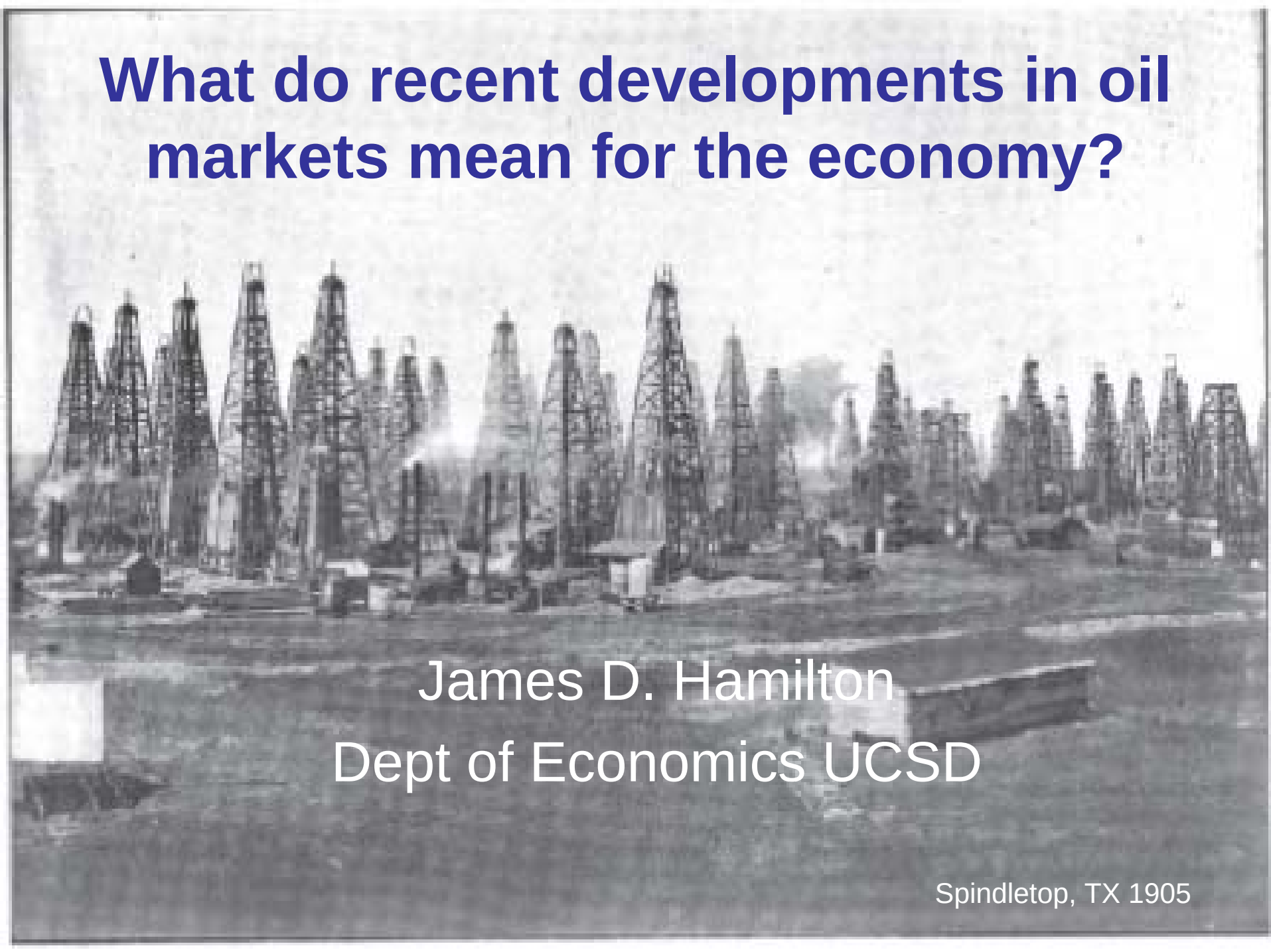
What do recent developments in oil markets mean for the economy?



