U.S. Economy in the Aftermath of the Financial Crisis

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Outline

- Financial Crisis
  - Role of Mortgage Market
  - September-October Developments
  - International Dimensions
- Real Economy Response
- Policy Options

Key Problems

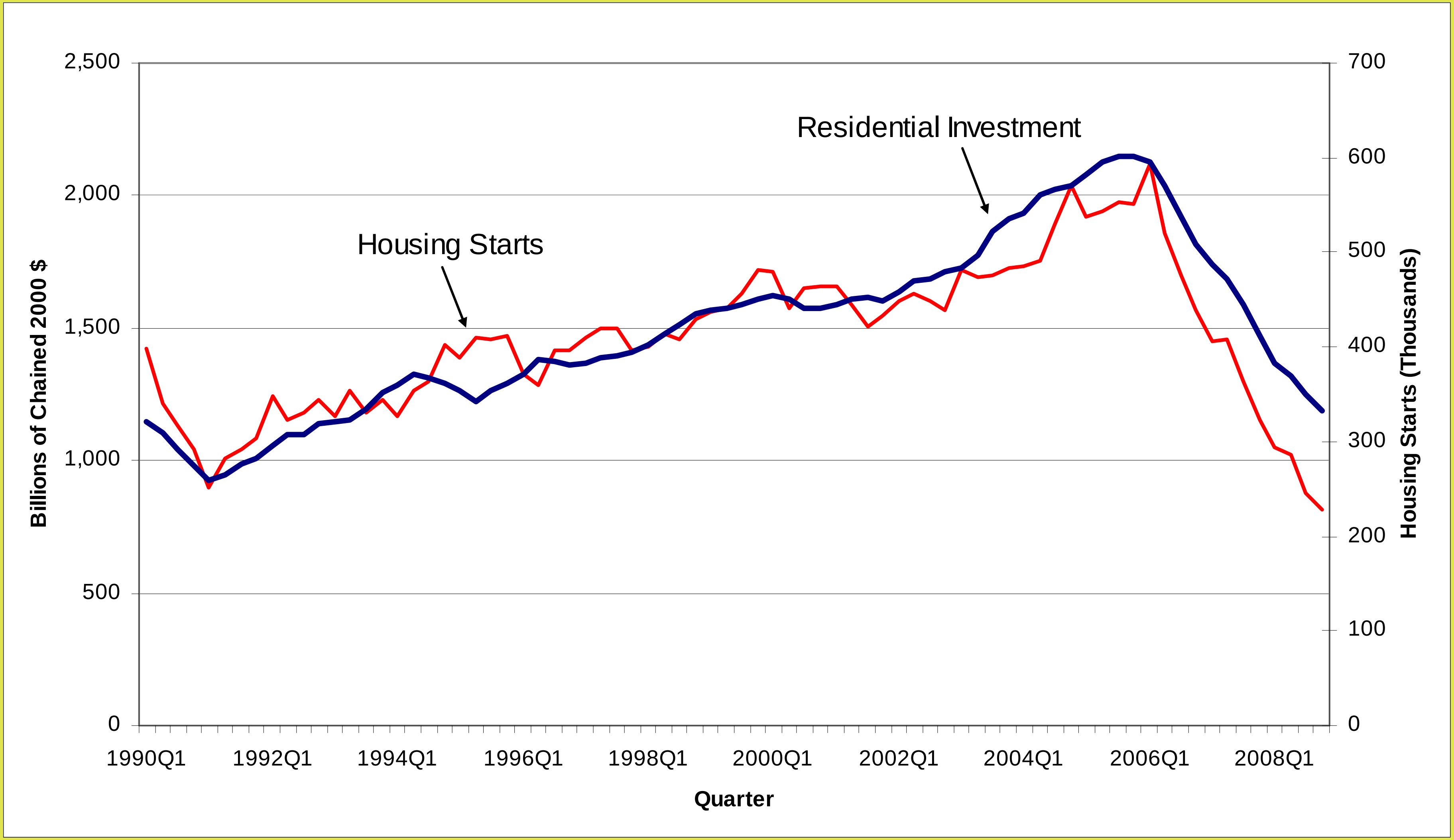
- Asset bubble in housing market fueled by lax lending standards in primary market.
  - Falling Home Prices
  - Subprime-mortgage defaults
  - Mortgages are non-recourse loans in the U.S.
- Excessive leverage of major financial institutions combined with lax regulation.
- Excess risk-taking promoted by compensation system that emphasized high immediate returns.
- Emergence of a solvency crisis.
  - Uncertain condition of counterparties led to freezing of credit flows and liquidity problems.

