Discussion of 'Oil and the Great Moderation' by Nakov and Pescatori

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Summary of the Paper

- There seems to be significant changes in the volatility of US GDP, US inflation, US monetary policy and world oil prices.

	Standard deviation (×100)		Volatility
	1970:I–1983:IV	1984:I–2007:IV	reduction
Inflation	0.57	0.25	57%
GDP growth	1.20	0.52	57%
Interest rate	0.88	0.57	35%
Real oil price	19.0	13.0	31%

- Change in how the US economy uses oil.
- Change in monetary policy. (pre- and post-Volcker)
- Useful to think about all (or some) of these changes as endogenous.

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- Main Results (percentage of volatility reduction due to each factor)

	Oil share	Oil shocks	Monet. policy rule	Monet. policy shock	TFP shock	Other factors
Inflation	32	17	40	11	2	-2
GDP growth	18	11	0	4	57	10
Interest rate	12	3	37	4	8	36
Real oil price	-3	101	0	0	0	2

Comparison to the Literature

- Important advantages vs. Leduc and Sill (2007):
  - Estimated vs. Calibrated.
  - An explicit oil-producing sector.
  - Dependence on oil is governed by a parameter.
- Results are somewhat similar:
- Leduc and Sill (2007) : 17% of reduction in volatility of output and 29% of reduction in volatility of inflation is due to policy. (rest are shocks) Not exactly same counter-factual exercise.
- Key difference : Effect of change in dependence on oil.

Main Comments / Questions

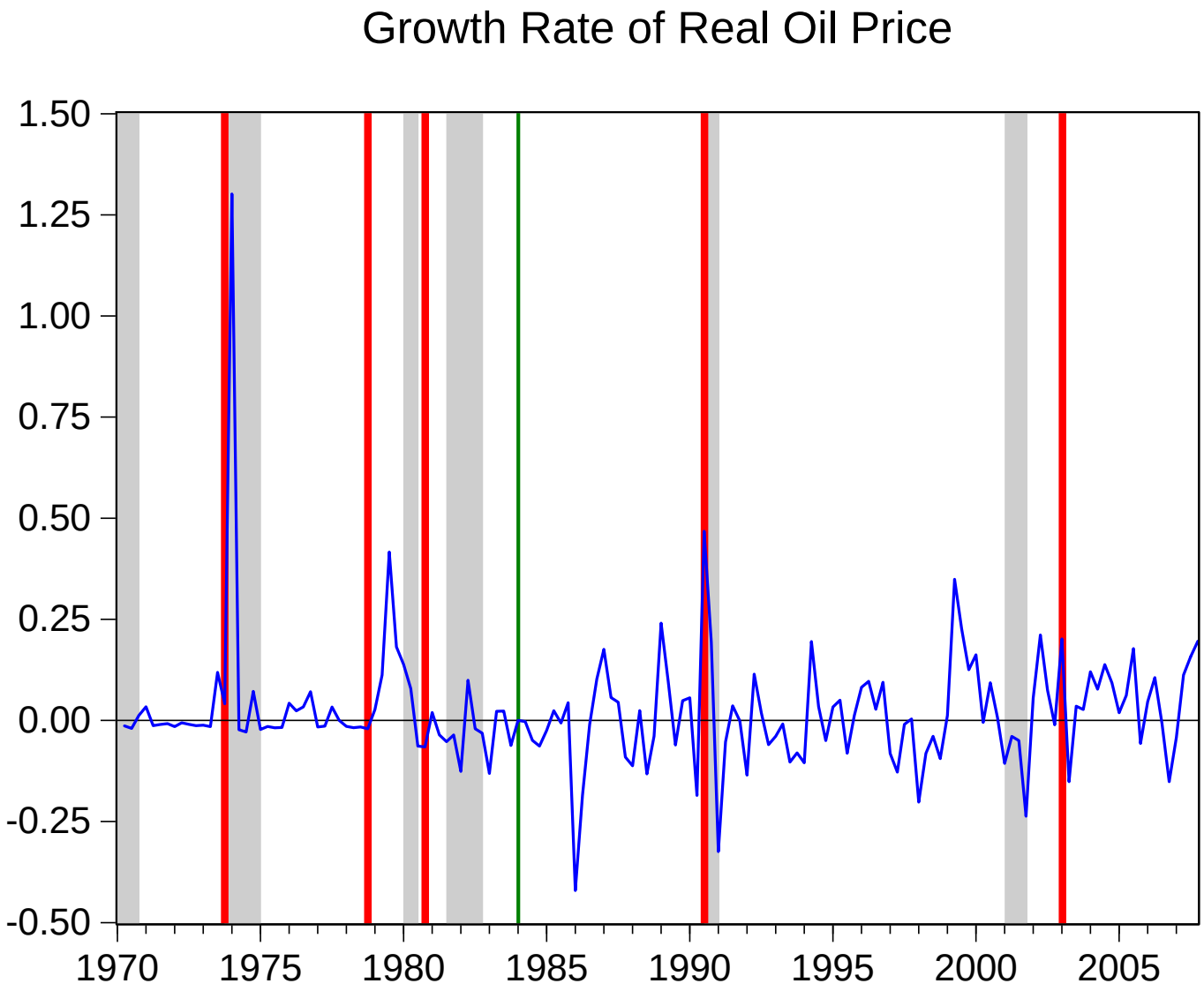
- Important step: endogenizing oil output (and price) in a model for the US...
- ... but US is not the sole consumer of oil. (about 30% of OPEC output)
- Maybe add a rest-of-the-world demand shock to the model, calibrating the share of US consumption. (Use GDP of G7 minus US plus China and India as an observable)
- Not clear if this will affect the results. (Oil to US GDP link is important for results.)

