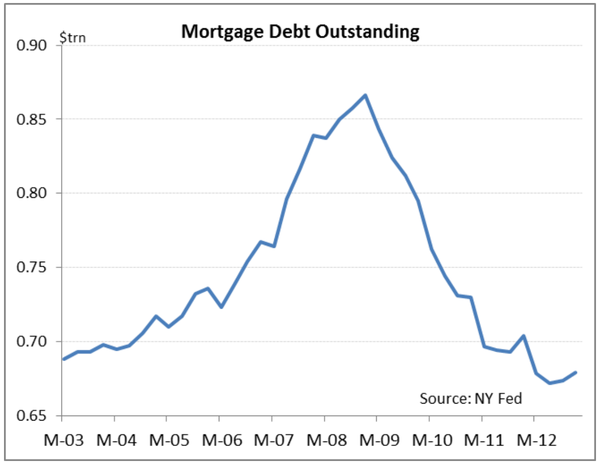




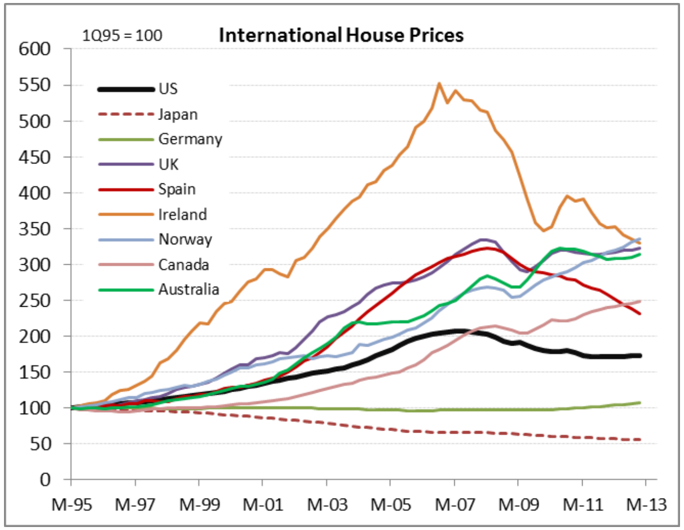


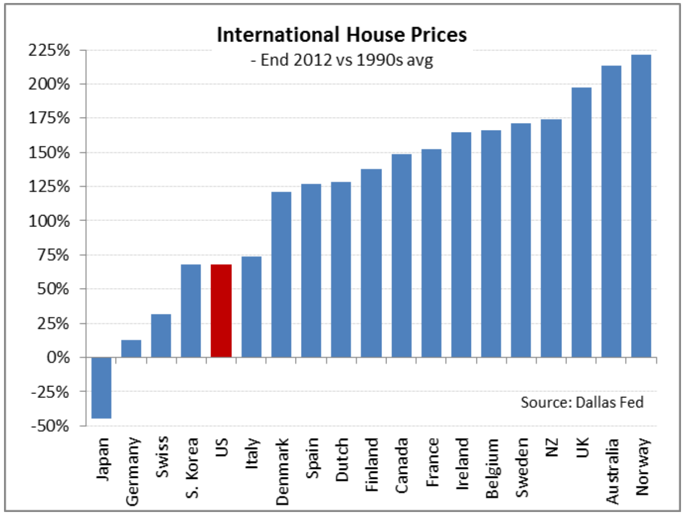






US house prices are low by international standards



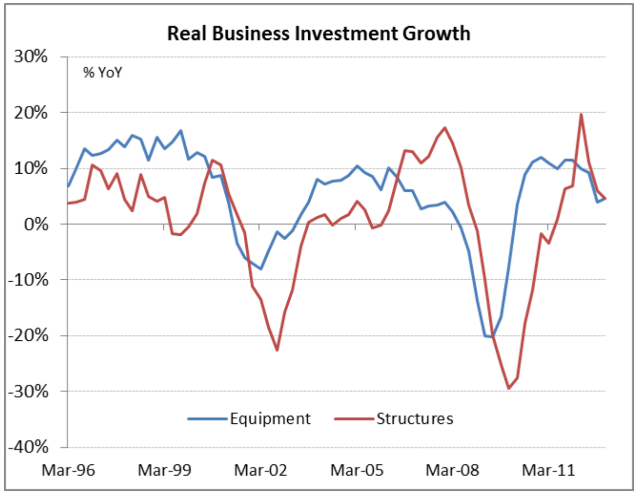


OECD DATA	% change in:		Current vs Long Term Average (100)		
Country	2011	2012F	Price to rent	Price to income	Latest data
US	-6.6%	0.4%	97	84	2Q 2012
Japan	-2.1%	-1.6%	63	65	1Q 2012
Germany	3.3%	8.0%	89	84	3Q 2012
France	3.8%	-1.4%	139	133	2Q 2012
Italy	-4.6%	-4.0%	99	112	1Q 2012
UK	-5.4%	-1.2%	132	126	3Q 2012
Canada	2.8%	3.3%	160	135	3Q 2012
Australia	-5.0%	-2.6%	139	121	3Q 2012
Belgium	0.0%	-0.1%	163	152	2Q 2012
Denmark	-5.1%	-5.6%	112	109	2Q 2012
Finland	-0.6%	-1.4%	135	99	3Q 2012
Greece	-8.6%	-9.4%	87	98	2Q 2012
Ireland	-14.4%	-14.2%	90	91	3Q 2012
Korea	1.3%	1.0%	108	64	3Q 2012
Netherlands	-4.5%	-7.0%	116	125	3Q 2012
Norway	6.7%	4.9%	172	128	3Q 2012
NZ	-2.2%	1.7%	150	119	2Q 2012
Spain	-8.8%	-9.5%	112	118	3Q 2012
Sweden	-0.5%	-3.4%	130	122	3Q 2012
Switzerland	4.0%	3.5%	97	93	3Q 2012
AVERAGE	-3.4%	-0.3%	104	95	

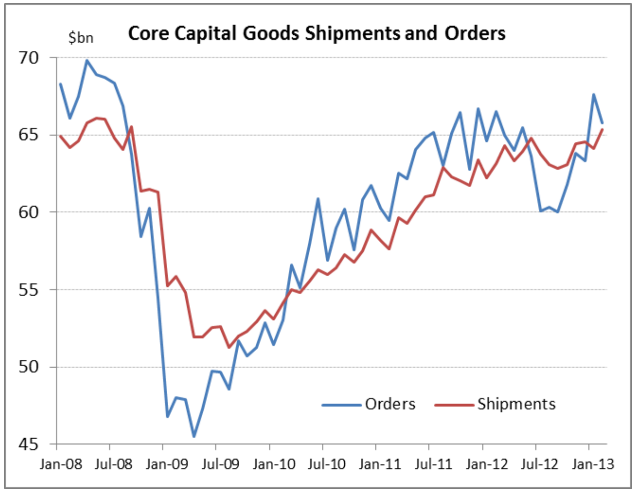
v. Business sector

Business investment still fragile

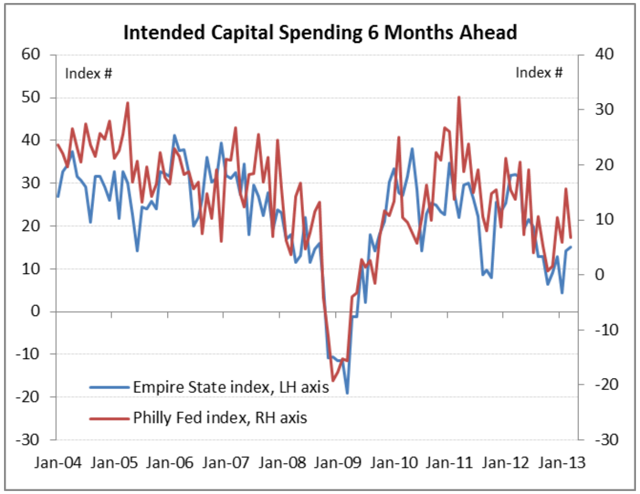
- Toppish real growth rates in uncertain year



