COUNCIL ON REVENUES

Director of Taxation Conference Room
Princess Ruth Keelikolani Building
830 Punchbowl Street
Second Floor, Room 221
Honolulu, HI 96813

Wednesday, January 8, 2009
10:00 A.M.

PRESENT:

Council Members:
Jack Suyderhoud (Vice-Chair), Pearl Imada Iboshi, Richard F. Kahle, Jr., and Albert Yamada

Staff Members:
Department of Taxation: Tu Duc Pham, Yvonne Chow, Glenn Ifuku, Hamid Jahanmir, Lester Lau, and Cathleen Tokishi
Department of Budget and Finance: Keith Shimada, Karen Matsunaga, and Terri Ohta

Others:
Huong Bassford, Department of Budget and Finance
Lowell Kalapa, Tax Foundation of Hawaii
Nandana Kalupahana, House Committee on Finance
Kurt Kawafuchi, Department of Taxation
Johnnel Nakamura, Department of Taxation
Jerry Nickelsburg, UCLA Anderson Forecast
Donald Rousslang, Department of Taxation
Titin Sakata, Department of Taxation
Joseph Tichy, Department of Taxation
Sandra Yahiro, Department of Taxation

ABSENT:

Council Members:
Paul Brewbaker, Carl Bonham, and Dean Hirata

CALL TO ORDER:

The Vice-Chair called the meeting to order at 10:00 A.M. with a quorum present.

FORMAT OF COUNCIL ON REVENUES REPORTS:

Because this agenda item was included at the request of the Chair, and because the Chair was unable to attend the workshop, this item was not discussed. If needed, the members present determined that it could be discussed the next day at the regular meeting, as it is relevant to the presentation of the Council's forecast to the Governor and other recipients.

DISCUSSION OF TAX REVENUE FORECAST MODELING:

The Vice-Chair introduced Dr. Jerry Nickelsburg, Senior Economist with UCLA Anderson Forecast. As stated by Dr. Pham, UCLA Anderson Forecast has been contracted by the Department of Taxation to improve upon the current econometric model used to forecast Hawaii General Fund revenues.

At the request of the Vice-Chair, Dr. Nickelsburg briefly presented information about UCLA Anderson Forecast and about his own background. Dr. Nickelsburg then proceeded with his presentation; a copy of Dr. Nickelsburg's handout of the presentation slides is appended to, and made a part of, these minutes.

In describing the scope of the project, looking at alternative models as well as alternative variables, Dr. Nickelsburg noted that there was a real difference between the development of models for forecasting and models for explaining behavior. When developing models to explain behavior, you need a model that fits very well without a lot of variation that isn't being explained. When developing models for forecasting, you may instead want a model that doesn't fit as well, but that does explain the important variations that better forecast the turning points. It is the difference between explaining why people are not consuming and forecasting their consumption; these are different things from a modeling point of view.

In response to a question about the State's counter-cyclical spending on infrastructure and such, Dr. Nickelsburg stated that they'd only looked at it with respect to the California Governor's proposal for such spending. He noted that such spending usually is for infrastructure, which is a slow process such that the cycle is over by the time the project is ready to build. California, however, has found a few projects that are just about ready to go, and is considering accelerating them. For immediate counter-cyclical spending without a timing issue, the state could consider buying a lot of consumer goods and giving them to the poor.

Dr. Nickelsburg was also asked to comment on the current Council process in which the members provide input and the model produces a forecast based on those statistical inputs. They have a discussion and come up with a subjective forecast that is influenced by the model. Dr. Nickelsburg said that statistics should be viewed as a tool and not the truth. The statistics are based on history—if tomorrow is like yesterday, then this is what probably will happen. But if

you know that there will be differences, then you start with the statistical forecast and take into account factors that are not easily quantified; in this case a judgmental methodology is appropriate.

In terms of improving the Hawaii Model Forecast, Dr. Nickelsburg stated that you want a model without systematic bias so that you get a measure of central tendency—a point forecast. The reality will be above or below the point forecast—a band forecast. It is the informed judgment of the Council members as to where their forecast should fall. Dr. Suyderhoud noted that the tendency of the Council has been to (1) lag the turning point and (2) underestimate the revenues when the economy was growing, but overestimate the revenues when the economy was declining, and he asked if the new model would fix this. Dr. Nickelsburg stated that the goal is to get closer to the turning points and to move away from the systematic bias. There are costs associated with making incorrect judgments.

Dr. Suyderhoud also asked if Dr. Nickelsburg would be suggesting a better way for the Council members to provide the top tier inputs to the model; they will.

PRESENTATION BY UCLA FORECAST ABOUT THE ECONOMIC OUTLOOK FOR THE U.S. AND CALIFORNIA

Dr. Nickelsburg gave a presentation of UCLA Forecast's economic outlook for the U.S., with some comments regarding California's economic outlook. A copy of Dr. Nickelsburg's handout of the presentation slides is appended to, and made a part of, these minutes.

In response to a question from Dr. Suyderhoud regarding the prospect of Asian economies increasing their savings and decreasing their savings (the reverse of the over-spending and low savings that had characterized the U.S. economy), and how that might affect prospects for Hawaii, Dr. Nickelsburg gave a two-part answer. The biggest concern today in the world economy is the Chinese economy. What is happening in China is unprecedented; while people tend to look at China in a monolithic way, people are unaware that there have been two revolutions in the last 100 years that threw out the government, and both were related to bad economic times. There currently are more than a million newly unemployed in China, and while they may talk about increasing consumption and lowering savings rate, this is a real concern and raises doubt about their stated 7% growth. He noted that the Chinese Premier stated two months ago that if the Chinese government doesn't do something about the unemployment problem, the future of the Communist Party is at risk. For Hawaii, that means that the prospect of further expansion of the Chinese tourism is gone for a while; the wealthy middle class will not grow until this is resolved. He thinks that other Asian economies will save less and consume more as they come out of the recession.

In response to another question about a stimulus other than government action, he said that there really wasn’t another stimulus source. He noted that the current recession is unlike previous recessions in which a housing downturn occurs simultaneously with the recession. The current

housing downturn began two years prior to the recession, such that much of the adjustment in the housing sector had already taken place. If this was a "normal" recession and if the housing downturn had begun in September, then we would be looking at the recession going for a longer period. Instead, housing related unemployment is starting to end. As a result, it won't continue to be a drag on the economy after another quarter.

