Discussion of:
"Declines in the Volatility of the U. S. Economy: A Detailed Look"

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BEA Advisors' Meeting, May 2, 2008

This Document Consists of Two Papers

- Paper #1 is a detailed look at variance across states and industries comparing 1978-84 with 1985-97
  - Base data 51 states and 63 industries
  - Aggregated also into 8 economic regions and 13 industry groups
- Paper #2 is an attempt to explain the variance in Real GDP 1972-97 by three explanatory variables
  - Nothing about states or industries in Paper #2

Makes Sense to Discuss this Document in Reverse Order, Paper #2 and then Paper #1

- Why?
  - Paper #2 develops an econometric equation to explain aggregate variance in real GDP without any state or industry detail
  - The disaggregated data in Paper #1 are not used in Paper #2, and so the 1978-97 constraint on the time period can be abandoned
  - Pure macro, hence can be compared with previous macro research
  - Main finding of Paper #1 can be better interpreted after learning about the causes of macro aggregate variance from Paper #2 and previous research

Agenda for the Discussion

- G-S paper includes my 2005 paper in the reference list but never actually mentions my results anywhere

- First I'll summarize my results about the "Great Moderation" which provide perspective on both their Paper #2 and Paper #1

- Then some comments on Paper #2, last comments on Paper #1

Qualification and Quibble: Dates

- Their Paper #2 only covers 1972-97. The reasons (SIC vs. NAICS) that caused them to stop in 1997 for Paper #1 are irrelevant for paper #2. They should have covered 1947-2007, and my results are based on 1947-2005.

- My decomposition of sources of variance depends on the full high volatility period 1947-1984, not just their 1972-1984

- Key example: For them, Fed government is a source of stability, for me a core source of instability. Difference: they omit the 50s & 60s!

My List of Hypotheses for post-1984 Reduction in Volatility

- Shocks
  - Demand shocks
    - Federal government: declining importance and volatility of military spending
    - Inventory management
    - Financial Market Deregulation stabilized residential housing at least until post-2001
  - Supply shocks, and their effect on inflation dynamics and on monetary policy
- More monetary policy emphasis on stabilizing output after 1990
- Of Lesser Importance
  - Shifts in shares to services (G-S correctly dismiss this)

Basic Disagreement with G-S Paper #1 on Industries and States

- For most macroeconomists, shocks originate in planned private expenditures, in monetary/fiscal policy, and in supply shocks

- Thus we should start with C+I+G+NX

- The G-S industry composition is mainly telling us that the important macro demand and supply shocks hit all industries, not just a few. That is why their covariance terms are so important

Preview of My Approach

- Demand Shocks: Composition analysis across 11 components of spending on GDP
    - Role of composition shifts vs. reduction in within-sector volatility
    - Isolation of three sectors as most responsible for improved stability; support for demand shocks
- Emphasis on Supply Shocks that Drove Inflation Volatility 1972-84

How to Compare Impact of Monetary Policy with Reduced Shocks?

- Estimation of a Three-Equation Simultaneous Model
- Three equations are:
  - My inflation equation in which supply shocks are explicitly entered and identified
  - A Taylor rule that makes interest rates endogenous to inflation and the output gap
  - An output equation depending on lagged interest rate changes; residuals are interpreted as demand shocks