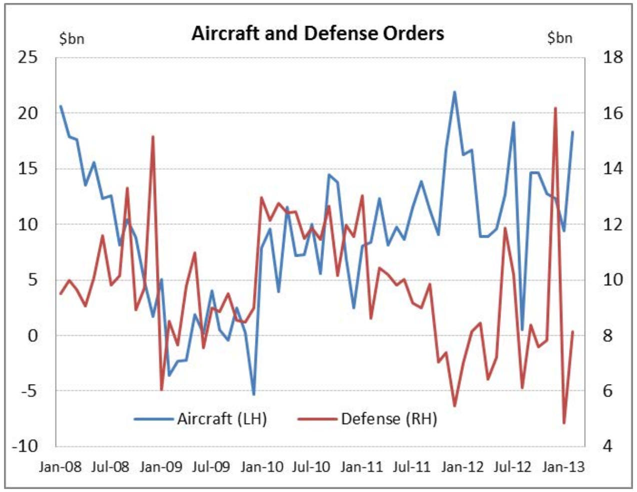
- Orders +5% in 4Q 2012 then +6% in Jan/Feb 2013



- Intended capex stalls in March

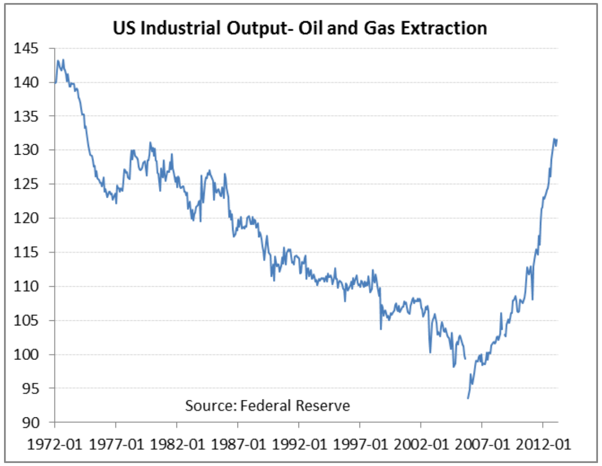


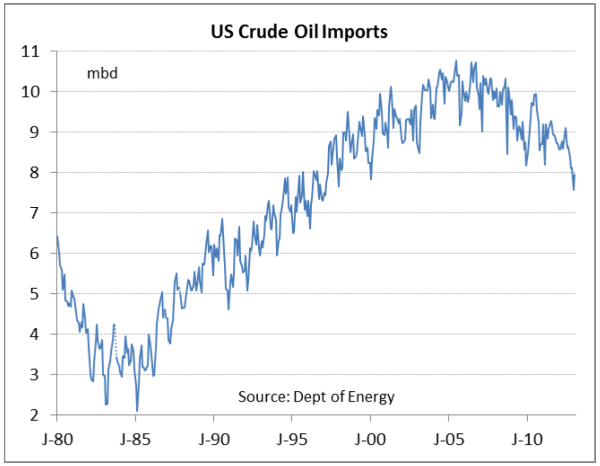
- Aircraft rebounds, defense remains soft

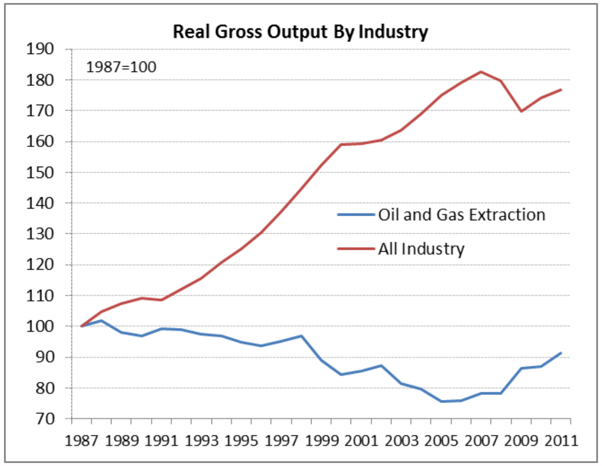


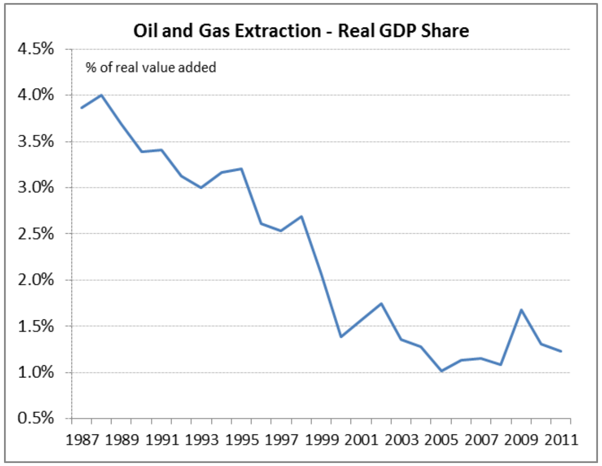
Growing US energy independence supports GDP growth

- US and gas production has grown 6% pa in the past four years and 9% in 2012.
- Real imports of petroleum and products fell by 6.3% during 2012, adding 0.1% to GDP.
- 10% pa growth in real value added in oil and gas extraction would contribute 0.125% pa to real GDP growth.









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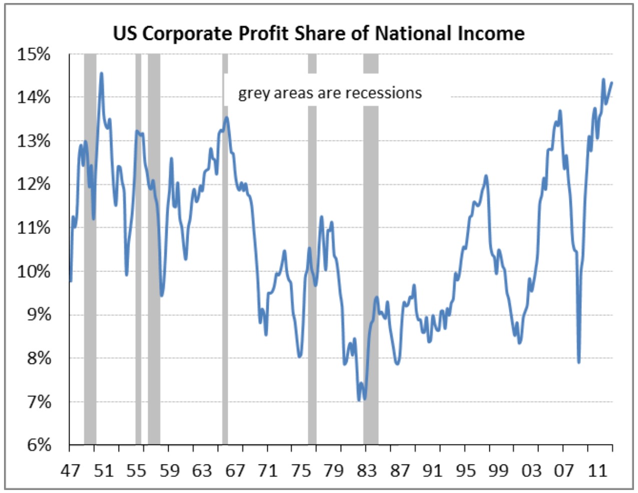
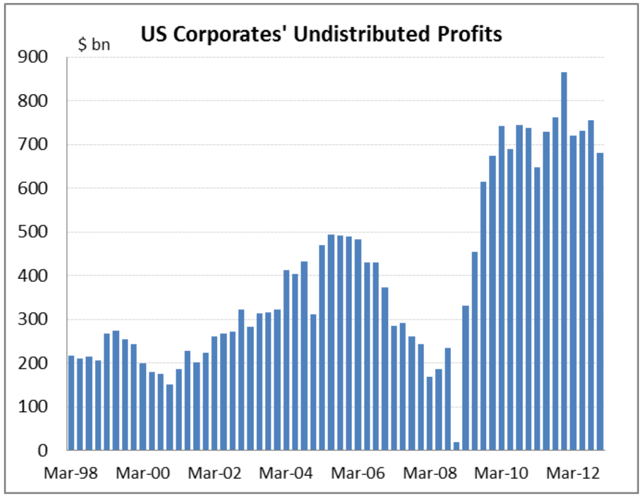
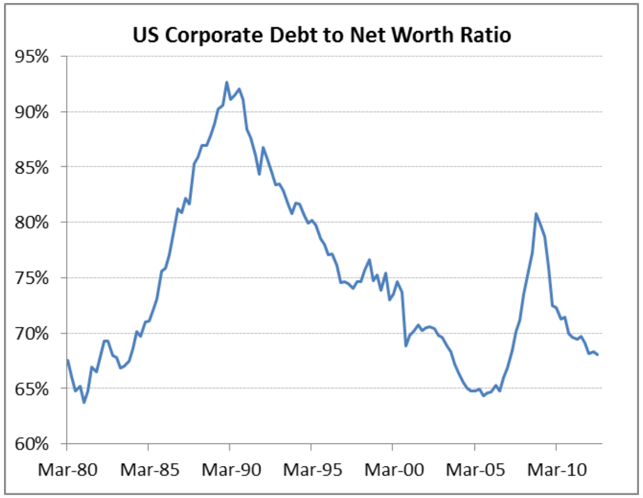
Corporate profit share near all time highs

- As a share of national income, profits haven't been higher since 1950.
- Undistributed profits have eased a bit because of higher taxes (+21% year-over-year) and dividends (+34% year-over-year)
- Corporate leverage (debt to net worth) is comfortably low.