James D. Hamilton

Dept of Economics UCSD

Spindletop, TX 1905

Gasoline shortages	Price increase	Price controls	Key factors	Business cycle peak
Nov 47- Dec 47	Nov 47-Jan 48 (37%)	no (threatened)	strong demand, supply constraints	Nov 48
May 52	Jun 53 (10%)	yes	strike, controls lifted	Jul 53
Nov 56-Dec 56 (Europe)	Jan 57-Feb 57 (9%)	yes (Europe)	Suez Crisis	Aug 57
none	none	no	---	Apr 60
none	Feb 69 (7%) Nov 70 (8%)	no	strike, strong demand, supply constraints	Dec 69
Jun 73 Dec 73- Mar 74	Apr 73-Sep 73 (16%) Nov 73-Feb 74 (51%)	yes	strong demand, supply constraints, OAPEC embargo	Nov 73
May 79-Jul 79	May 79-Jan 80 (57%)	yes	Iranian revolution	Jan 80
none	Nov 80-Feb 81 (45%)	yes	Iran-Iraq War, controls lifted	Jul 81
none	Aug 90-Oct 90 (93%)	no	Gulf War I	Jul 90
none	Dec 99-Nov 00 (38%)	no	strong demand	Mar 01
none	Nov 02-Mar 03 (28%)	no	Venezuela unrest, Gulf War II	none
none	Feb 07-Jun 08 (145%)	no	strong demand, stagnant supply	Dec 07

Potential output or aggregate demand?

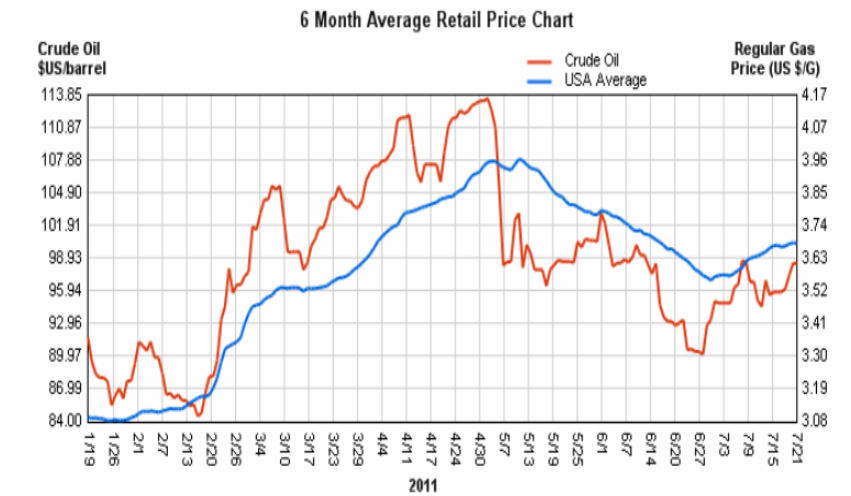
- Consider exogenous disruption in oil supply of 1m barrel/day
- Option to individual firm: buy same quantity as before at higher price
- loss = price per barrel x 1 million
- if firm does something other than this, value of loss must be less than dollar value of lost oil

Example:

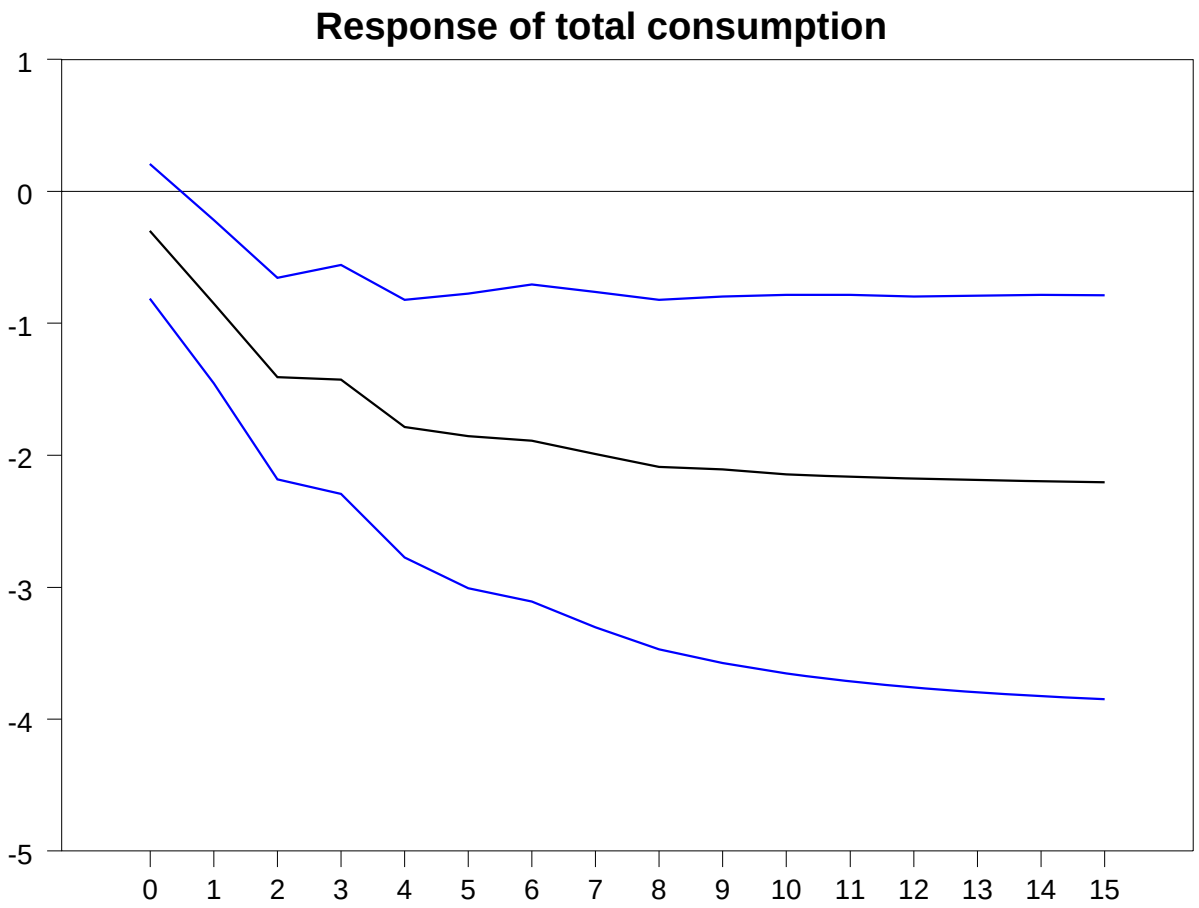
- Energy costs = 5% of GDP
- 2% decrease in supply of energy
- 0.1% loss in GDP