Rolling 20-quarter Standard Deviation of 4-qtr Δs in Real GDP, 2.8 vs. 1.3 pre/post 1988:Q1
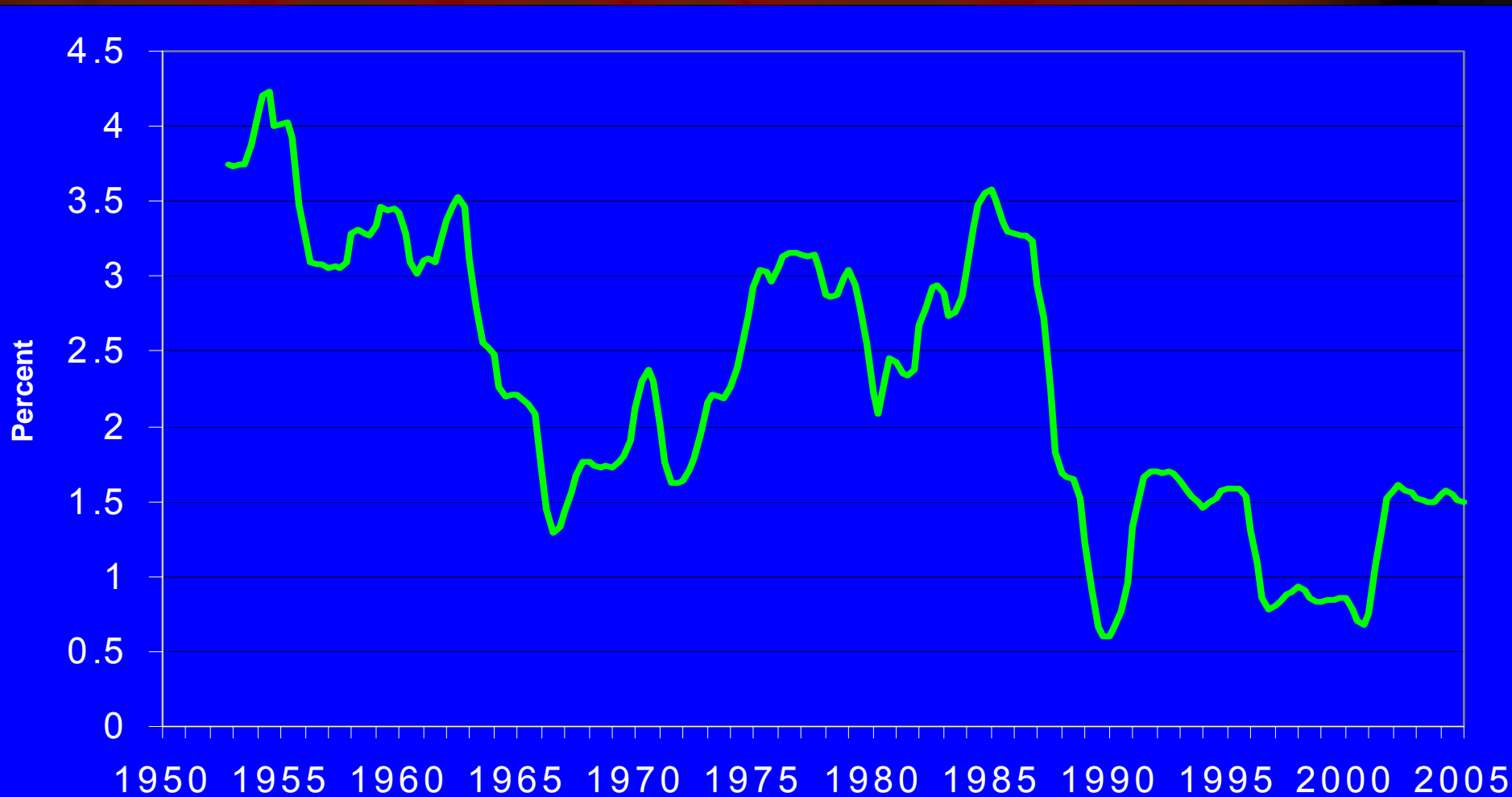
Their Comment on Blanchard-Simon that Volatility had Declined over a Longer Period, interrupted in 70s

- Moving Outside of the Narrow 1978-97 Prism, What are the Facts?

- Contra Blanchard-Simon, there was nothing steady about decline in volatility: high 50s, low 60s, high 70s-80s, low after 1988

- How Did the Evolution of Real GDP Volatility Compared with Inflation Volatility?

- 20-quarter Rolling Standard Deviations of Real GDP and GDP Deflator *Growth Rates*

Inflation vs. Output Volatility: Sometimes the Same, but Other Times Different

Already We Have Support for their Main Conclusion in Paper #2

- Decline in the Volatility of Inflation was a Major Source of the Decline in Output Volatility after 1984

- Pattern of Decline in Output vs Inflation Volatility was Different

  - Output Volatility was High in 1950s, Lower 1960s

  - Inflation Volatility was Low in 1950s

Summary of inflation volatility vs. real GDP volatility (20 qtr stdev)

	1952-72	1973-87	1988-2005
Real GDP	2.69	2.87	1.25
GDP Deflator	1.11	1.67	0.48

Turn to My Tables for Decomposition Analysis

- Table 1: Standard Deviations and Shares of 11 Sectors

- Table 2: Effect of Shifts in Shares and Own-Sector Volatility

- Table 3: Contributions to GDP Change:
  - Emphasis on Residential Investment, Inventory Investment, and Federal Spending