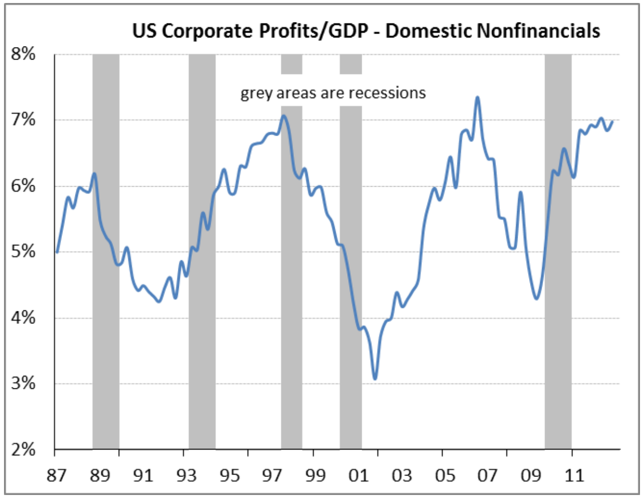


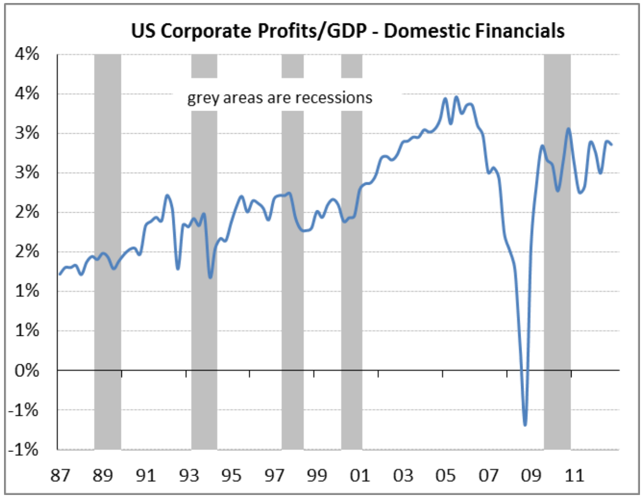


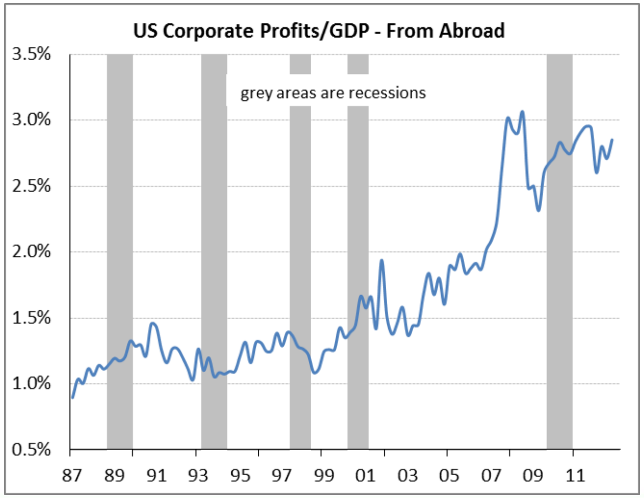


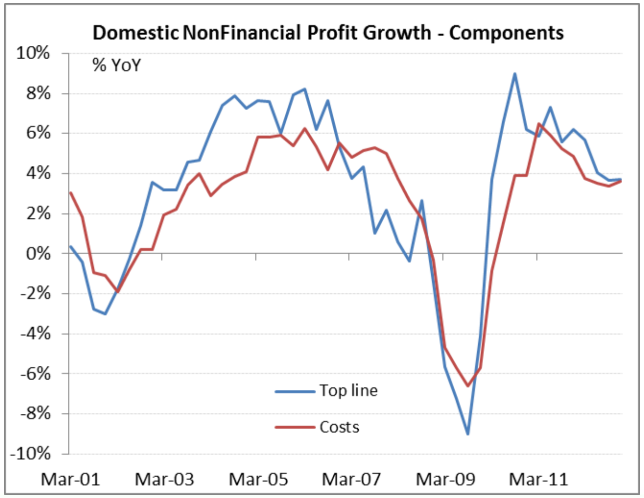
Corporate profits in detail

- Corporate top line and costs are both growing at around 3.5% per year, which is about at the same pace as nominal GDP and national income.





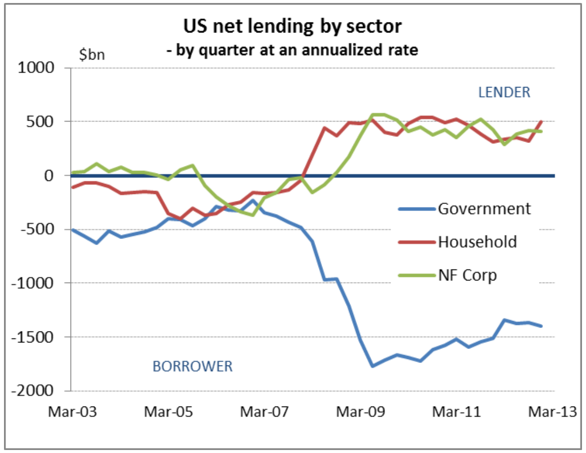




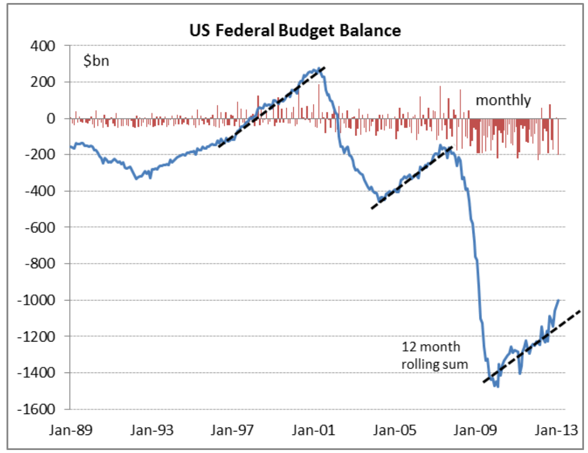
vi. Government sector

Government accounts gradually repairing

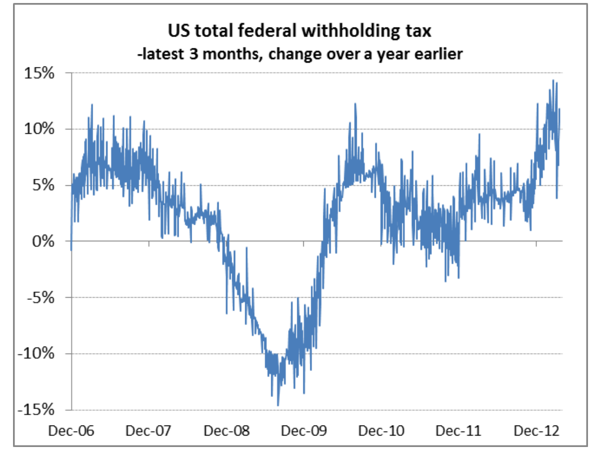
- Government is the only non-FI borrower