I. Real Estate Market

- Asset price bubble
  - Fueled by easy monetary policy
  - Low global interest rates (excess saving in Asia)
  - Mortgage innovations
- Mortgage Market
  - Conforming mortgages – GSE securitization
  - Nonconforming mortgages – private securitization
  - Originate and Distribute Model
    - Low cost of funds
    - High yield spreads
  - GSE expansion beyond securitization to purchase for own account.

Real Estate Price Indices: Japan, Sweden, and the United States
(Base Year: Japan = 1985, Sweden = 1985, US = 2000)

US Housing Starts and Residential Investment, 1990-2008



Real Estate Market (2)

- Subprime Mortgages
  - Initially provided access to credit for minorities and marginal neighborhoods, but
  - Most subprime mortgages were for equity extraction, not home purchase
  - Alt-A loans are between conforming and subprime categories - lack documentation and have a lower credit rating of borrower.
- Housing market turned down in late 2005, and problems in subprime market were evident in 2006.
  - Rise in foreclosure rate on sub-prime mortgages
  - Home prices turn down in late 2006

The Pricing of Subprime Mortgage Risk from ABX Index Series

Price Series	1-Jun-07	31-Dec-07	30-Jun-08	4-Nov-08
ABX 06-1 AAA	100.1	93.5	91.8	88.9
ABX 06-2 AAA	99.6	86.8	69.3	61.7
ABX 06-1 AA	100.1	85.0	60.6	48.3
ABX 06-2 AA	99.5	62.2	20.5	19.3
ABX 06-1 A	98.7	61.0	21.2	19.0
ABX 06-1 A	96.2	39.5	9.3	8.4
ABX 06-1 BBB	94.5	33.5	9.7	9.3
ABX 06-2 BBB	82.7	20.5	5.5	4.0
ABX 06-1 BBB-	88.2	29.4	9.0	9.3
ABX 06-2 BBB-	73.1	19.3	5.2	4.0

*Observed market prices (as a percentage of par) by original rating

Estimated Losses IMF

- Subprime and Alt-A (50% default rate)

	Outstanding	Losses
Subprime and Alt-A	$2,400 B	$585
Other Mortgages	$10,940	$415
Other Debt	$9,870	$405
Total	$23,210	$1,405

- About half of projected losses have been recognized through 2008:3.

General Banking Problems

- Generalized crisis of confidence due to concerns about solvency of counterparties.
  - Lack of transparency in structured assets
  - Freezing of interbank lending
  - Hoarding of liquidity
  - Central banks substituted for interbank lending.
  - Creditworthiness issues spread beyond U.S.

General Banking Problems (2)