Building the Three Equation Model

- Combines my "mainstream" or "triangle" approach to explaining inflation
  - Inertia
  - Demand through output or U gap
  - Specific supply shocks
- "Taylor Rule" equation for Fed Funds rate
  - Coefficients allowed to change, 1979 and 1990
- Output gap equation with feedback from interest rate changes
- Comment on Differences with Stock-Watson (2002, 2003)

Supply-shock variables

- Changes in the relative price of nonfood nonoil imports

- The food-energy effect

- Acceleration and deceleration of the productivity growth trend

- Nixon-era controls, held down inflation in 1971-72, boosted inflation in 1974

The Dramatic Effect of Supply Shocks
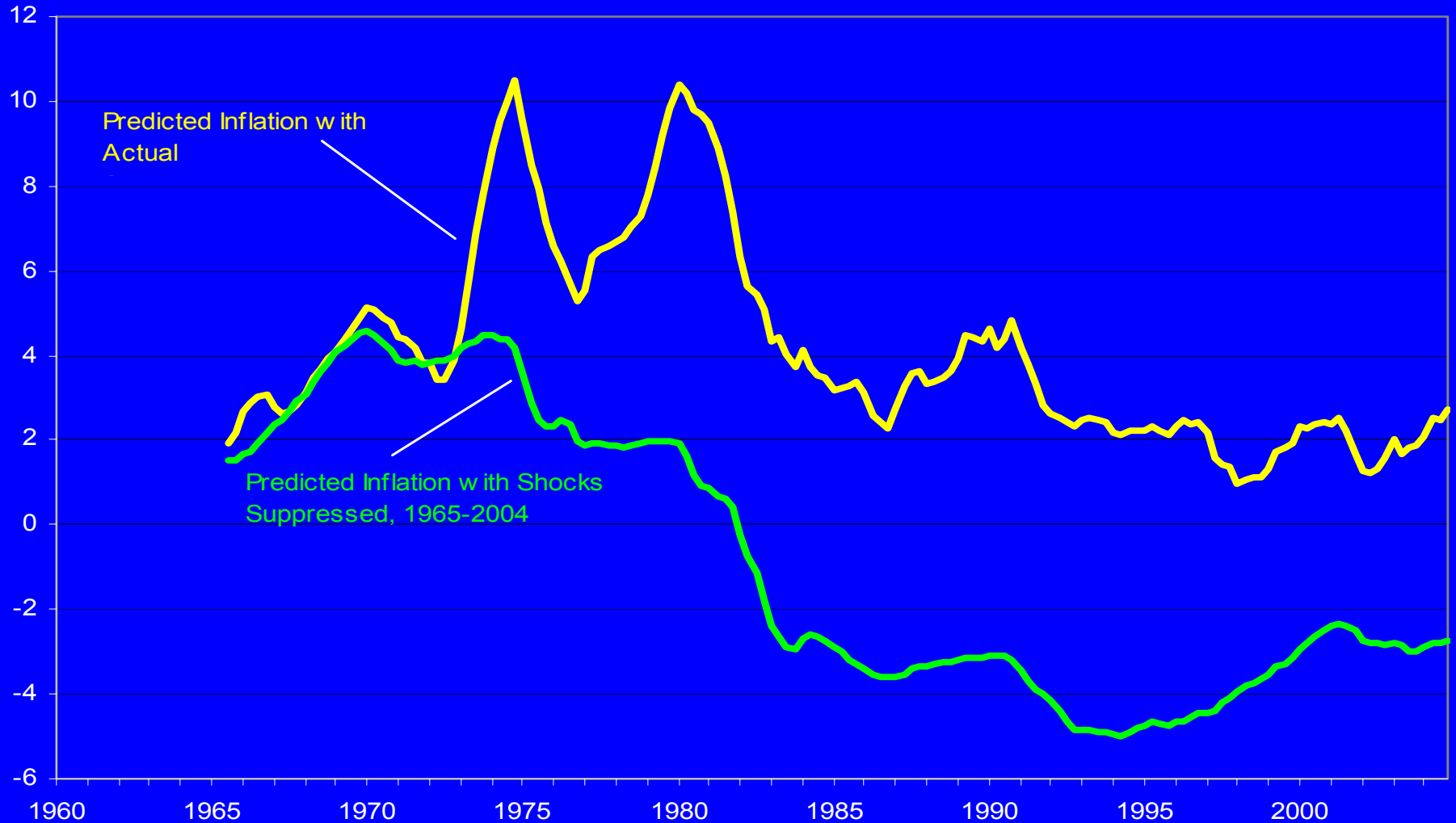
The Interest Rate Equation