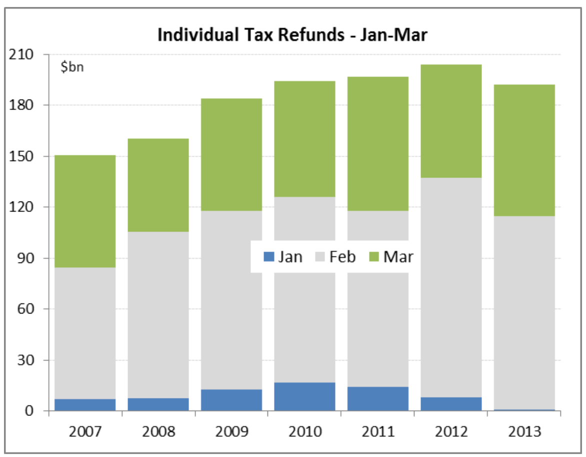
- Federal deficit reduction is impressive



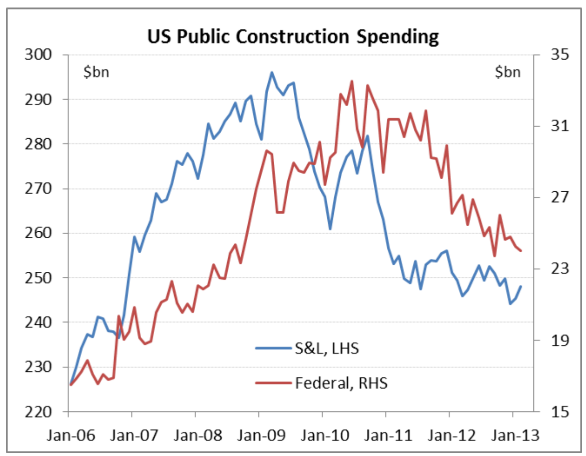
- Federal withholding growth 12% year-over-year (YoY) after tax hikes



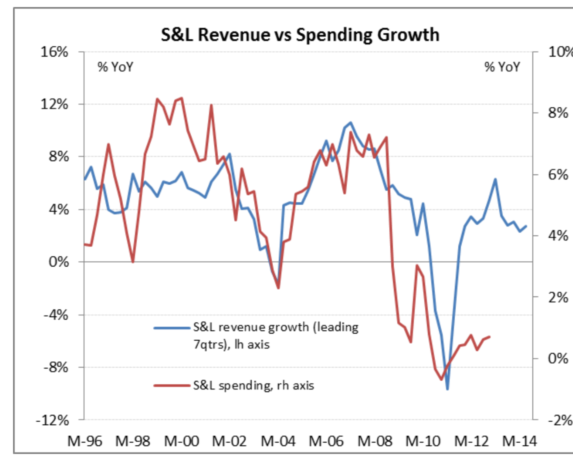
- Tax refunds are running behind recent years



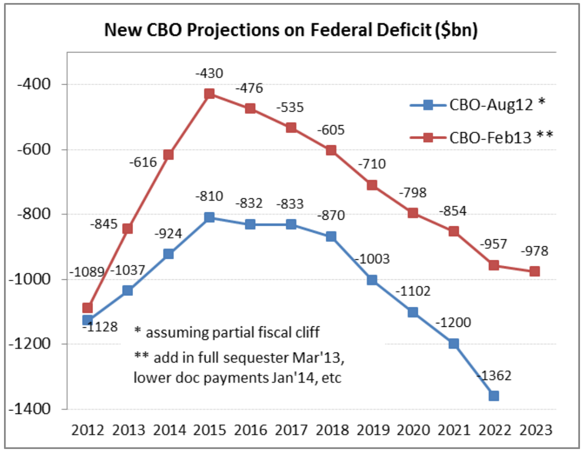
- Public construction spending is still weak

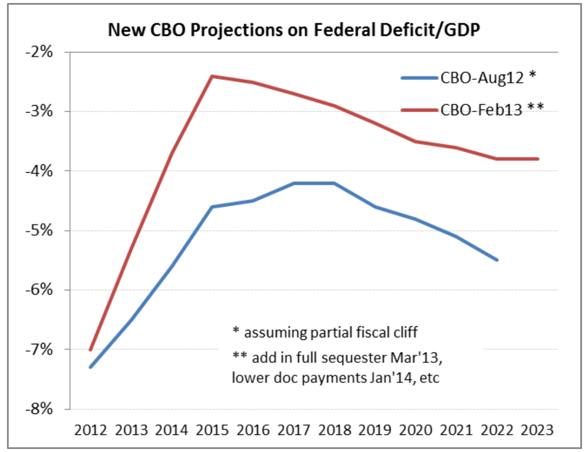


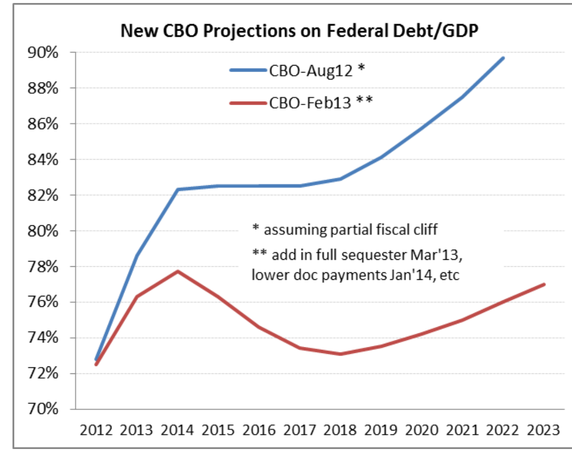
S&L tax collections up 13% FY 2010 to FY 2012

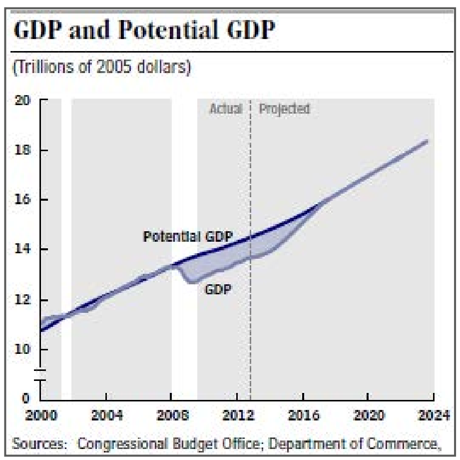


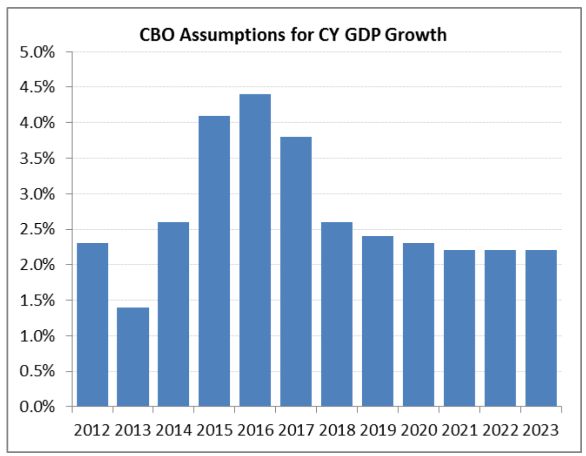
Congressional Budget Office (CBO) sees deficit falling, but only until 2015









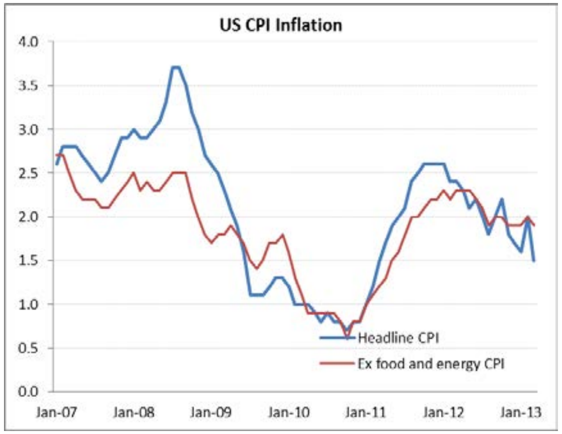


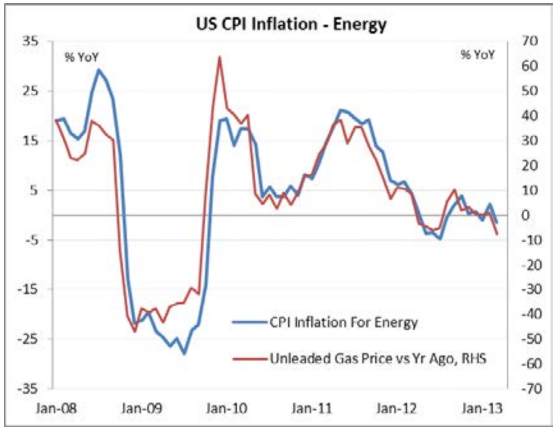
- The new CBO projections show a much lower path for the federal deficit until 2015, then a resumed widening as higher health and social security obligations kick in.
- The numbers also assume a burst of above trend US growth in 2015-2017, helping to firm up tax collections. However, that is a questionable assumption.