Dr. Suyderhoud observed that some people have said that the current situation is in part due to the 2001 recession during which the interest rates were kept too low for too long, and asked if Dr. Nickelsburg thought that the present policy of pushing interest rates to even lower levels may increase the future risk of similar imbalances. Dr. Nickelsburg thought that there is a significant risk of that occurring. They need to push interest rates up soon, but in a way that does not choke off the growth; this is a delicate balance but he thinks Chairman Bernanke will be arguing for slower increases in interest rates to soak up the liquidity.

Dr. Suyderhoud thanked Dr. Nickelsburg and reminded everyone about the Council's meeting at 2:00 P.M. the next day.

ADJOURNMENT:

The workshop adjourned at 12:00 P.M.

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State of Hawaii
Department of Taxation
Revenue Forecasting Model Review

Jerry Nickelsburg
Senior Economist,
UCLA Anderson Forecast

January 8, 2009

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Econometric Model
For Forecasting The State of Hawaii
General Fund Tax Revenues

1. Present a detailed assessment of current and proposed model.
   1. Critique of existing model
   2. Proposed development of new model
   3. Department of Taxation "go-ahead"
2. Draft project report
   1. methodology, model, equations, and performance
   2. Software including justification if other than Eviews
   3. 3 bound and 1 electronic copy of draft report
3. Training for TRP and DoTax Information Technology staff on use of model and software
4. Final Presentation of Model (June 2009)
   1. Oral presentation
   2. 3 bound and 1 electronic copy of draft report

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MAIN THEMES

- Forecast Model Flow
  - Components
  - Hawaii & U.S. by sector
- Critique of The Current Model
  - Methodology
  - Equations
  - Out of Sample Forecasts
- Alternative Model Strategies
  - Variable specifications
  - Distributed Lag Modeling
  - Structural Change Effects
  - Other Modeling Considerations
- Summary and Discussion

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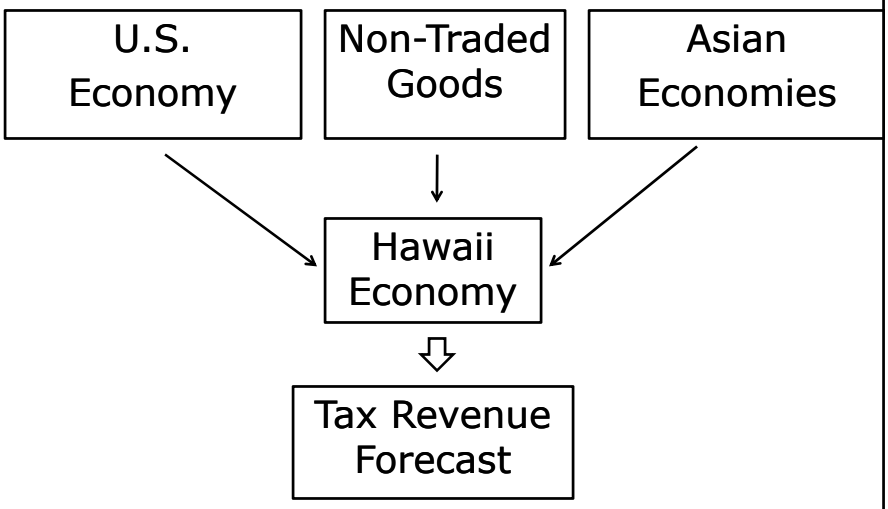
Forecast Model Flow



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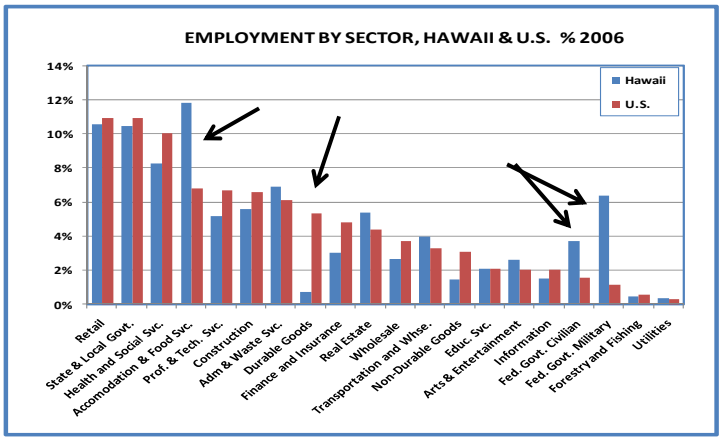
How does Hawaii differ from U.S.?



More Tourism and Federal Government
Less Durable Goods Manufacturing

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Existing Model Methodology

- All variables are levels
- AR(1) used to adjust for autoregressive error terms
- Dummy variables are inserted to pick up changes in the tax code
- Estimation methodology Least Squares
- Equations are estimated individually
- Estimation 1967 (FY) – current year
- Forecast 1 year ahead

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Existing Model Equations

Revenue Type	Model	Total % Var.	
1. Excise & Use Taxes	= f_1(VisArr,TPI,Constr)	51.4	48.0
2. Personal Income	= f_2(VisArr,TPI,Constr)	33.0	33.7
3. Transient Accom.	= no model	4.5	4.1
4. Corporate Income	= f_3(Constr)	2.8	2.6
5. Public Service Co.	= f_4(TPI)	2.5	3.3
6. Insurance Fees	= f_5(GDP Deflator)	2.2	2.1
7. Tobacco & License	= f_6(GDP Constant $)	1.2	1.3
8. Liquor & Permits	= f_7(VisArr,GDP Deflator)	0.9	1.4
9. Conveyance	= f_8(Convey(-1))	0.9	0.4
10. Bank Fees	= f_9(TPI)	0.6	0.5
11. Inheritance	= f_{10}(CYWages)	0.0	0.4
12. Miscellaneous	= f_{11}(Misc(-1))	0.0	0.0

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Out of sample forecast analysis

- Model equations estimated with data from 1967-2004
- Forecast made with actual data for exogenous variables from 2005-2008
- Forecast Compared to Actual

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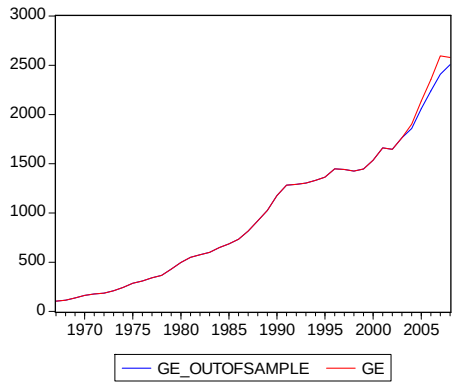
General Excise and Use Tax