- $R = T^* + p^* + d(L)(p_t - p^*) + f(L)(G_t)$
- Estimated over three time intervals
  - 1960-79 (shorthand: "Burns")
  - 1979-90 (shorthand: "Volcker")
  - 1990-2004 (shorthand: "Greenspan")
- After 1979, Fed fought inflation
- After 1990, Fed fought both infl & Ygap

Conclusions from My Previous Analysis

- Demand and Supply Shocks both Mattered
  - The Major Demand Shocks were Military Spending, Financial Institutions that Destabilized Residential Investment, and Primitive Inventory Management
  - The Major Supply Shocks were Import Prices (and Flexible Exchange Rates), Food-Oil Prices, Productivity Trend, and Nixon Controls
- Compare with Stock-Watson "Good Luck"
  - Part was not luck, policy reduced size of military and reformed financial markets to stabilize residential construction

Full-Model Simulations

- Comparing 1965-83 with 1984-2004
- Inflation Volatility
  - Reversal of SS Accounts for 80%, Output Error 20%
  - SS Overexplain reduction in mean inflation
- Output Volatility
  - St Dev 2/3 explained by OE in both periods
  - SS contributed about 1/3 in first period

The Basic Conclusion of the Paper: The Output Gap Simulations
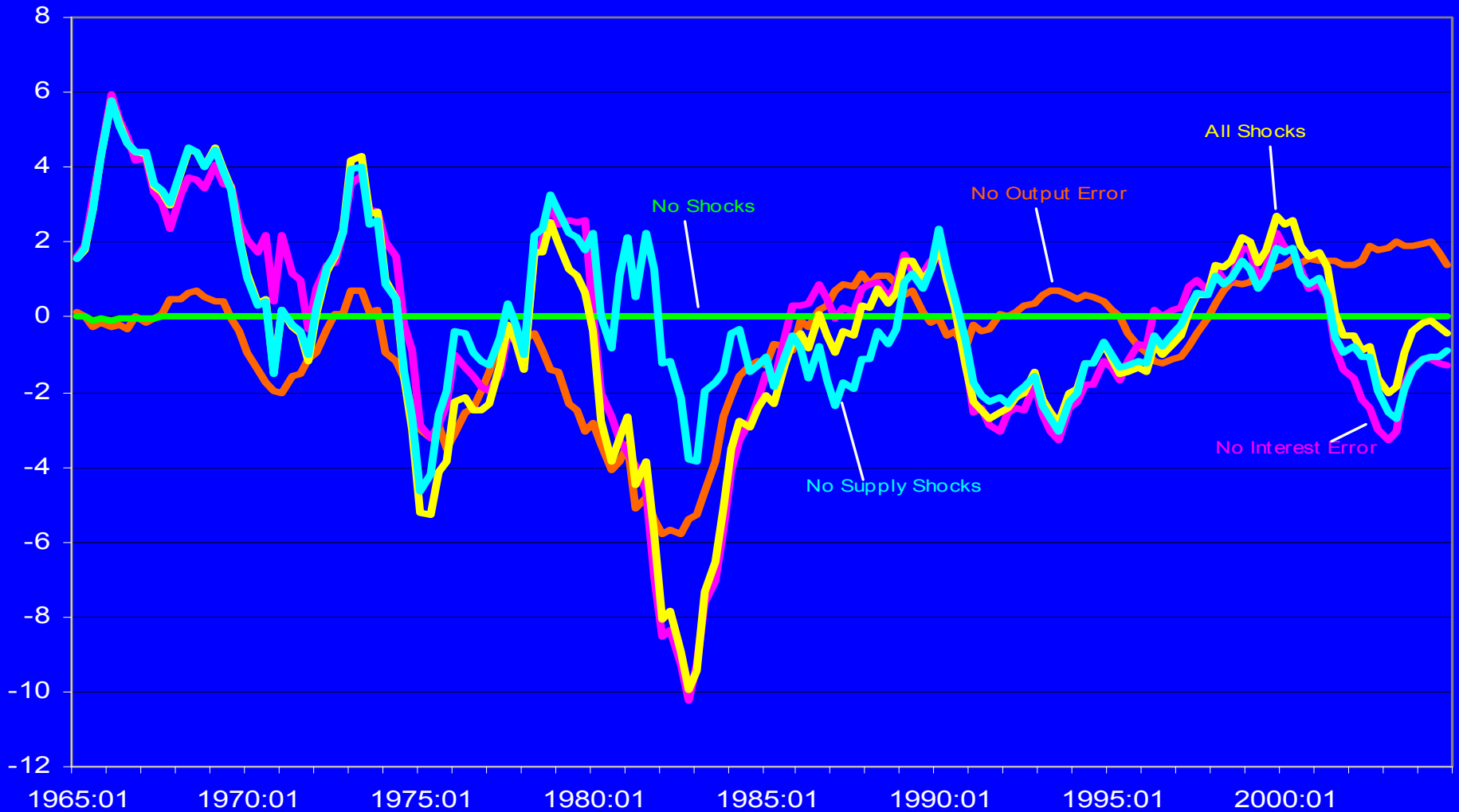
Let's Compare with G-S Paper #2