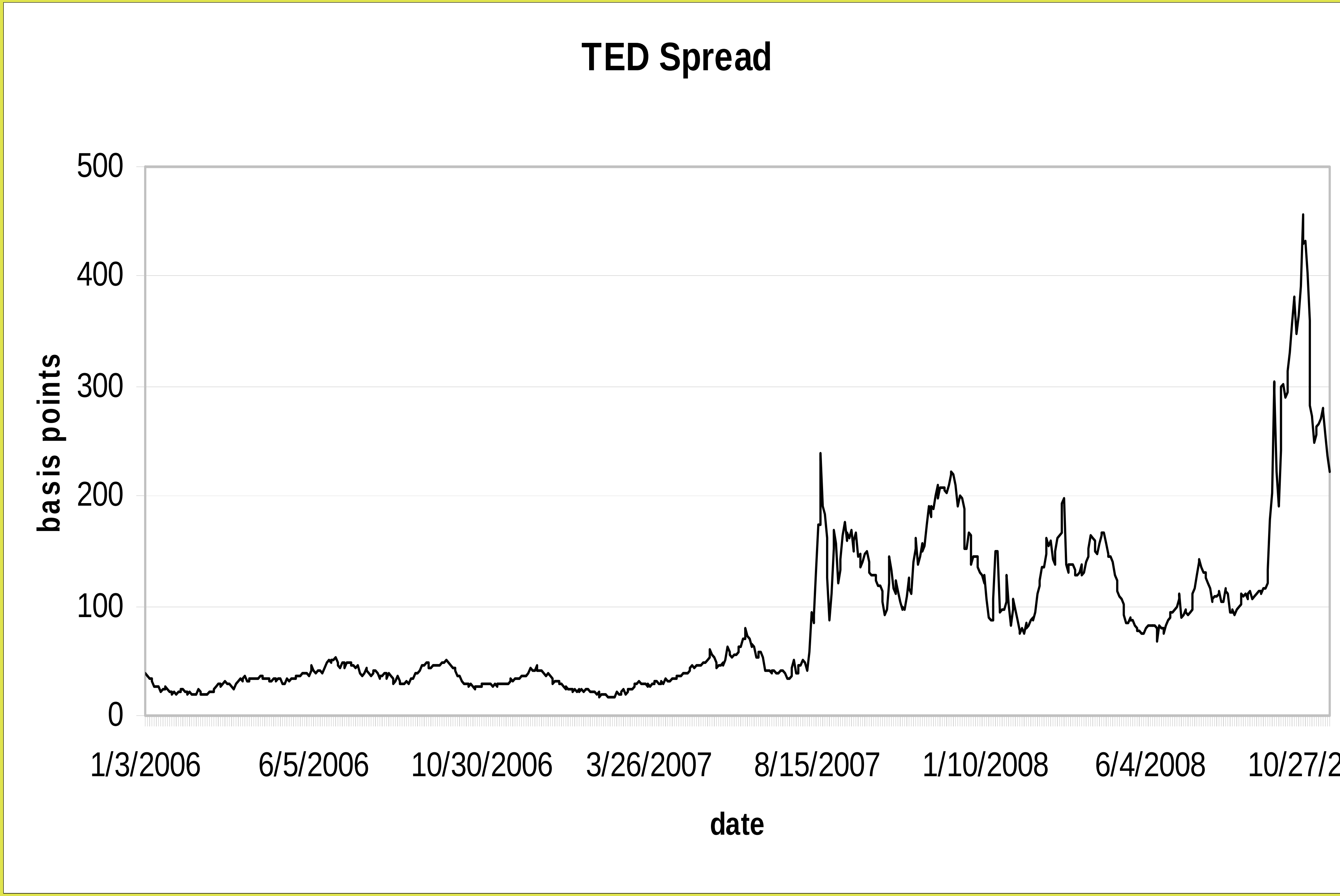
- Lehman and AIG
  - Solvency, not liquidity
  - Treasury problem, not FRB
- Crisis of debt-based bank model
  - Borrowed funds versus deposits
  - No equivalent of deposit insurance
  - Inability to role over debt is equivalent to bank run.
- Deleveraging is underway
  - Many institutions will shrink or disappear.

Typical Financial Leverage

- Ratio of total assets to equity, 2007
  - GSEs - 25x
  - Brokers and Hedge Funds – 32x
  - Saving Institutions – 8.4x
  - Commercial Banks – 9.8x

Financial Leverage of Selected Banks in 2007

	Assets (trillion $)	Leverage (ratio)
U.S. Banks		
Bank of America	1.7	11.7
Citicorp	2.2	19.2
JP Morgan	1.6	12.7
Lehman	0.7	16.1
Foreign Banking Institutions		
Deutsche Bank	2.8	52.0
UBS	2.0	53.4
Credit Suisse	1.2	22.7
BNP	2.4	28.5
Barclays	2.0	37.8
Royal Bank of Scotland	3.2	21.7


TED Spread
basis points
500
400
300
200
100
0
1/3/2006
6/5/2006
10/30/2006
3/26/2007
8/15/2007
1/10/2008
6/4/2008
10/27/20
date