In terms of % Change

mean annual growth 8.3%
st. dev. annual growth 5.7%
mean forecast error -4.6%

Excise & Use Taxes = f_1(VisArr,TPI,Constr)

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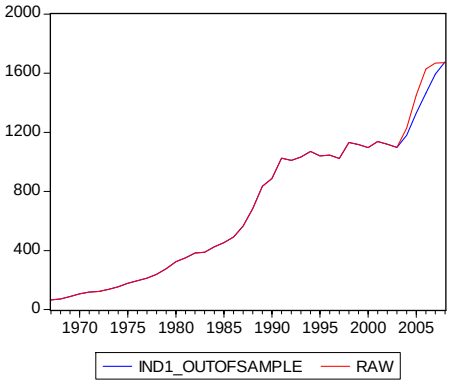
Individual Income Tax



In terms of % Change

mean annual growth 8.5%
st. dev. annual growth 7.5%
mean forecast error -5.6%

Personal Income = f_2(VisArr,TPI,Constr)

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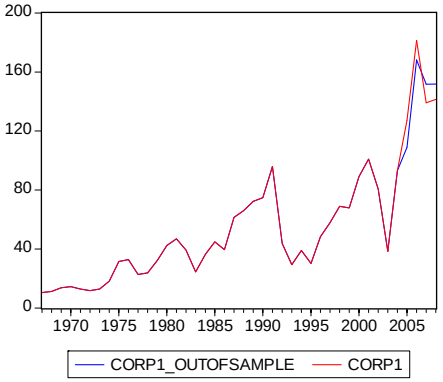
Corporate Income Tax



In terms of % Change

mean annual growth 11.9%
st. dev. annual growth 37.0%
mean forecast error -1.3%

Corporate Income = f_3(Constr)
Forecast tracks actual

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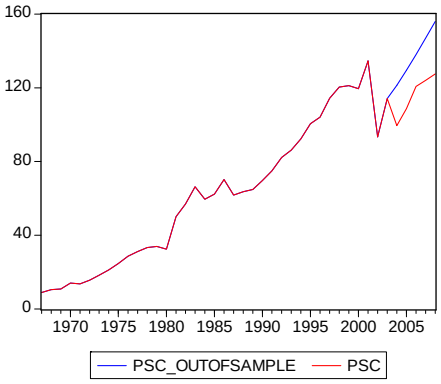
Public Service Tax



Public Service Co. = f_4(TPI)
Forecast has consistent bias

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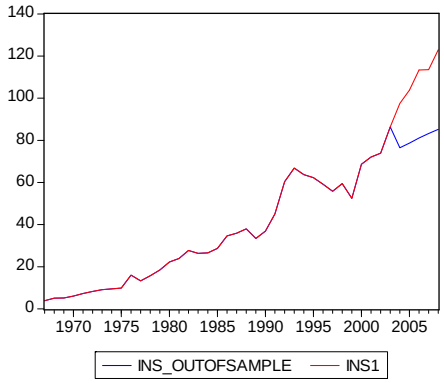
Insurance Tax



Insurance Fees = f_5(GDPDefl)

Forecast has consistent bias

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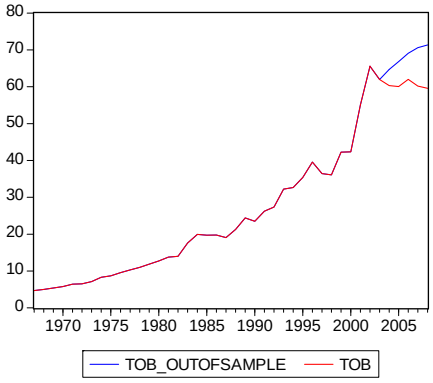
Tobacco & License Tax



Tobacco & License = f_6(GDPCons)

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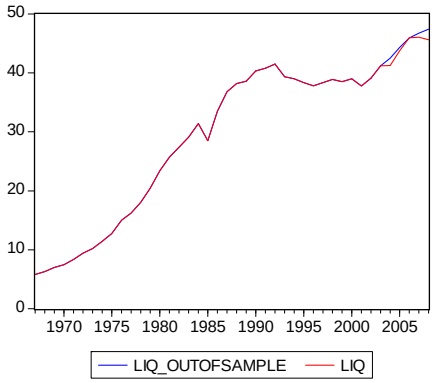
Liquor & Permit Tax



Liquor & Permits = f_7(VisArr,GDPDefl)

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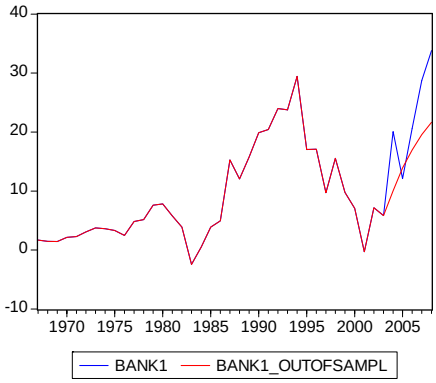
Bank Fees & Taxes



Bank Fees = f_8(TPI)

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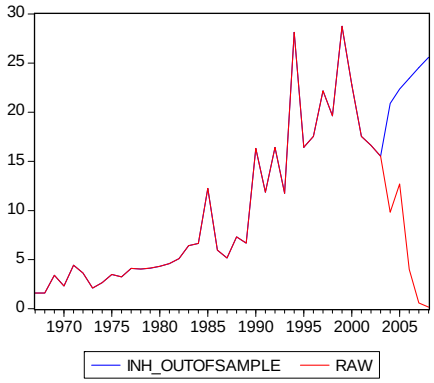
Inheritance Tax



Inheritance = f_9(CYWages)

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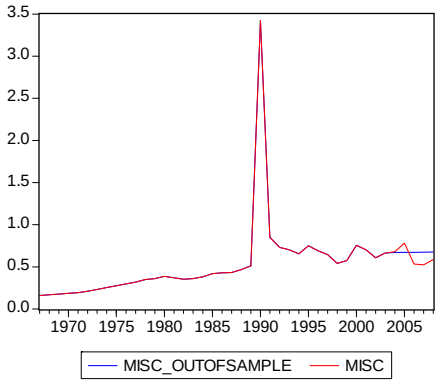
Miscellaneous Taxes