- Review: Paper #2 Tests Explanations of Reduction in Real GDP Volatility, Paper #1 Uses State and Industry Data
- Three Hypotheses of Paper #2, Explaining Moving 6-Year Variance of Real GDP Growth:
  - Moving 6-Year Share of Computer Investment in Real GDP
    - Better Inventory Control, Better Planning in General
  - Moving 6-Year Share of Imports in Real GDP (Keynesian textbook, lower multiplier)
  - Moving 6-Year Variance of Changes in GDP Deflator (same construct as the dependent variable)

Comments on Regressions

- From the Preceding Discussion, we know that Inflation Volatility is Strongly Related to Output Volatility after 1972 (not before 1972).

- So It's No Surprise that Line 7 of Table 5 has the Inflation as the Only Significant Variable

- Recall My Chart

Inflation vs. Output Volatility: Sometimes the Same, but Other Times Different

Problems with Other Variables

- Computer Share of GDP; this was flat 1985-95, then jumped to 2000, then collapsed. Completely different timing from GDP volatility

- Import Share Looks More Promising. Its Increase Took Off after 19982. But it Increased Steadily after 1984 but Volatility leveled off, did not drop continuously

The Share of ICT and Software Investment in GDP, 1965-2006
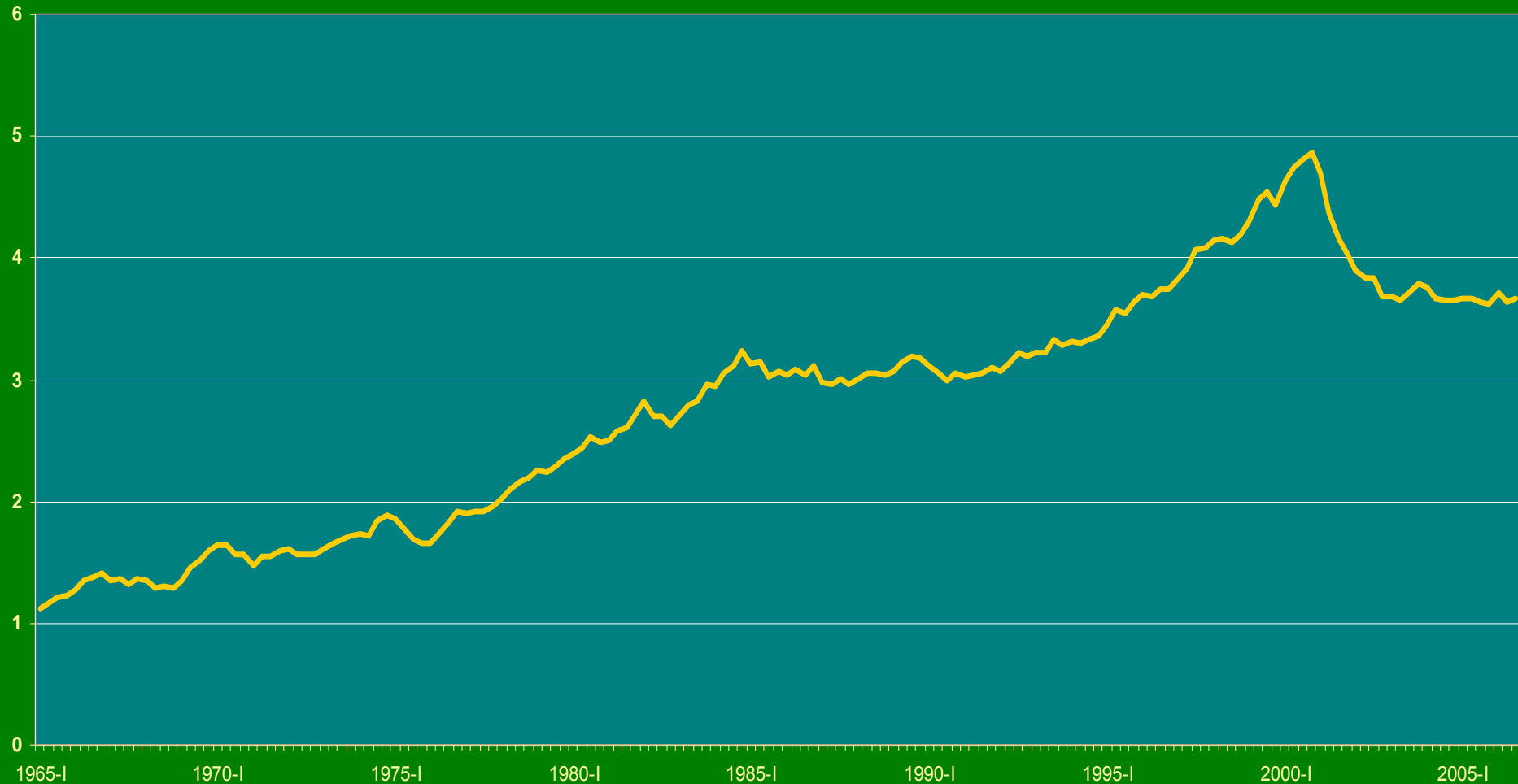
The Import and Export Shore, 1947-2007