Main Comments / Questions

- Unconditional variance-decompositions show virtually 100% of variations in oil prices are explained by oil-related shocks. Is that realistic? What has endogenizing oil output bought us?
- In popular press we hear (especially recently) that oil prices fall due to concerns about the US economy. Maybe they do not survive to a quarterly frequency?
- Hamilton (1983, 2003) argue that while before 1973 oil prices are exogenous, in the post 1974 data, US variables Granger-cause oil prices.
- Maybe we should see some impulse-responses to see the short-run feedback from US GDP to oil prices.

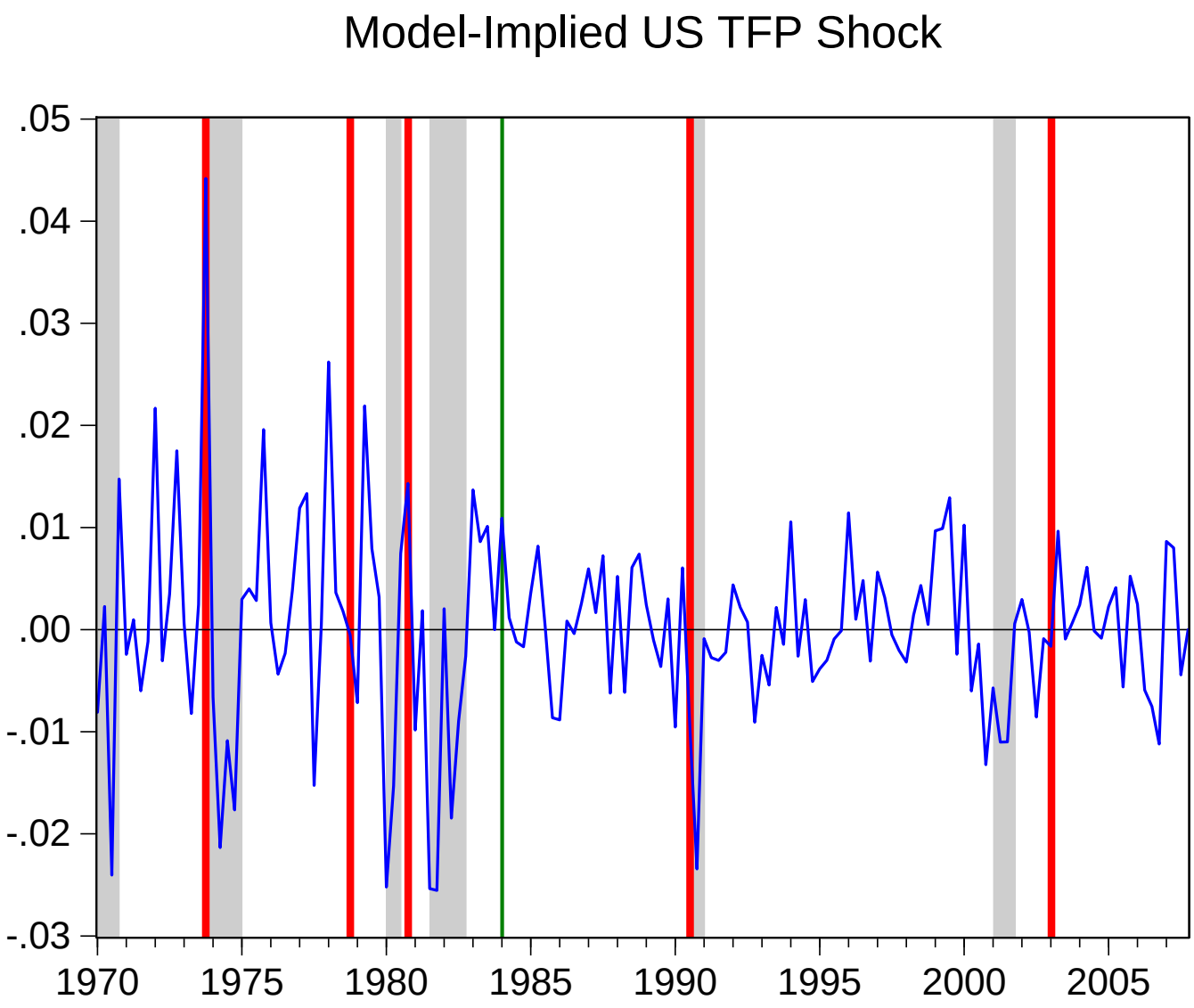
Main Comments / Questions

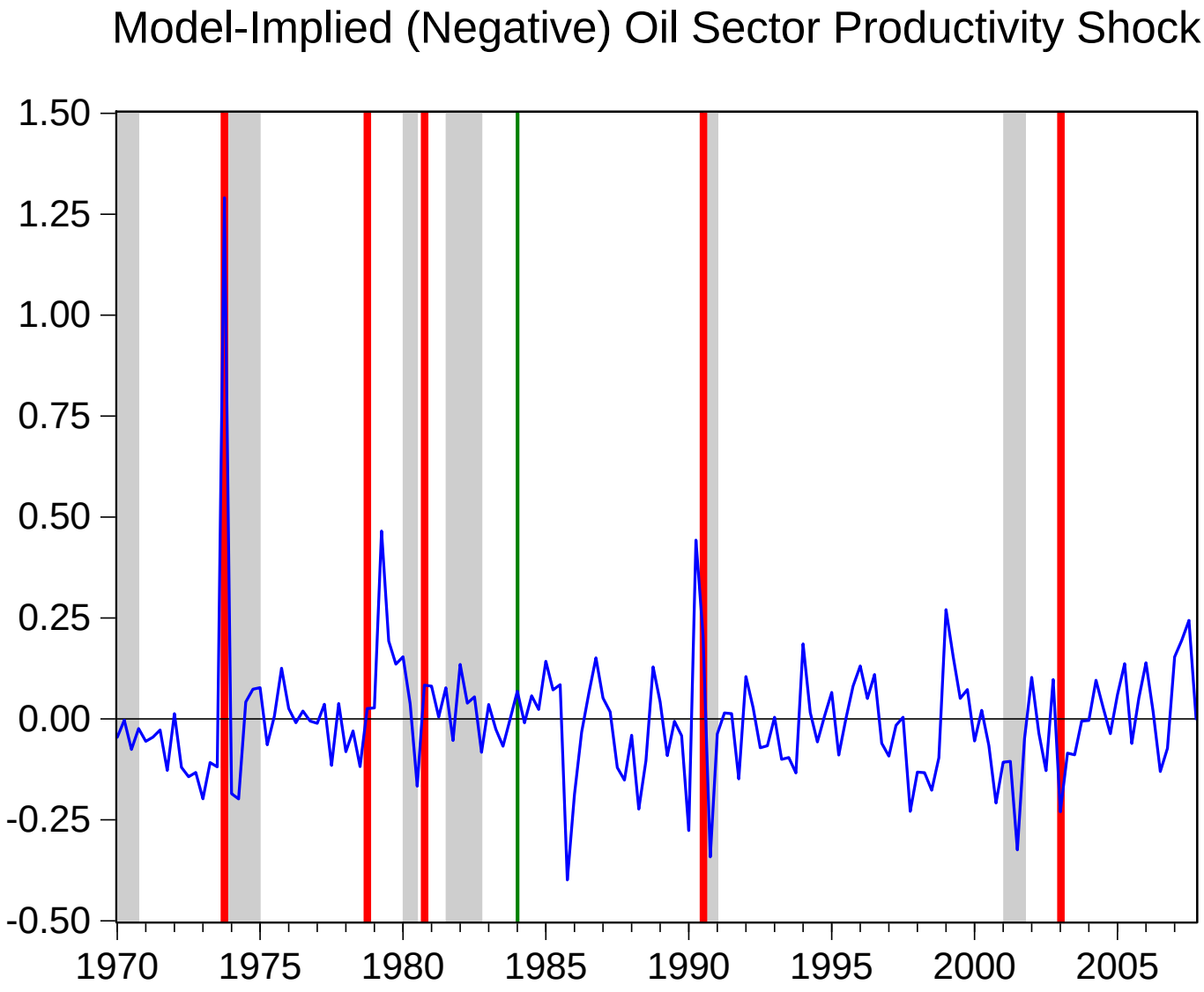
- One of the key implications of the model : Due to smaller oil shocks and due to (possible) feedback from the US economy, oil prices are less volatile.
- Did the volatility of real oil price really go down after 1984?
- The standard deviation of growth rate of real oil price : 19 before 1984, 13 after 1984. (similar numbers for HP filtered or levels)