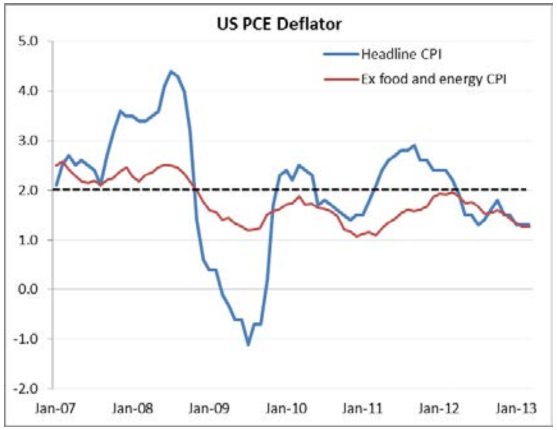
vii. Inflation, money and credit

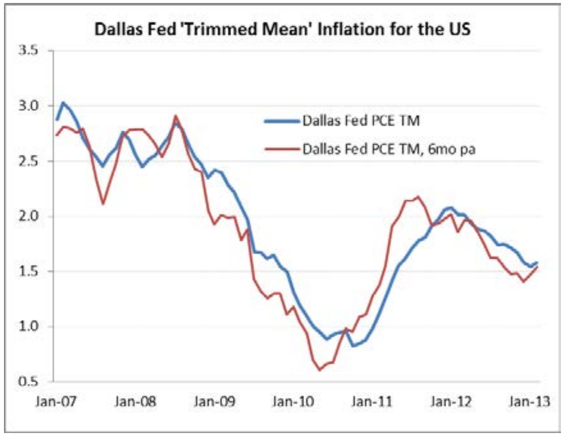
Actual and expected inflation is tame

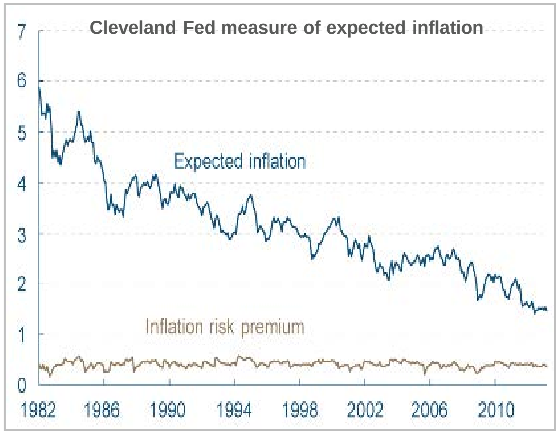
- Consumer Price Index (CPI) growth rates remain subdued for energy (-1.6% YoY), food (+1.5% YoY), and core (1.9%).
- Health insurance inflation has slowed to 6.5% from 12.1% in 2012. Airfare inflation has accelerated to 3.8% from 0.3% in 2012.





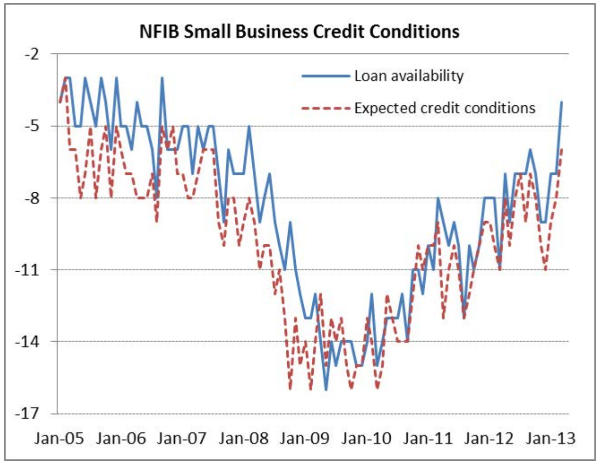


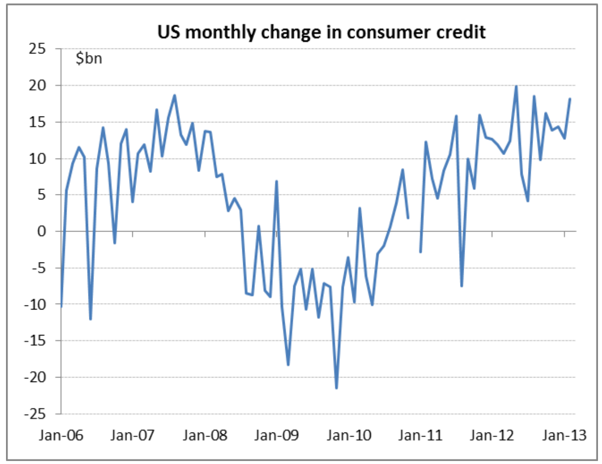


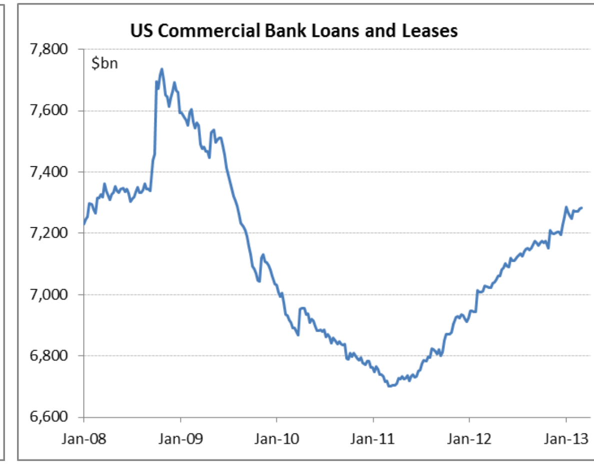


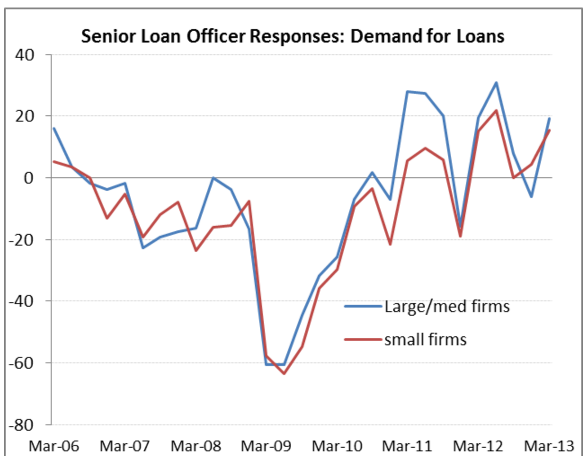
Credit channels repairing gradually

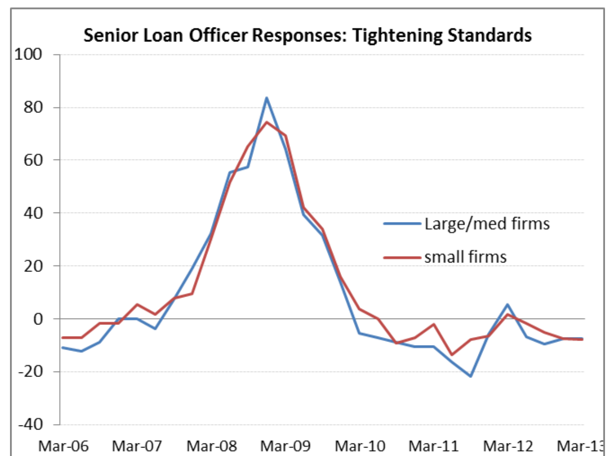
- For consumers, auto and student loans have been strong. Commercial bank loan growth has faded a little as corporates delay capex decisions.
- 1Q 2013 Senior Loan officers survey reports unclogging credit channels.