Miscellaneous = f_{10}(Misc(-1))

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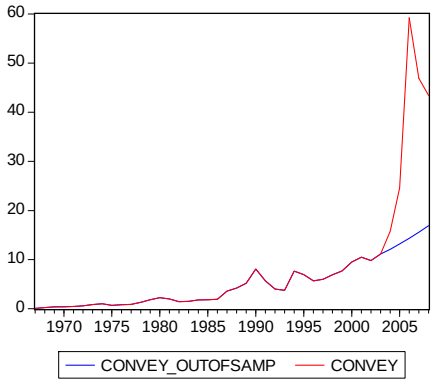
Conveyance Tax



Conveyance = f_{11}(Convey(-1))

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Alternative Estimation Strategies

- Transformations of Variables (ln, diff)
- Timing of revenue streams (distributed lag structures)
- Customized structural change effects
- Other Model Observations

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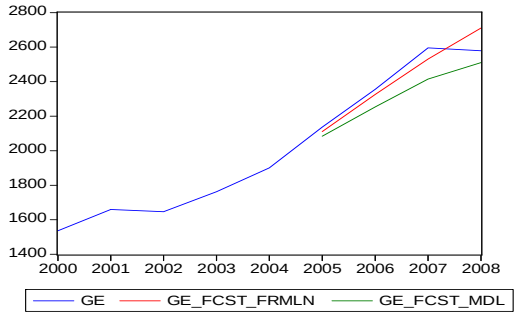
Change Transformation Excise & Use Equation

$\Delta \ln(\text{excise \& use tax}) = \beta_0 + \beta_1 \Delta \ln(\text{visitor arrivals}) + \beta_2 \Delta \ln(\text{nominal personal income}) + \beta_3 \Delta \ln(\text{construction})$



Model performs better
but specification issues remain

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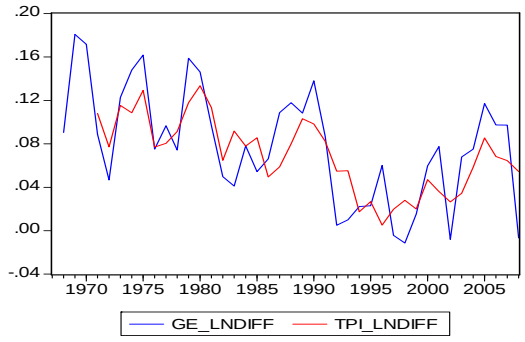
Distributed Lags

Annual % Change Excise & Use Tax Model



- Persistence in changes
- Timing of activity and revenue collection

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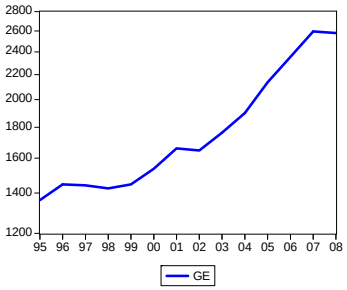
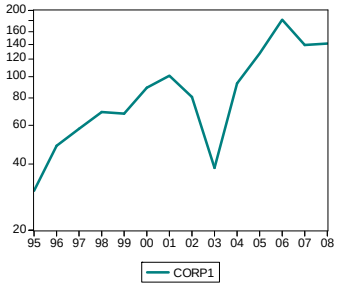
Modeling Changes In Tax Codes

- E&U model: 2001-2008
- Corp. model: 2003-2008 & 2006

E&U log scale



Corp. log scale



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Other Model Observations

- Existing model residuals not correlated
- Collinearity and Stationarity of variables
  - Corporate tax
  - Transient Accommodations
- Relationship of explanatory variable to tax revenue
  - GDP deflator in Insurance & Liquor Models
  - US Real GDP in Tobacco Model
  - Total wages in Inheritance Model
- Core models in nominal values

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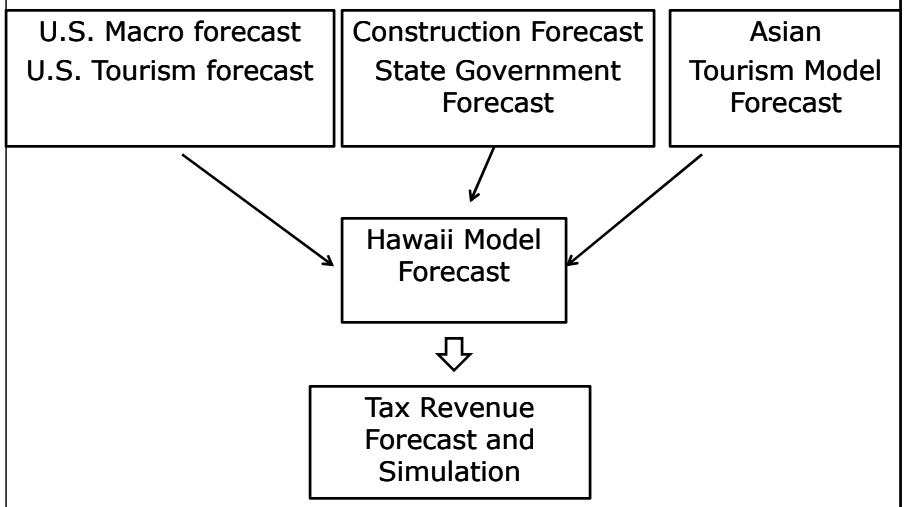
Proposed Forecast Model Flow



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Recommendations & Discussion

- Re-specifiy and re-estimate equations
  - Current model performs well
  - has systematic bias and specification issues
- Add equations to model key variables
  - Foreign and U.S. arrivals
  - Real Personal Income and Inflation
  - U.S. Economy & Federal Budget
- Incorporate explicit Objective Function
- Next Steps

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The UCLA-Anderson Forecast can also provide individual services for your organization.

- Speaking at conferences and events
- Economic research consulting services
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For more information contact:

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Managing Director
323-932-0411
shanna@agsm.ucla.edu

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U.S. Economic Report:
Did we talk ourselves into a recession?