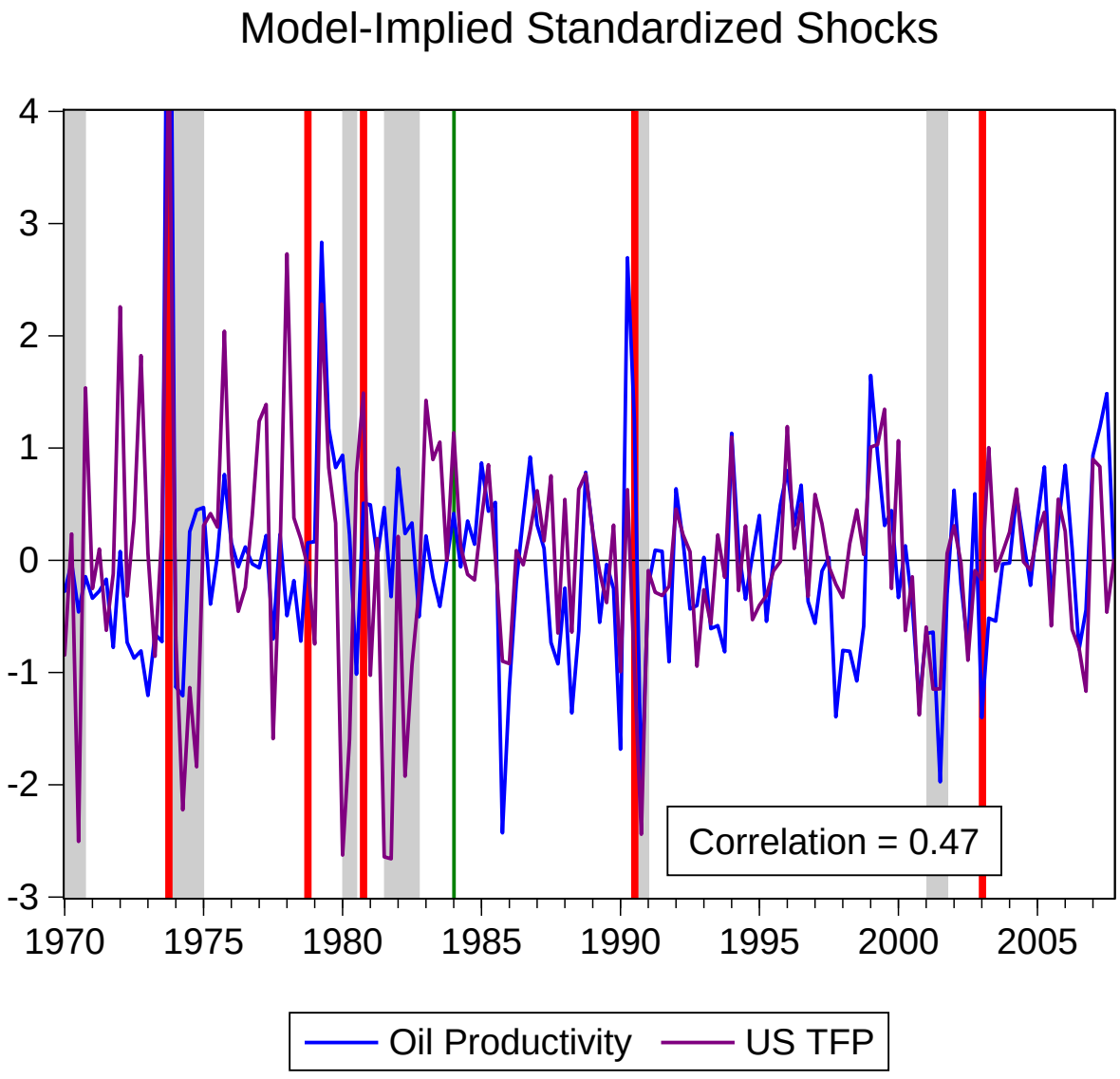

Growth Rate of Real Oil Price
1.50
1.25
1.00
0.75
0.50
0.25
0.00
-0.25
-0.50
1970
1975
1980
1985
1990
1995
2000
2005

Main Comments / Questions

- What do the identified structural shocks look like?
- Do they behave as we expect them to? E.g. does the oil sector productivity shock pick up the 4 events Hamilton (2003) identify plus the recent war in Iraq? (These are episodes where world oil production falls by 7%-10%.)
  - 1973Q4 : Arab-Israel War
  - 1978Q4 : Iranian Revolution
  - 1980Q4 : Iran-Iraq War
  - 1990Q3 : Persian Gulf War
  - 2003Q1 : Iraq War
- Do the shocks become smaller? (good luck)


Model-Implied US TFP Shock
.05
.04
.03
.02
.01
.00
-.01
-.02
-.03
1970
1975
1980
1985
1990
1995
2000
2005


Model-Implied (Negative) Oil Sector Productivity Shock
1.50
1.25
1.00
0.75
0.50
0.25
0.00
-0.25
-0.50
1970
1975
1980
1985
1990
1995
2000
2005


Model-Implied Standardized Shocks
4
3
2
1
0
-1
-2
-3
1970
1975
1980
1985
1990
1995
2000
2005
Correlation = 0.47
Oil Productivity
US TFP

Cheap Shots / Small Comments

- The discount-factor shock sounds non-standard. Some other demand shock?
- In the calculation of the elasticity of oil of oil in production, why is nominal output defined as $PQ = PY + P_o O$?
- Why is labor supply elasticity and Calvo parameter allowed to vary across the two sub-periods? Related, the Calvo parameter in the post-1984 estimation (0.47) could be too low for some people's tastes.
- Why doesn't the model implied unconditional variances match those in the data? ▶ Table 4
- An alternative question to ask: how much "good luck" do we need to explain the great moderation?