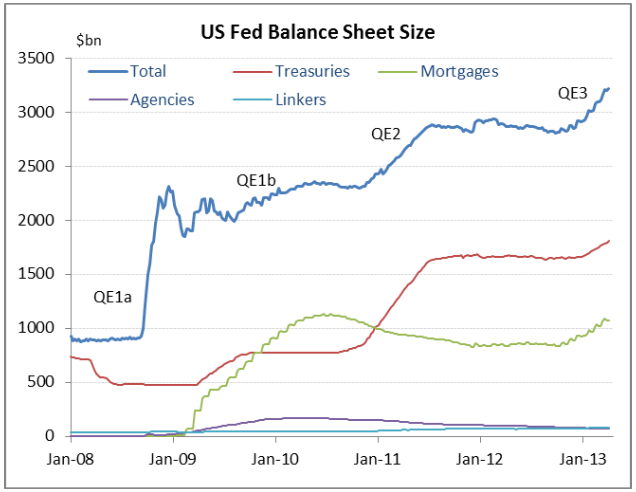


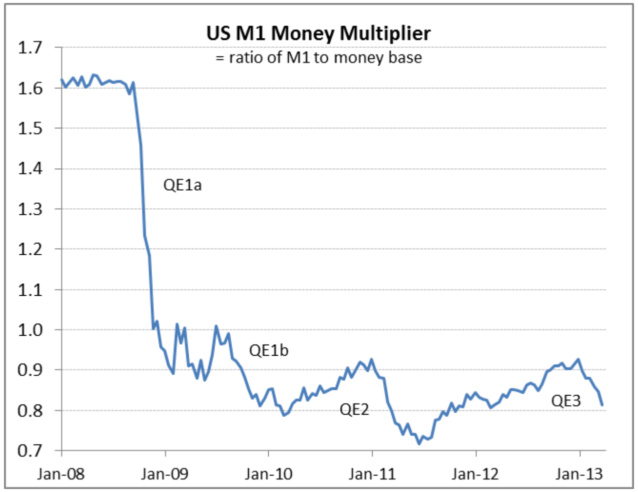


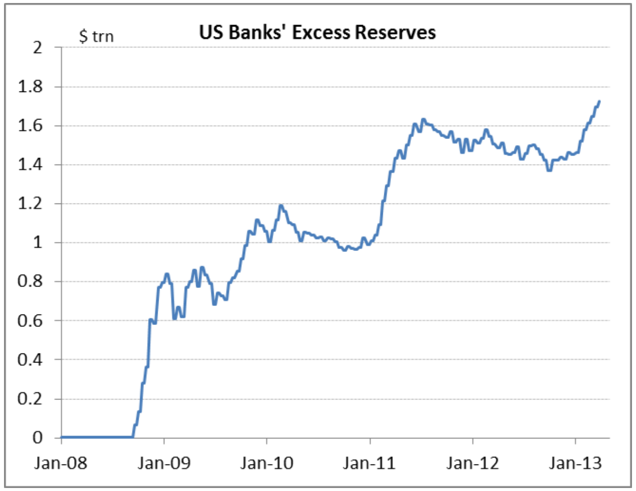


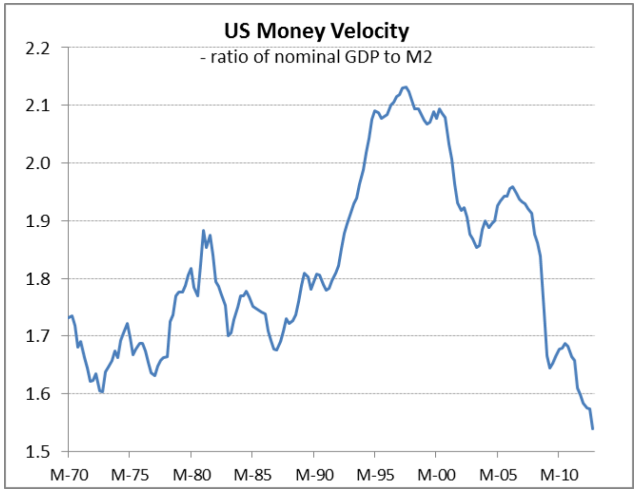
Subdued multipliers suggest little inflation risk from QE

- Trends in money multipliers and money velocity suggest that there is little inflation risk from February balance sheet expansion/base money creation.









viii. Global cycle

Organization for Economic Co-operation and Development (OECD)

- OECD leading index has stabilized
- Latest reports points to 'growth picking up in most major economies'.

	Ratio to trend, amplitude adjusted (long term average =100)					Month on Month change (%)					Year on Year change (%)	Growth cycle outlook
	2012		2013			2012		2013			Latest month	
	Oct	Nov	Dec	Jan	Feb	Oct	Nov	Dec	Jan	Feb		
OECD Area	100.0	100.1	100.2	100.4	100.5	0.06	0.10	0.12	0.13	0.13	0.36	growth firming
Euro Area	99.4	99.5	99.6	99.7	99.9	0.01	0.08	0.12	0.15	0.15	-0.01	growth picking up
Major Five Asia*	99.3	99.4	99.5	99.6	99.7	0.03	0.06	0.10	0.12	0.11	-0.10	growth picking up
Major Seven	100.1	100.2	100.4	100.5	100.7	0.09	0.12	0.15	0.16	0.16	0.48	growth around trend
Canada	99.7	99.6	99.5	99.5	99.4	-0.06	-0.07	-0.07	-0.07	-0.07	-0.49	growth around trend
France	99.5	99.4	99.4	99.5	99.6	-0.07	-0.02	0.02	0.05	0.06	-0.40	no further decline in growth
Japan	99.9	100.1	100.3	100.6	100.9	0.06	0.14	0.22	0.28	0.31	0.44	growth firming
Germany	98.9	99.0	99.2	99.5	99.7	0.03	0.15	0.22	0.24	0.23	-0.20	growth picking up
Italy	99.1	99.2	99.3	99.4	99.5	0.06	0.09	0.12	0.13	0.13	-0.22	positive change in momentum
United Kingdom	100.4	100.6	100.7	100.7	100.7	0.21	0.15	0.09	0.03	0.01	1.43	growth around trend
United States	100.5	100.7	100.9	101.0	101.2	0.14	0.15	0.16	0.16	0.16	0.78	growth firming
Brazil	99.5	99.5	99.4	99.4	99.5	-0.03	-0.06	-0.04	0.01	0.09	0.88	growth around trend
China	99.6	99.8	99.9	100.1	100.3	0.09	0.14	0.18	0.21	0.17	0.46	growth picking up
India	97.9	97.6	97.3	97.1	96.8	-0.21	-0.26	-0.27	-0.28	-0.30	-2.78	weakening growth
Russia	99.4	99.4	99.5	99.6	99.7	-0.02	0.05	0.08	0.09	0.06	-2.53	growth around trend

* China, India, Indonesia, Japan and Korea.

Global Purchasing Managers Index (PMI) show steady, below-trend global growth

- JPM Global Economics: “The March PMI data signal steady growth in the global economy at a pace that is just below trend. With the PMI indicating that job growth is still muted and inflows of new business are slowing, there is some question whether this momentum can be sustained. Signs that cost pressures are receding should provide some support in this respect”

Global Manufacturing *PMI*™ Summary

50 = no change on previous month.