Jerry Nickelsburg
Senior Economist
UCLA Anderson Forecast

January 8, 2009
Department of Taxation
State of Hawaii

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Main Themes

- What is a Recession?
- Have we been in one?
- September, October 2008
- Financial Meltdown and Government Intervention
- When will it all end?
  - The Anderson Forecast
- The California Report and Forecast

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Elements of a Recession

- Recessions are defined by a contraction in output, not a revaluation of assets
  - Sharply rising unemployment > 6.5%
  - Sharp declines in payroll employment > 150,000 jobs per month
  - Sharply declining industrial production
  - 6 months of declining income
- Recessions Matter
  - Housing problems will become worse
  - Bad debt will increase
  - Strain on Social Welfare System

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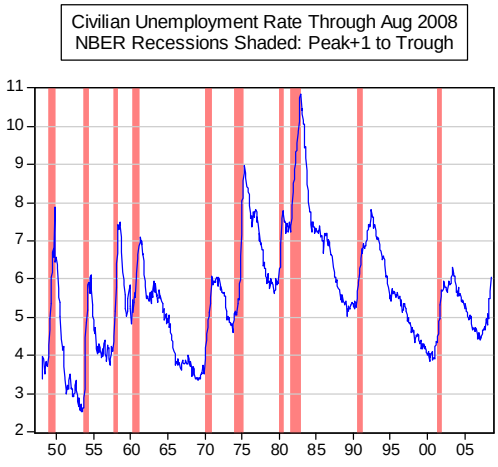
Sharply Rising Unemployment



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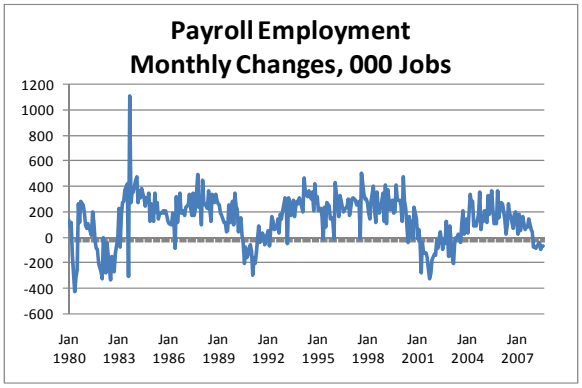
Payroll Employment Not Showing Downturn

- Small Loss of Payroll Jobs consistent with little to no economic growth



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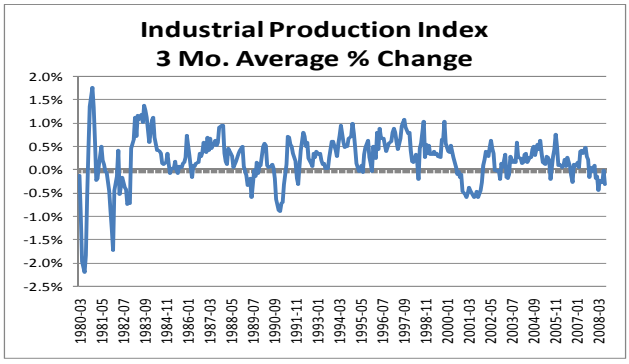
Industrial Production Not Showing Downturn

- Industrial Production Weakens in July, August but consistent with little to no economic growth forecast



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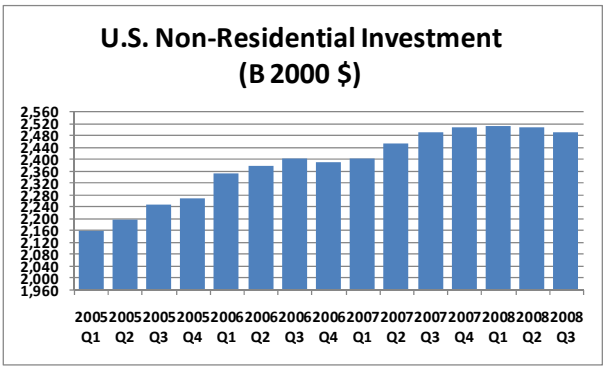
GDP: Non-Residential Investment

- Manufacturing Backlog strong, Investment consistent with slow growth



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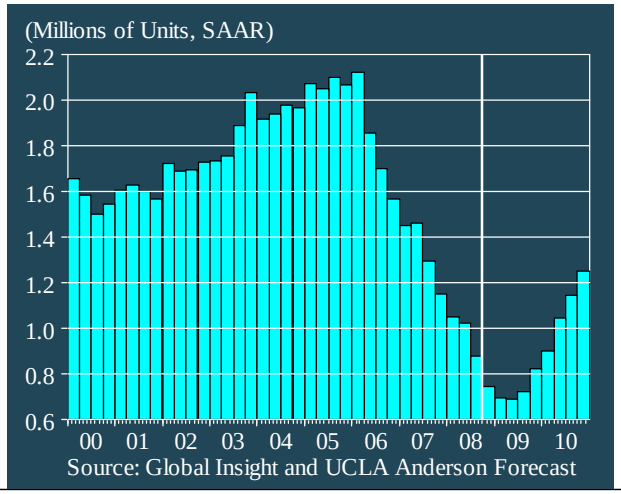
Housing Implosion Gets Worse

Housing Starts, 2000:Q1 – 2010:Q4F



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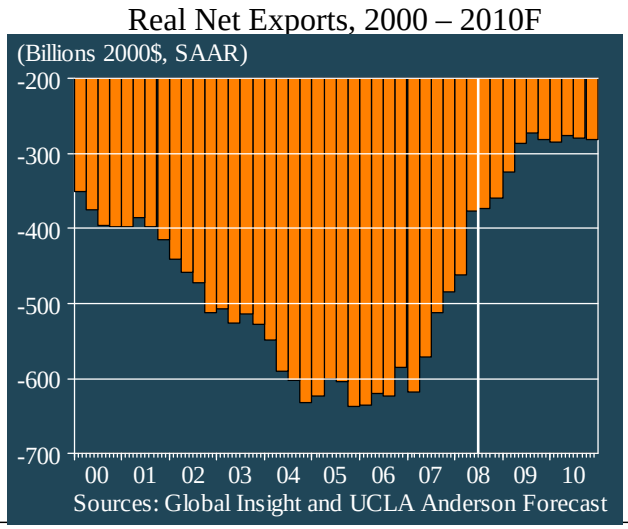
GDP: Net Exports Strong



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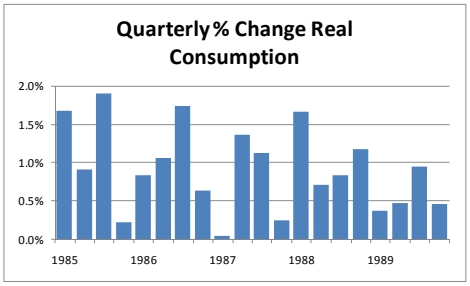
GDP: Consumption and The S&L Crisis