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Future Directions

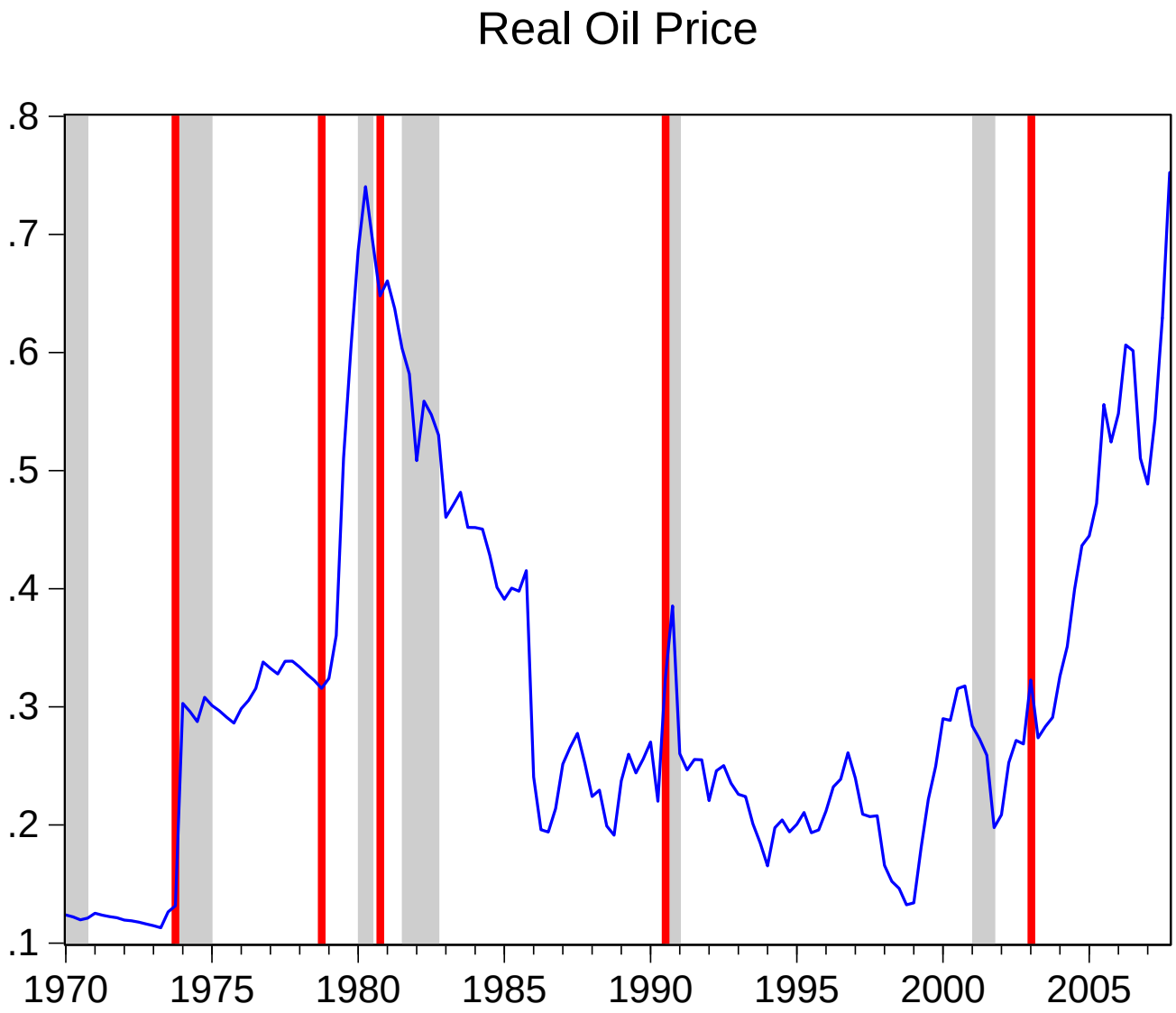
A more general analysis of business cycles (of US, world?) and "oil cycles":

▸ Real Price of Oil

- Allow for time-variation in volatilities, monetary policy rules and ...
- Allow the agents to form expectations over future changes changes.
- Question: How much of the volatility of cyclical fluctuations in output can be explained by oil-related shocks / changes in elasticities, when TFP shocks are also present? Which business cycle(s) are really due to oil-related shocks? How much of TFP is actually coming from oil-related shocks.
- There are non-structural answers to these questions in the literature but this setup would be especially useful to answer this question.

	1970-1983		1984-2007		Volat. reduction	
	Data	Model	Data	Model	Data	Model
Inflation	0.57	0.61	0.25	0.25	57%	58%
GDP growth	1.20	1.64	0.52	0.72	57%	56%
Interest rate	0.88	0.89	0.57	0.43	35%	51%
Real oil price	19.0	16.6	13.0	12.0	31%	28%

Back


Real Oil Price
.8
.7
.6
.5
.4
.3
.2
.1
1970
1975
1980
1985
1990
1995
2000
2005

Back