	Feb	Mar	Change	Summary, rate of change
Global PMI	50.9	51.2	+	Expanding, faster rate
Output	51.8	52.1	+	Expanding, faster rate
New Orders	51.5	52.1	+	Expanding, faster rate
Input Prices	54.4	53.0	–	Rising, slower rate
Employment	50.4	50.5	+	Rising, faster rate

Global Services *PMI*™ Summary

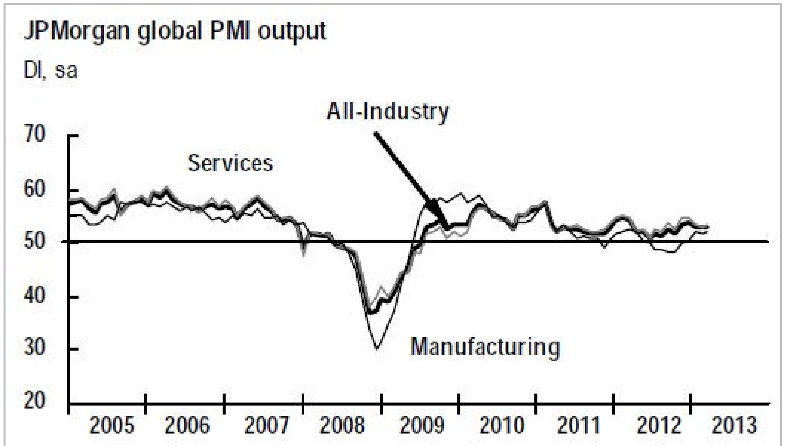
50 = no change on previous month.

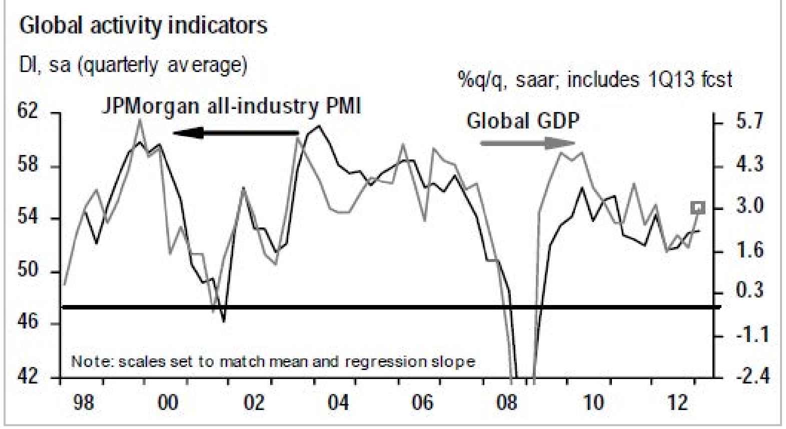
	Feb	Mar	+/–	Summary
Output/activity	53.2	53.4	+	Growth, faster rate
New business	53.8	52.3	–	Growth, slower rate
Backlogs of work	50.7	51.4	+	Rising, faster rate
Input prices	57.9	54.9	–	Rising, slower rate
Employment	52.9	51.8	–	Rising, slower rate

Global Manufacturing & Services *PMI*™ Summary

50 = no change on previous month.

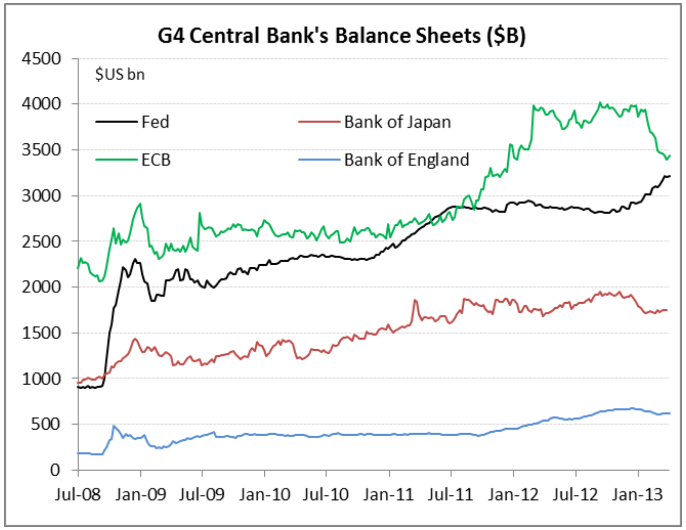
	Feb	Mar	+/-	Change Summary
Output	52.9	53.1	+	Expanding, faster rate
New Orders	53.2	52.3	–	Expanding, slower rate
Input Prices	57.0	54.5	–	Rising, slower rate
Employment	52.3	51.4	–	Rising, slower rate

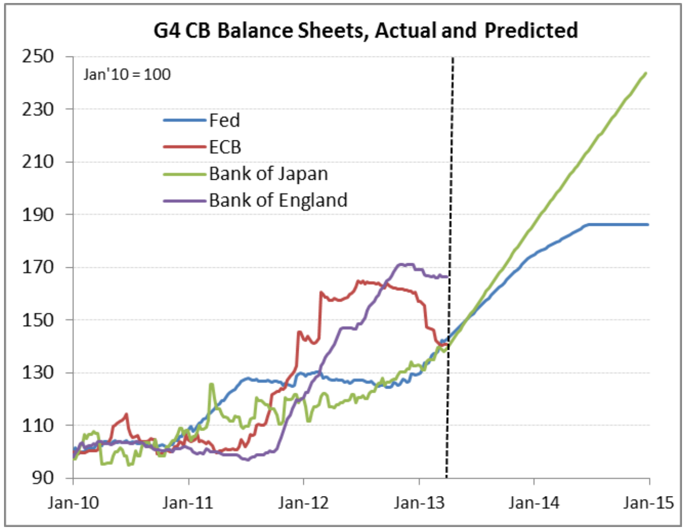


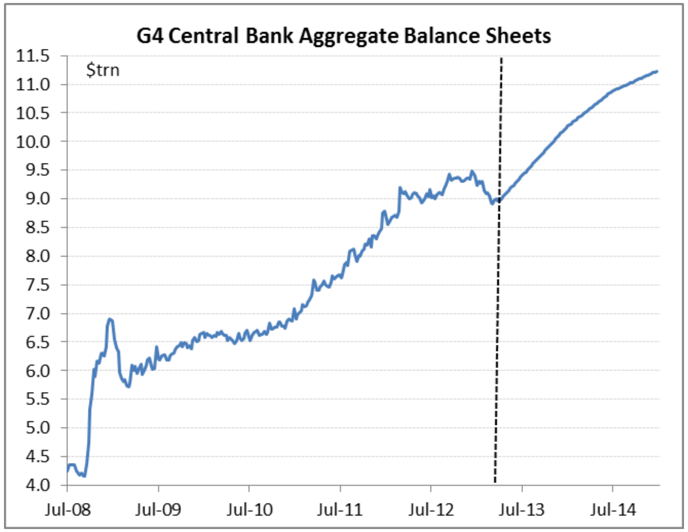


Global QE set to revive, led by Bank of Japan

- Recently, the aggregate size of the main central banks' balance sheets has actually declined (from $9.5billion to $9billion) due to the Bank of England ending QE and the European Central Bank (ECB) buying back some long-term refinancing operation (LTRO).
- However, in the charts below we assume continued QE at the current pace by the Fed this year, tapering to half pace in 1H15, while the Bank of Japan has a very aggressive QQE plan now in place.
- Assuming unchanged exchange rates and no further changes in the ECB balance sheets, it is estimated that the combined G4 central bank balance sheet size could increase from $9 billion to $11 billion by the end of 2014 (less so if the yen weakens further).