Imports and Exports as a Share of GDP
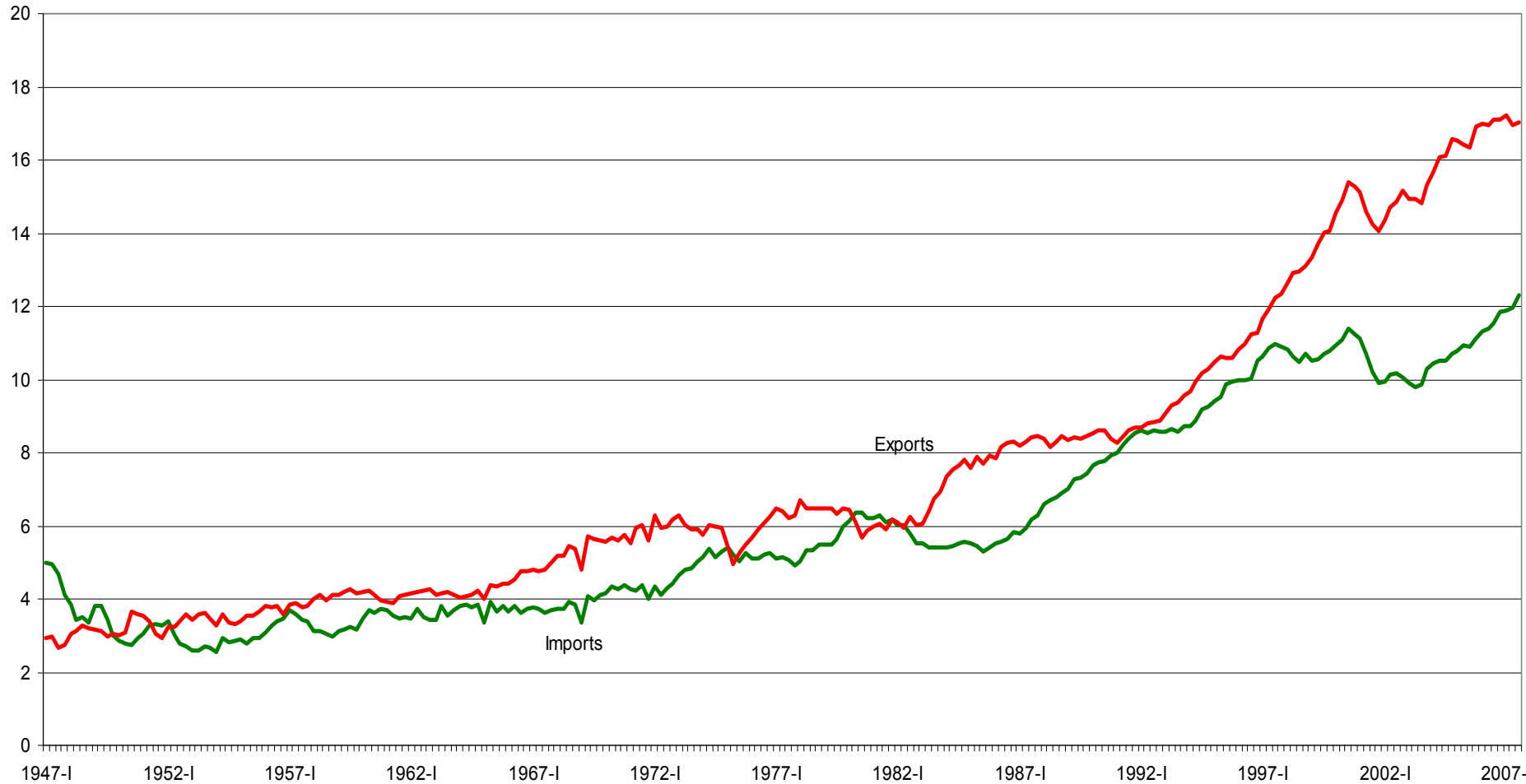
Comment About Style of Paper #2