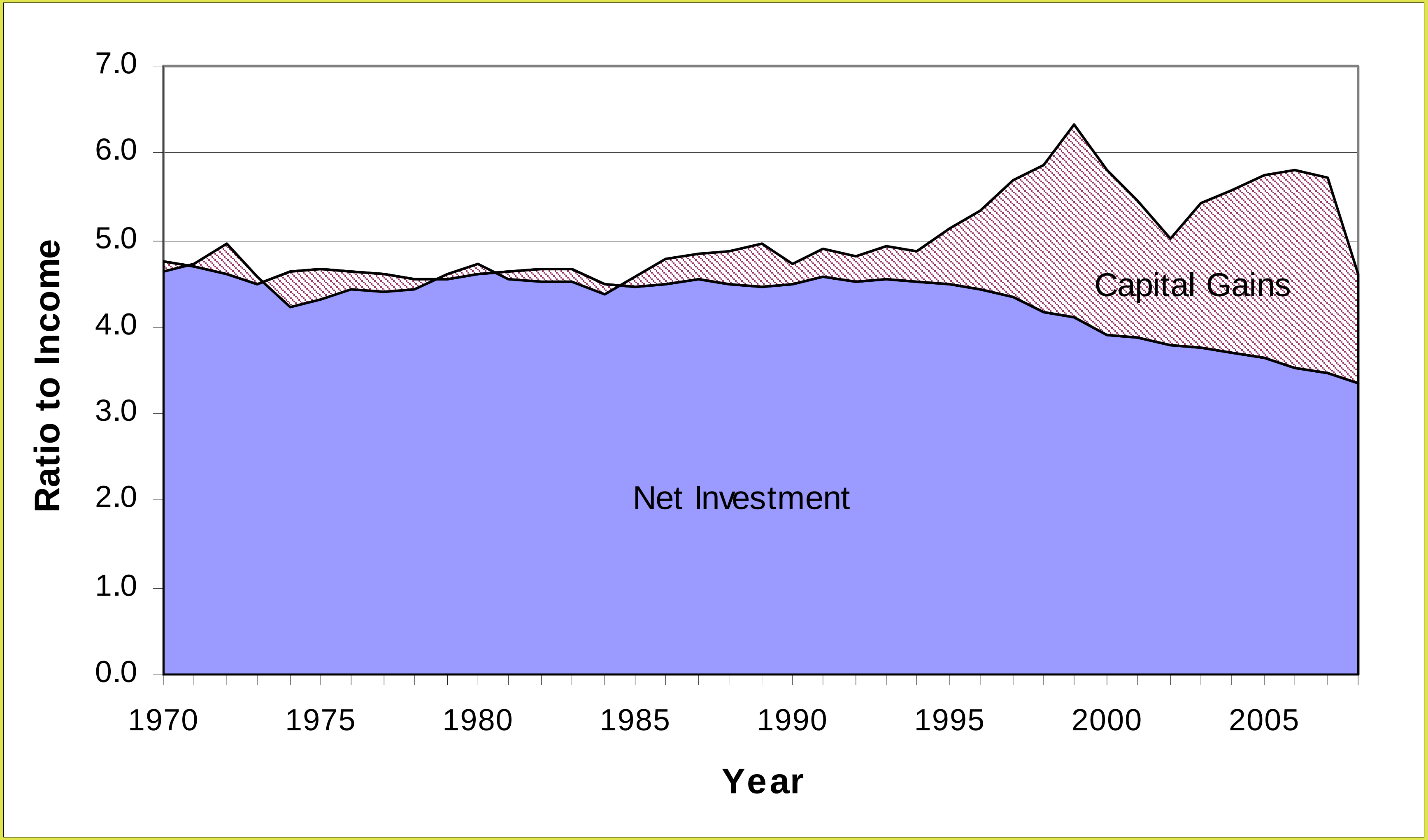
III. Real Sector Effects

- Prior to September expectations of a modest recession
  - Housing decline to be offset by net exports and fiscal stimulus
  - growth in 2008 of about 1.5%
- Situation changed in Sept-Oct
  - Severe credit disruption
  - Huge decline in household wealth

Consumption

- Prior consumption boom drove household saving to zero
- Most common explanations focus on a large rise in wealth-income ratio as capital gains overwhelmed the decline in saving
  - With decline in housing prices and equity prices, wealth-income ratio has returned to historical average
  - Implies a reduction in consumption equal to about 3 percent of GDP.

