## William C. Handorf, Ph. D.

<table>
<thead>
<tr>
<th>Current</th>
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<tbody>
<tr>
<td>Professor of Finance</td>
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<tr>
<td>The George Washington University</td>
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<tr>
<td>Consultant</td>
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<tr>
<td>Banks</td>
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<td>Central Banks</td>
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<td>Corporations</td>
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<tr>
<td>Director</td>
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<td>Federal Home Loan Bank of Atlanta</td>
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<tr>
<th>Experience</th>
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<tr>
<td>Director</td>
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<td>Federal Reserve Bank of Richmond</td>
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<td>Federal Home Loan Bank System</td>
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<tr>
<td>Regulator</td>
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<tr>
<td>Federal Deposit Insurance Corporation</td>
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<td>Federal Home Loan Bank Board</td>
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<tr>
<td>Lender</td>
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<tr>
<td>National Bank of Detroit</td>
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<td>Officer, United States Army</td>
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Bank Failure

Liquidation

Economic

Financial

Managerial
Recent “Failures”

- AIG
- Bank United
- Bear Stearns
- Chrysler
- Citigroup
- Downey
- Fannie & Freddie
- GM (US Auto) & GMAC
- Indy Mac
- Lehman Brothers
- WAMU
- Wachovia
- Who is next today?
Bank Failure and the Economy

- Economic Recession
- High and/or Increasing Unemployment
- High “Real” Interest Rates
- Regional “Boom to Bust”
- Low Confidence in Banks or the Central Bank
Bank Failure and Asset/Liability Management

- Low Capital
  - Losses
    - Loan Problems
    - Concentrated Portfolio
    - Loss of Cost Control
  - Quick Growth

- Liquidity
  - Non Core Fund Reliance
  - Lack of Good Collateral
  - Bad Press & Run

- High-yield Assets
- High Sensitivity
Bank Failure and Management

- High number and percentage of loans to insiders
- Passive Board of Directors
- Lack of coherent business plan
  - Quick growth funded by high cost funds offset by high yield assets
  - High dividend payouts and stock repurchase programs
  - Shrinkage to maintain capital ratios leads to even lower profits given fixed non-interest costs
- Ineffective risk management
- Fraud
Resultant Governmental Actions

- US Treasury invests in low-cost preferred stock (US $250 billion)
- FDIC raises deposit insurance limit and guarantees bank debt (US $400 billion)
- Federal Reserve provides long-term loans and purchases securities (US $2 trillion)
Housing Problem History

- Home prices rise quickly after dot.com bust and central bank reduces interest rate to very low levels
- Investors earn 50+% returns with 10% annual appreciation and encourage speculators to purchase more property
- Mortgagors need “innovative” loans and “piggy-back” loans to afford a home prior to even higher prices
- Wall Street encourages brokers to originate more high-yield loans for MBS
- MBS losses trigger “dominoes” to fall
## US Home Prices

- **Annual Price Change**
  - 2001: 8.9%
  - 2002: 15.0%
  - 2003: 13.4%
  - 2004: 19.9%
  - 2005: 14.8%
  - 2006: 0.2%
  - 2007: -9.7%
  - 2008: -19.1%
  - 2009: -2.5%
  - 2010 Increasing
Major Metropolitan Areas: What Goes Up Most Comes Down Hardest

• Home Prices Increased 100% (since 2000 to peak)
  – Miami
  – Los Angeles
  – Washington, DC
  – San Diego
  – Tampa
  – Las Vegas
  – Phoenix
  – San Francisco
  – New York

• Home Prices Declined at least 40% (peak to trough)
  – Las Vegas (boom)
  – Phoenix (boom)
  – Miami (boom)
  – Tampa (boom)
  – Detroit (bust)
Accommodative Monetary Policy

- Reduce Interest Rates 13 Times 2001-2003
  - Reduce Cost of Short-term Borrowing
    - Consumer
    - Corporate
    - Fiscal
  - Stimulate Growth
  - Reduce Value of US$
  - Stimulate Inflation
  - Increase Rates Mid-2004
Interest Rate Trends

Percent

Three Month Treasury Bill
Mortgage Risk

- A: Excellent Credit History (84%); Prime Borrower
- Alt-A: Income not Verified or Property not Appraised (6%); Higher Rate Loan
- B/C: Mediocre to Weak Credit History (10%); Much Higher Rate Loan
Credit Score