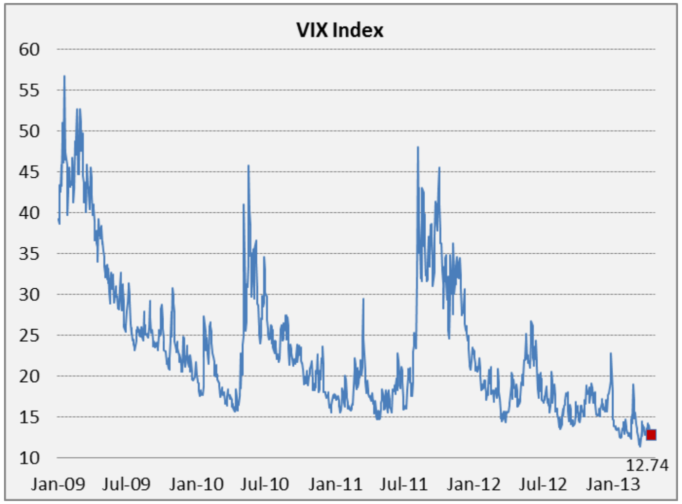


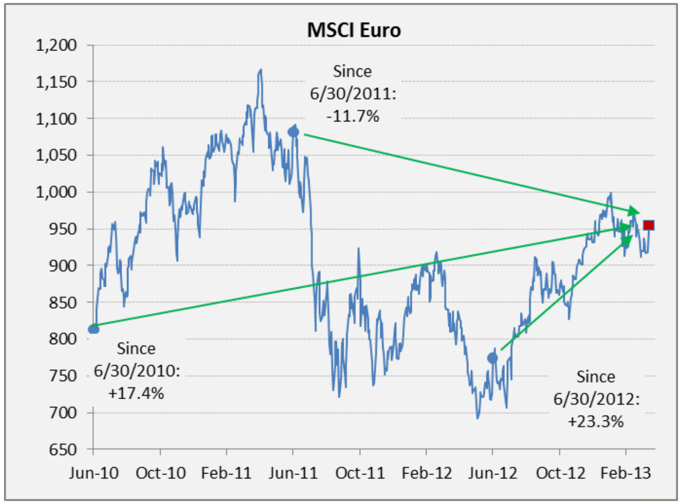


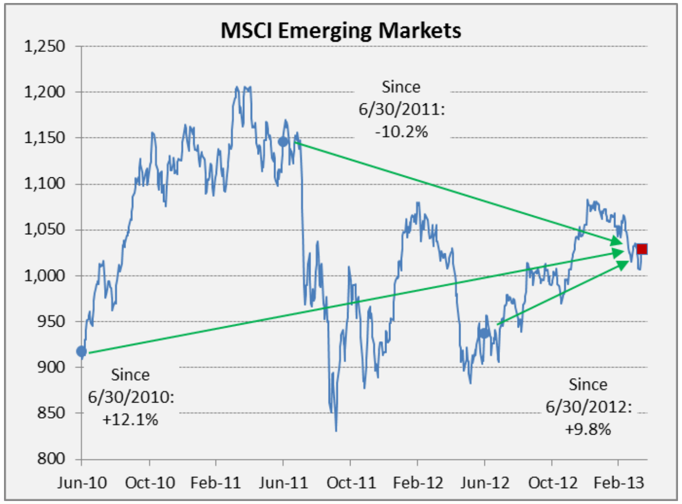
ix. Financial markets

Equity markets

- Low volatility rebound in US stocks continues.
- In contrast, international equity markets have labored this year. (In emerging markets this is partially due to stronger currencies.)

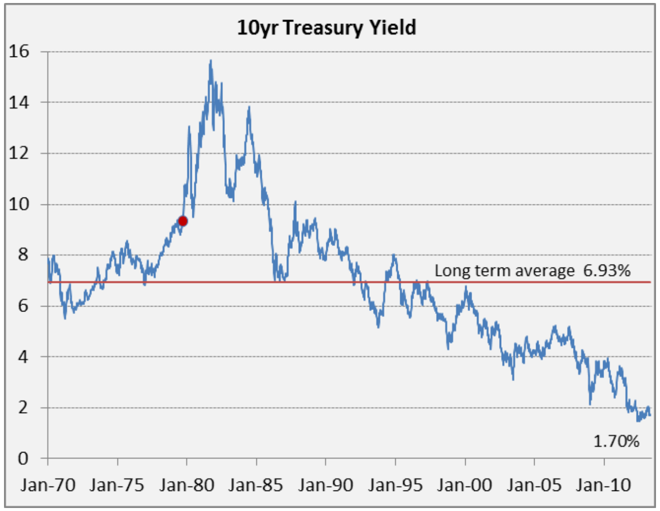


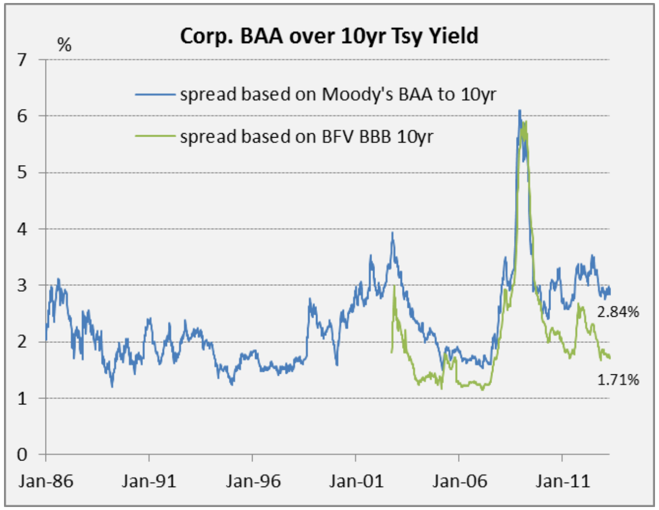


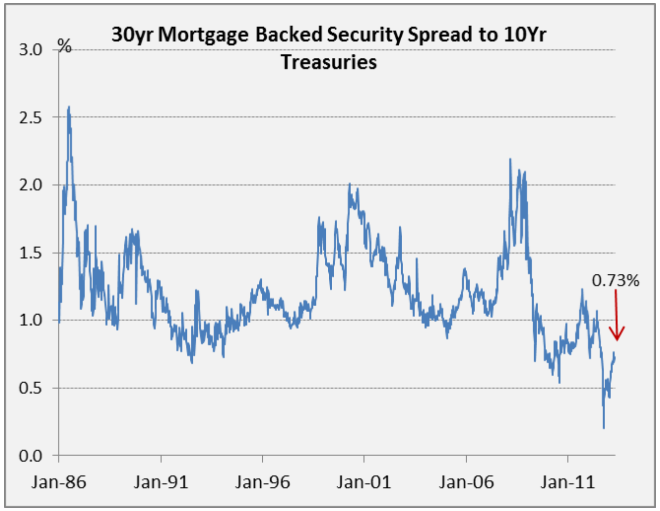


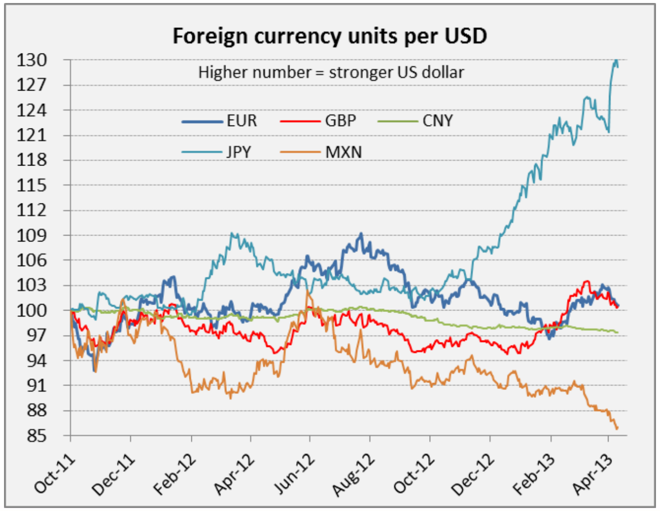
Fixed Income and Currency

- Softer US data and QE pull back the 10-yr yield into the middle of a 15% to 2.0% range.
- Mortgage rates have fallen recently, but by less so than Treasury yields. Corporates have rallied with Treasuries.









CalPERS Investment Office Asset Allocation

Commodity markets

- Softer growth in China and a higher US dollar mean commodities are not benefiting from QE.