- 1985 Ohio declares a bank holiday with the failure of Home Savings Bank of Cincinnati
- 1989 The Financial Institutions Reform Recovery and Enforcement Act Passed
- Over 721 S & L's and 1,035 banks failed
- Largest Bank Failure Since Great Depression ($800B in 2008$ Assets)



- Americans Go Shopping

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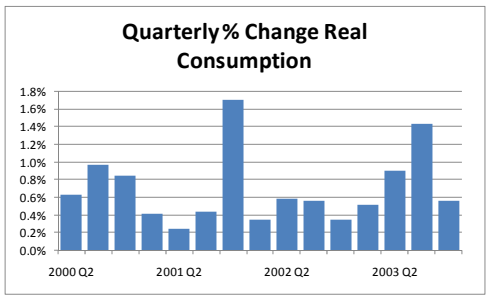
GDP: Consumption and The Dot Com Crisis

- Speculative Bubble comes to an end in March 2000
- $5.8 Trillion in 2008$ in equity value lost



- Americans go shopping

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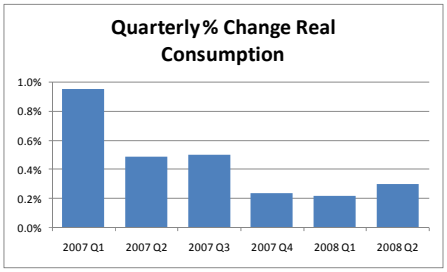
GDP: Consumption and The Sub Prime Crisis

- Housing Market Peaks in Q4 2005
- $3 Trillion of home value lost
- Countrywide, New Century, Fremont, Bear Sterns, IndyMac
- Americans Go Shopping



- Historically consumption is resilient in the face of dramatic changes in asset values
- Consumer demand is negatively related to uncertainty

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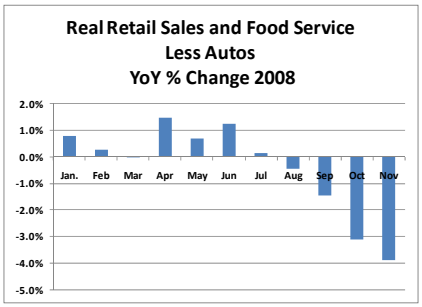
September to November 2008

♦ Employment	-403,000	-500,000	-533,000
♦ Unemployment	6.1%	6.5%	6.7%
♦ Industrial Prod.	-4.1%	+1.5%	-0.6%
♦ Cap. Utilization	-4.2%	+1.3%	-0.8%



What Happened ?

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September 2008

- ♦ September 8: Freddie Mac, Fannie Mae Conservatorship
- ♦ September 14: Lehman Bankrupt
- ♦ September 14: B of A – Merrill Merger
- ♦ September 16: AIG Ward of the Fed
- ♦ September 18: Wall Street Bailout Plan Announced
- ♦ And on and on …

"Despite the efforts of the Federal Reserve, the Treasury and other agencies, global financial markets remain under extraordinary stress," Mr. Bernanke told the Joint Economic Committee. "Action by the Congress is urgently required to stabilize the situation and avert what otherwise could be very serious consequences for our financial markets and our economy."

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September 2008
The Great Uncertainty

-  Fits and Starts in policy making and pronouncements from Wall Street and world capitals created uncertainty about the future course of the economy.

- The consumer responded with a defensive position

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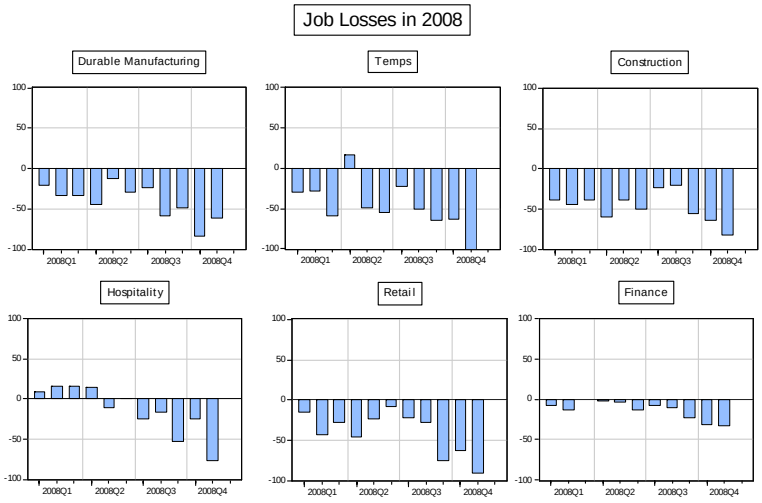
Retail and Hospitality Hard Hit



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Implications of Financial Crisis

- Massive Government Intervention
  - Restricts President-Elect Obama
  - Government picking winners and losers
  - Moral Hazard
- Financial Markets Can't Assess Risk
  - Higher borrowing rates
  - Tighter lending standards
  - Less credit available
- Will another shoe drop?
  Consumers won't come back until they know.

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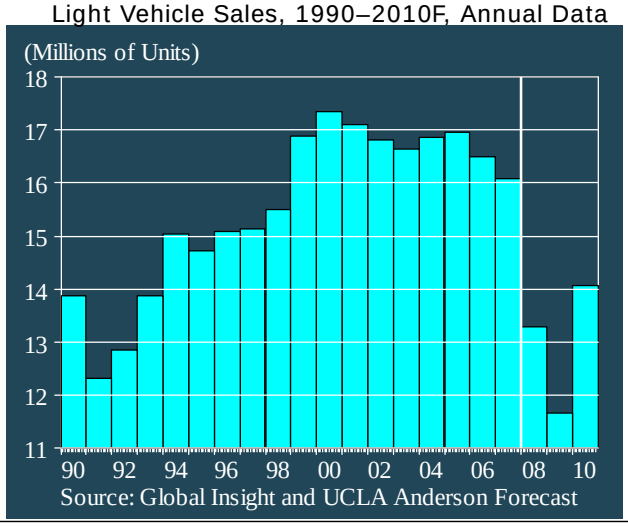
Auto Sales Collapse