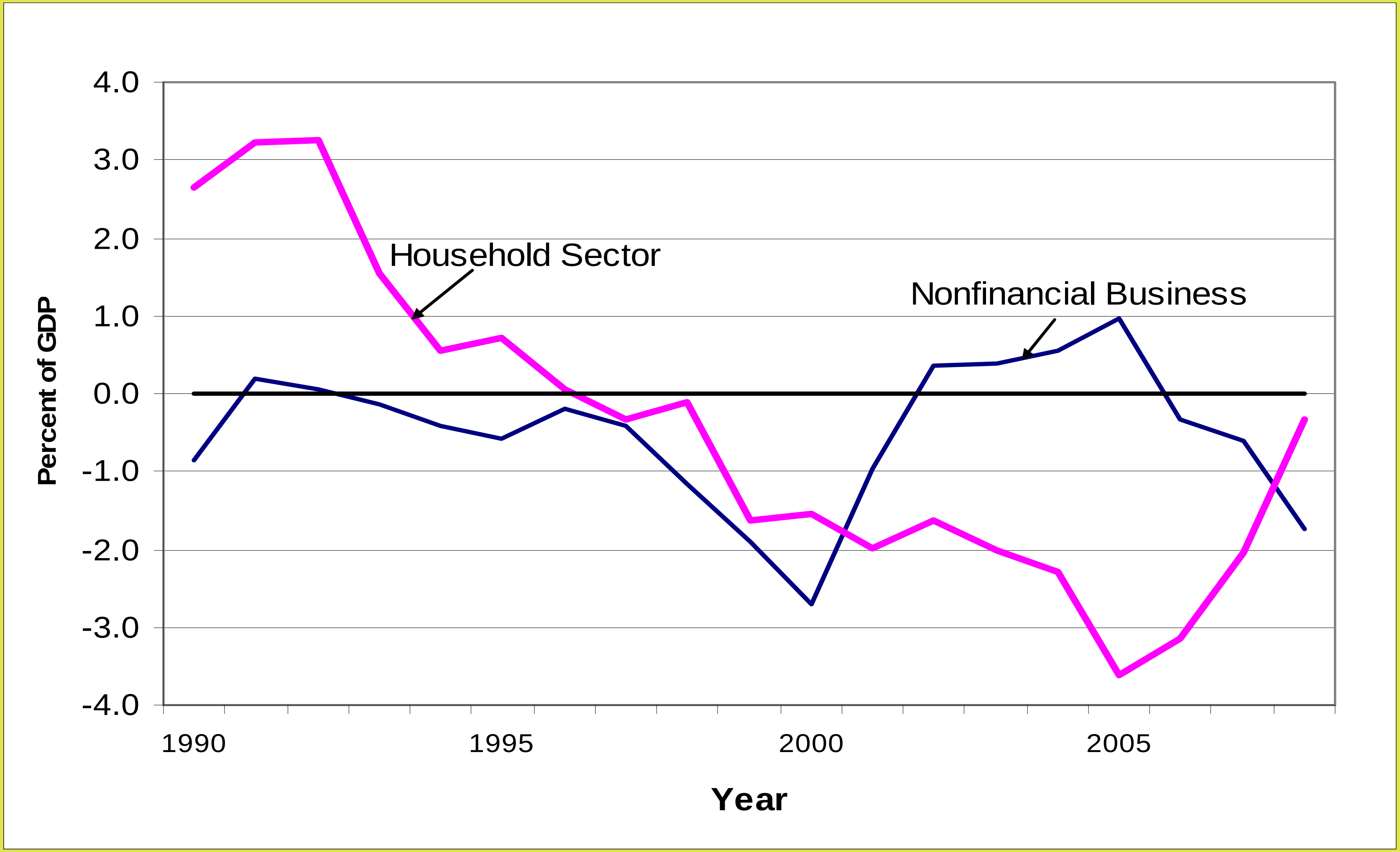
Household Wealth as a Ratio to Income, 1970-2008



Sector Financial Balances

- Large realignment of saving-investment balances
  - Expect household sector to be a net supplier of funds, but it has had a funding deficit in recent year.
    - Low saving, high housing investment
  - Business sector is normally a net user of funds, but corporate sector had a surplus prior to crisis
    - High retained earnings