- Payment history
- Amount of debt owed
- Length of credit history
- New credit requested
- Types of credit used
Real Estate Loan Risk

- Type - Balloon loans or non-amortizing more risky than amortizing
- Interest Rate - Adjustable-rate more risky than fixed rate
- Amortization Period - Long-Term (40 years) amortization more risky than medium-term (15 years)
- Purpose - Equity refinance more risky than purchase
- Occupancy - Second home or investment home more risky than primary property
Mortgage Products

Monthly Payment per $100,000 Loan
Initial is First Five Years

<table>
<thead>
<tr>
<th></th>
<th>Initial Pay</th>
<th>Later Pay</th>
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<tbody>
<tr>
<td>30 Fixed</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>40 Fixed</td>
<td>555</td>
<td>555</td>
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<tr>
<td>Interest only</td>
<td>515</td>
<td>655</td>
</tr>
<tr>
<td>ARM</td>
<td>475</td>
<td>610</td>
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<tr>
<td>Pay Option</td>
<td>375</td>
<td>725</td>
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- Fixed-rate 30 Year
- Fixed-rate 40 Year
- Interest-only (5 years) 30 Year Loan
- Adjustable-rate 30 Year Loan
- Payment Option (up to 110% LTV) 30 Year Loan
U.S. Foreclosure Market Report Heat Map 2010
Empirical Foreclosure Analysis

• Leading Causes
  – Negative Equity (35%)
  – Unemployment (23%)
  – Sub prime (18%)
  – Loan-to-value (LTV) > 97% (16%)
  – Payment Reset (8%)
Mortgage Problems Remain

• A record 14% of home loans are 30+ days slow or in foreclosure
• About 24% of borrowers have negative equity
• Only 5% (v. 45%) of slow loans are being cured
• Loan workouts are performing badly
  – 25% slow within 6 months if payment reduced
  – 50% slow within 6 months if payment not reduced
Implications for Acquisition, Development and Construction (ADC) Loans

- Excess housing inventory eliminates demand for new home lots by builders
- Expectations of falling home prices stem demand for new homes
- Strict underwriting limits potential buyers
- As a result, land sells for 20% of cost; banks incur substantial losses on ADC loans
Supply Factors

Investment Banks
Sell Highly-Rated Securities
backed by High-Yield Loans

Mortgage Brokers
Originate High-Yield Loans
then Sold to Banks

Mortgagors Require
Credit to Afford Homes
Prior to Higher Prices

Investors and Speculators Seek
Credit to Purchase Real Estate
and Enhance Returns
Securitization

Pool of Residential Mortgages

Mortgage Payments

Packager/Servicer

Mortgage Backed Security

Senior Tranche (AAA)

Mezzanine Tranche (BBB)

Junior Tranche (Low-grade)
CDO’s
(Collateralized Debt Obligations)

RMBS From Loans

AAA
81%

AA
11%

A
4%

BBB
3%

Unrated
1%

Loan Losses

CDO Collateral

BBB

AAA

AA

A

BBB

Unrated

Super Senior

62%

AAA

14%

AA

8%

A

6%

BBB

6%

Equity

4%

Other CDO’s
Financial Market
“Flight-to-quality”

- Unexpected losses on highly-rated mortgage-backed securities lead to:
  - Wall Street unable to sell new MBS and stop buying loans from mortgage brokers
  - Mortgage brokers incur liquidity problems and fail when unable to sell loans and correspondent banks cut lines of credit
  - Sub-prime, Alternative-A and investment mortgagors unable to obtain credit
  - Prime mortgagor loans underwritten more carefully
  - Stock of unsold homes increase, absorption periods lengthen and prices fall
Implications of Home Loan Problems

- Lower tax base
- Higher homelessness
- Bank failures and GSE problems
- Lost real estate wealth and MBS investment value
- Inability to refinance or obtain home equity loan
- Lost employment and retail spending
- Very weak economy
Subprime Problem Culprits

- Central bank
- Other bank regulators
- Unregulated mortgage brokers
- Bank risk managers
- Bank management and board of directors
- Credit rating agencies
- Appraisers
- Investors seeking high yield with no recognition of risk
- Federal government efforts to support affordable housing
Regulatory Implications

• Strict loan underwriting
• Higher FDIC insurance premiums
• Higher capital requirements
• More attention to liquidity
• Federal Reserve a lender of “first resort”
• Department of Treasury a source of Tier I capital
• What is “exit” strategy for government?
• Who will buy US debt to pay for stimulus?