Light Vehicle Sales, 1990–2010F, Annual Data



Source: Global Insight and UCLA Anderson Forecast

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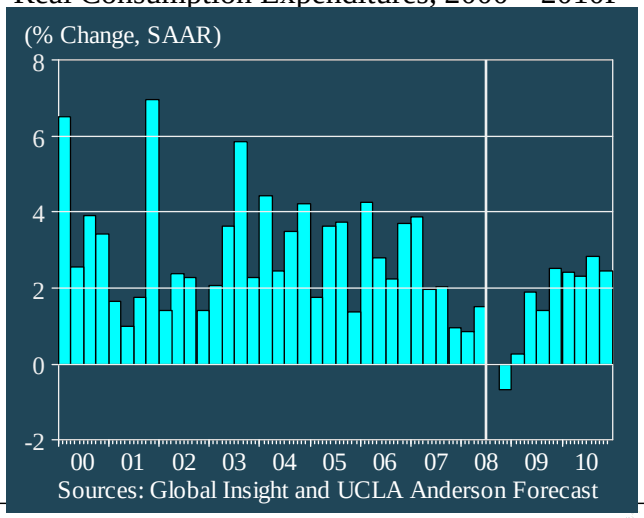
Dragging Down Consumption

Real Consumption Expenditures, 2000 – 2010F



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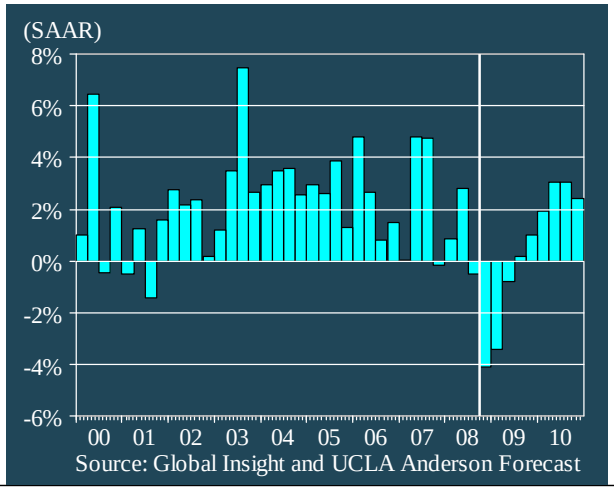
Four Quarters of Negative Real GDP Growth

Real GDP Growth, 2000:Q1 – 2010:Q4F



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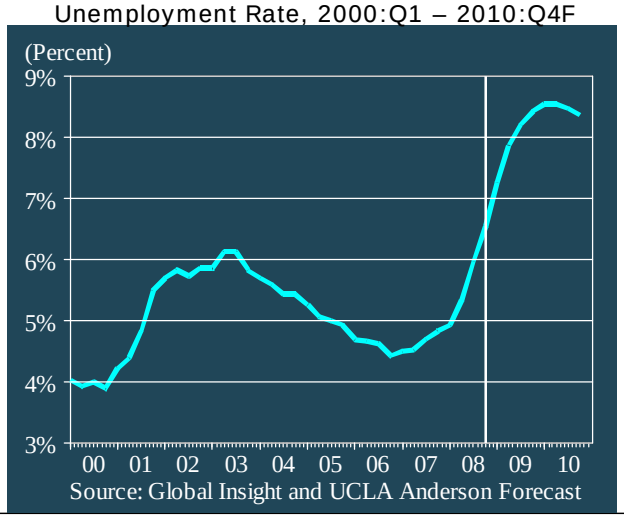
Rising Unemployment

Unemployment Rate, 2000:Q1 – 2010:Q4F



Source: Global Insight and UCLA Anderson Forecast

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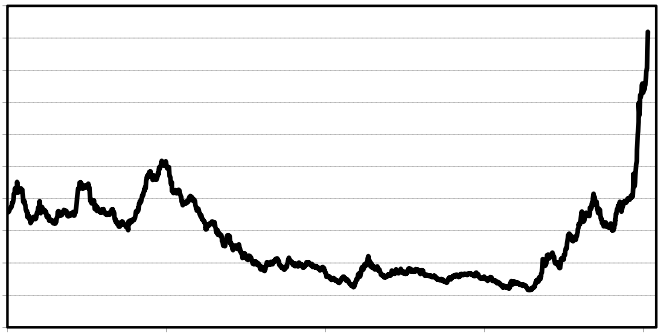
High-Yield Bond Spread Soars

High-Yield Bond Spread vs. Treasuries, Daily Data, Aug. 15, 2000 – Nov. 21, 2008



Source: Barclays Capital Markets

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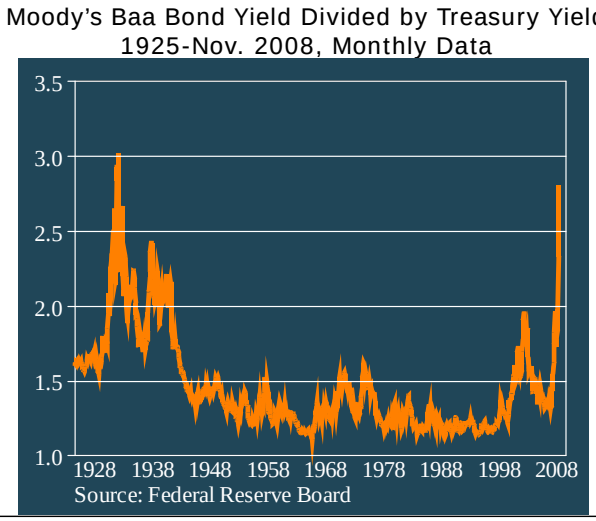
Investment Grade Spreads at Early 1930s Level



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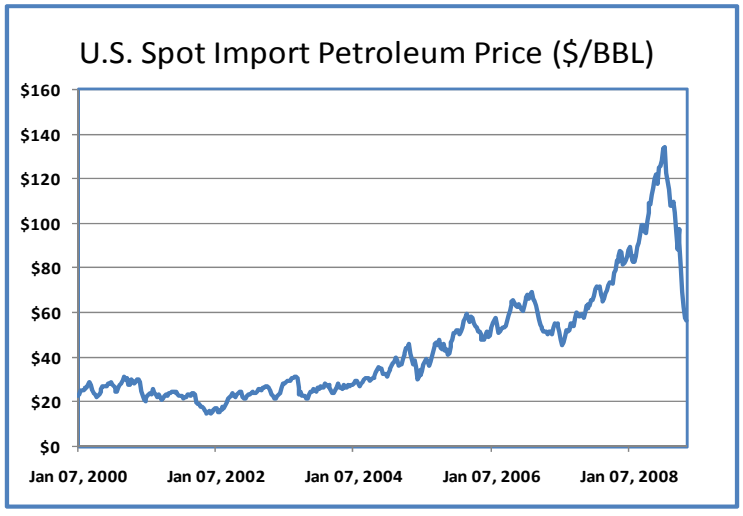
Oil Prices Break