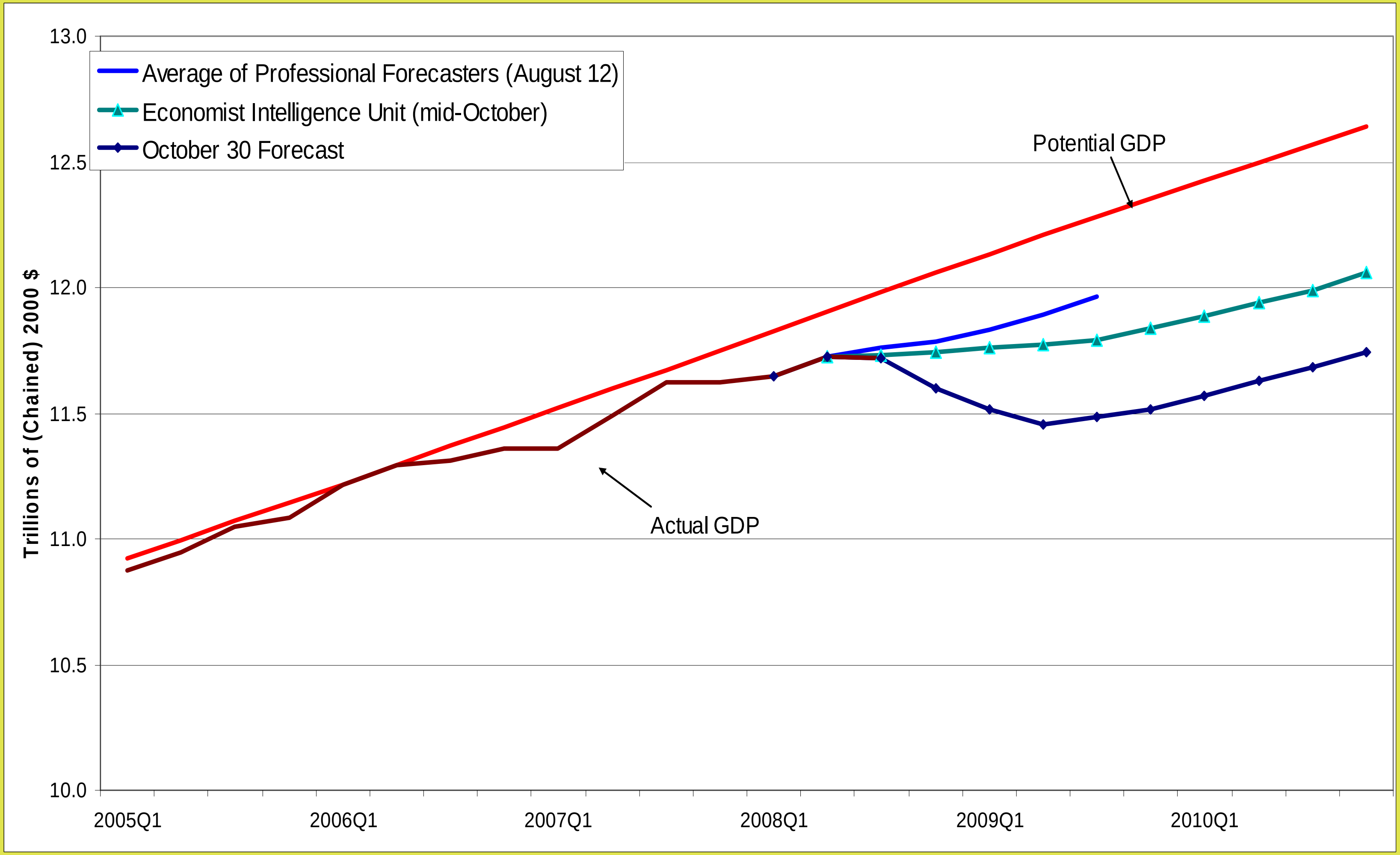
Financial Balance: Saving less Investment as a Percent of GDP, 1990-2008



Current Outlook

- Expectations of severe recession
  - Negative 3-4% growth through first part of 2009
  - Limited recovery in late 2009 and into 2010
  - Based on assumption of large wealth effect and continued credit squeeze.
- Unemployment above 7% in early 2009 and peaking at about 8 percent.
- Rise in dollar and slow growth in other countries will limit some of the offset in net exports.

United States GDP Growth Forecasts Relative to Potential GDP



Policy Options

- Japan's experience suggests that monetary policy will not be effective
  - Damaged balance sheets
  - Deleveraging process
- Small countries with financial crisis
  - Relied on export growth
- U.S. will need large fiscal stimulus
  - Temporary tax cut followed by infrastructure projects.
  - Monetary authorities will continue to be major source of liquidity
  - Treasury TARP program is proceeding slowly

Policy Options

- Budget deficit begins from a $500 base level
  - Revenue losses in FY2009 of $150B and over $200B in 2010
  - $200 – 300 fiscal stimulus
  - Budget costs of TARP of $100 – 200B
- Key problem of stabilizing housing market
  - US mortgages are nonrecourse loans.
  - Strong incentives to default with negative equity
  - As many has 1/3rd of loans will have negative equity position by yearend.