- While the dependent variable is graphed in Chart 4, no charts are provided showing the time-series behavior of the explanatory variables
- The single-equation methodology misses much of the substance in my alternative multi-equation approach
  - Output was volatile in 1979-84 not just because inflation was volatile, but because the Fed decided to fight high inflation with unprecedented high levels of interest rates in 1980-81
  - Only a multi-equation dynamic simulation can sort through the relative role of demand shocks, supply shocks, and monetary policy

Paper #1 Can Be Discussed More Briefly

- Decomposition of Variance over Disaggregated and Aggregated State and Industry Groups
- Disaggregated:
  - 51 States, 63 Industries
- Aggregated
  - 8 Area Groups, 13 Industries

Data Problems

- Short Sample, 1978-97
  - Lack of Data pre-1978 because of Lack of Data (can this be fixed by BEA?)
  - Lack of Data post-97 due to unwillingness to merge SIC and NAICS
- BUT: The Interesting Results in Paper #1 Emerge from the Aggregated (Area and Industry) Data
  - No need to go to disaggregated data where SIC and NAICS merge causes difficulties
- Mistake, p. 6, line 7. They say AAGR of real GDP_S is 1.6%, actual number from BEA web site is 2.96%

Basic Results of Paper #1

- Decomposition of Variance into Own-industry Variance and Cross-Industry Covariance
- Overwhelming Share of Decline in Variance is Explained by Covariance Term, not Own-Industry variance term
- You Would Expect This if the Basic Causes Were Macro Demand and Supply Shocks that Impacted All Industries
- The Industry and State Results are Consistent with a Macro Explanation, not Shocks Originating from Individual Industries

Most Interesting Finding: Increased Variance in Some Industries

- Basic Conceptual Point: Variance Measures Deviation from Mean Growth
  - This is Not Only Due to Business Cycles
  - Also Due to Sharp Changes in Growth Rate during a Period, e.g., Faster Growth in Computers
- Easier to Sort Out at Aggregated (13-Industry) Level
  - Communications and Utilities

What Are the Higher Variance Industries in Table 4?

- Electronic
  - Instruments
  - Communications
- Finance
  - Depository and Nondepository Institutions
  - Security Brokers
  - Investment Offices
- Special Stories
  - Tobacco
- These are "Change-in-Trend" Stories, not Business Cycle Stories. Plots of Output can Distinguish the Two Stories
- The authors need to plot the data for these "increasing variance" industries and help the reader understand whether there are change trends or changed volatility around trend

Conclusion

- The Great Moderation Was Caused by a Decline in the Magnitude of Demand and Supply Shocks
  - Military spending, residential construction, inventory investment
  - Food and energy prices, relative price of imports, productivity trend, Nixon controls
- Volcker-regime Fed was serious about fighting inflation so magnified impact of Supply Shocks
- Individual industry reactions were mainly the multiplier effect of macro shocks, plus some increase in variance in Electronics, Communications, and Finance due to Changing Trends within 1985-97