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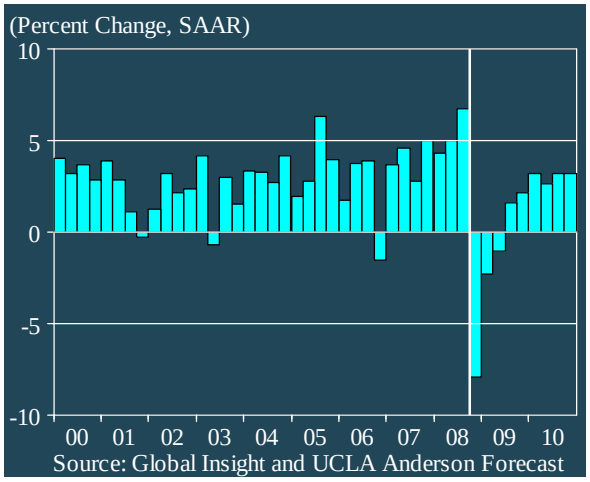
Inflation is Behind us: (deflation?)

Consumer Price Index, 2000:Q1-2010:Q4F



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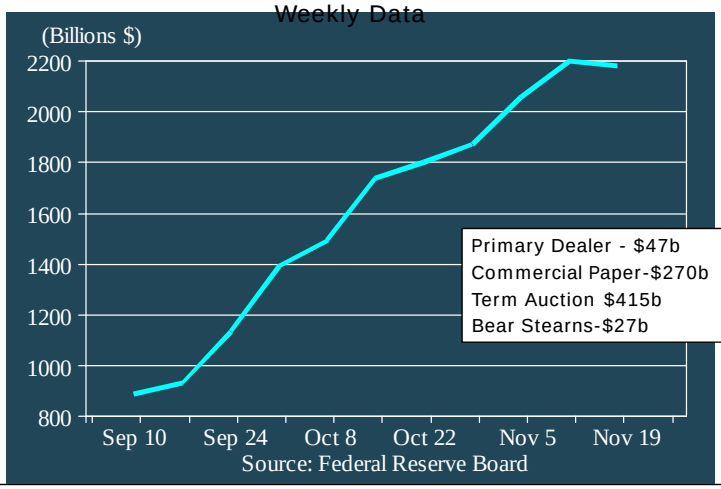
Fed Balance Sheet More than Doubles in Two Months

Federal Reserve Assets, Sept. 10, 2008-Nov. 19, 2008
Weekly Data



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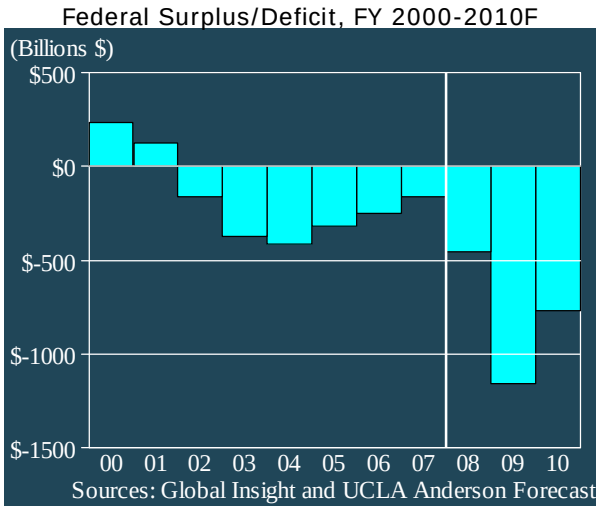
Along with the Federal Deficit



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Reagan-Thatcher Era Over

- Wall Street To Be Heavily Regulated.
- Auto Industry Loan Guarantees.
- Taxes Going Up.
- New Energy Taxes
- Growing Whiff of Protectionism.

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21st Century National Monetary Commission On The Way

- Monetary Commission formed after the Panic of 1907 led to the Federal Reserve in 1913.
- Architecture for the 21st Century Needed.
- More counter-parties subject to regulation, increased capital requirements, swap clearinghouse and greater oversight necessary.

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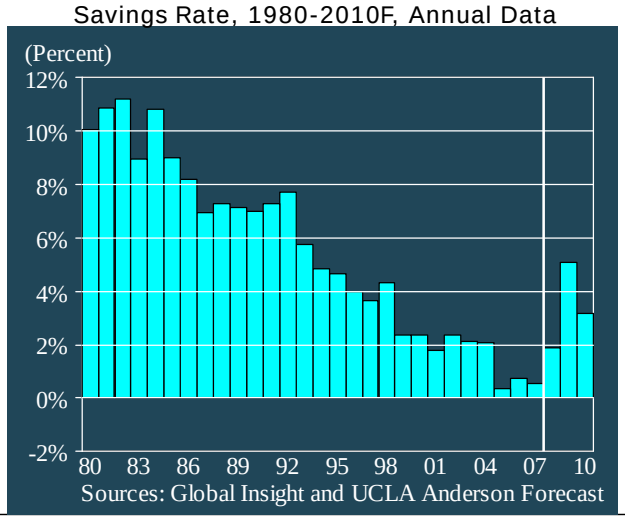
The Savings Rate Must Rise



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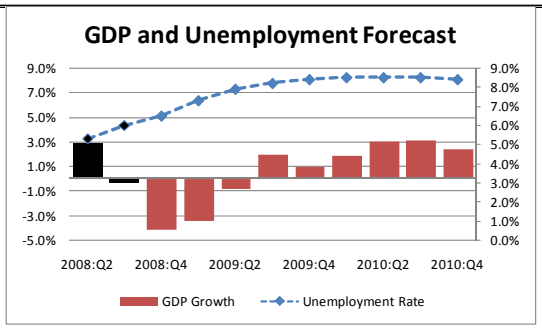
Where does that leave us?



- Sustained period of below trend growth
- Inflation risks behind us for now
- The interventionist cat is out of the bag
  - political risks with non-traditional economic policies

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