- Demand side: suppose gasoline price increases $1/gal
- If consumers buy same quantity x gals as before, must decrease spending or saving by $x
- very slow recycling of OPEC or domestic oil company profits

- Gasoline has increased 60¢/gal since Jan
- Americans consume 140 B gal/year
- If tried to buy same amount of gasoline, must cut other spending by $84 B/year
- 0.6% slowdown in GDP

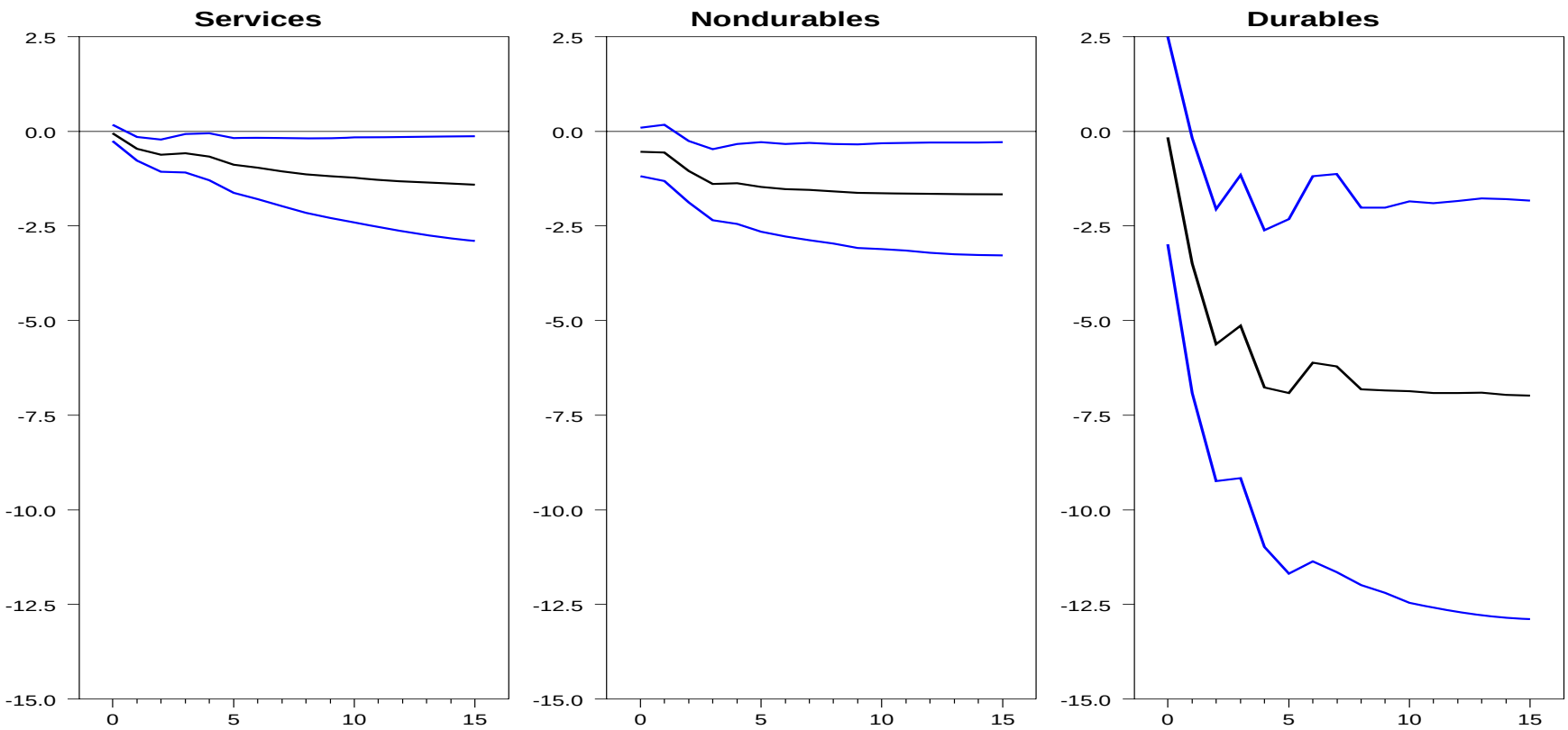


Pre-2007 estimated impulse-response function (and 95% confidence intervals) relating 100 times log of real consumption spending to *x*



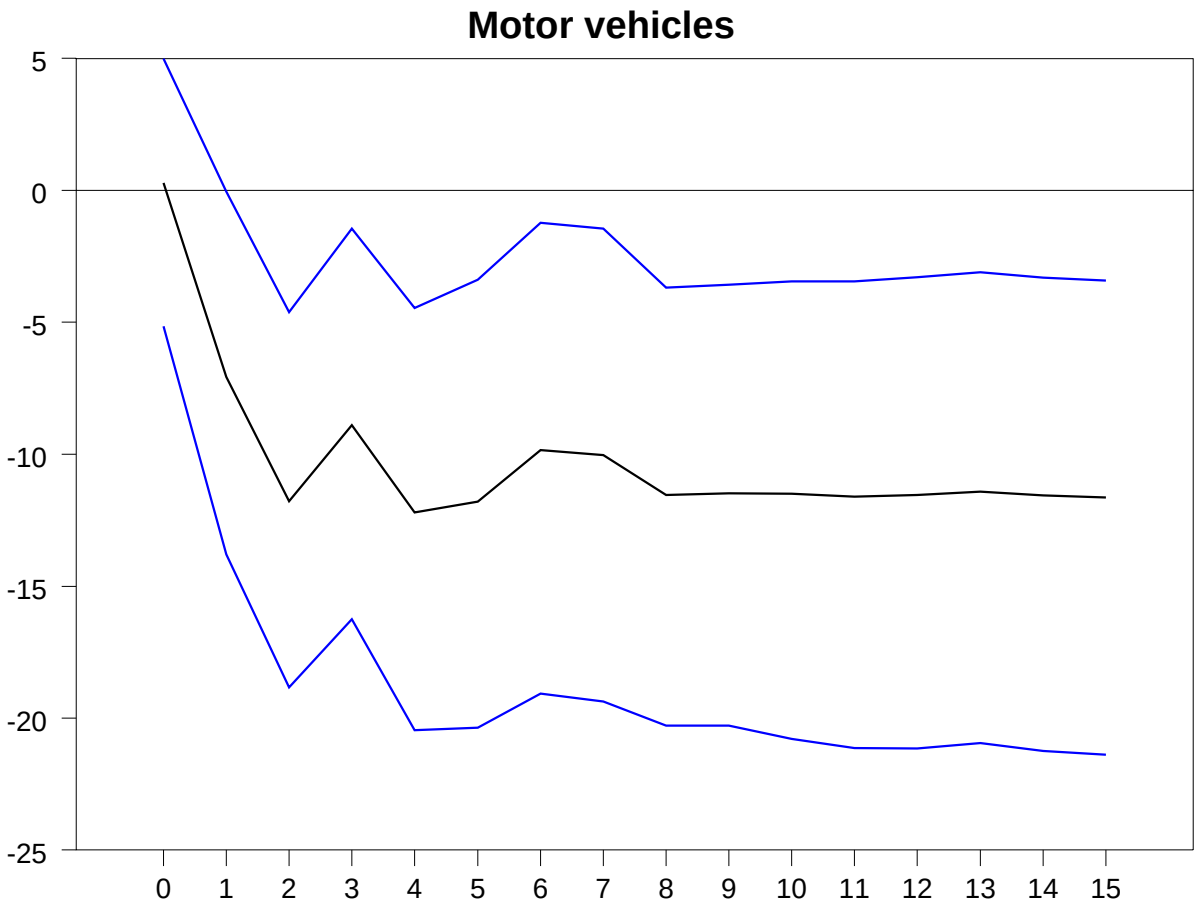
Reproduces Figure 8a in Edelstein and Kilian (2007)

Pre-2007 estimated impulse-response functions.

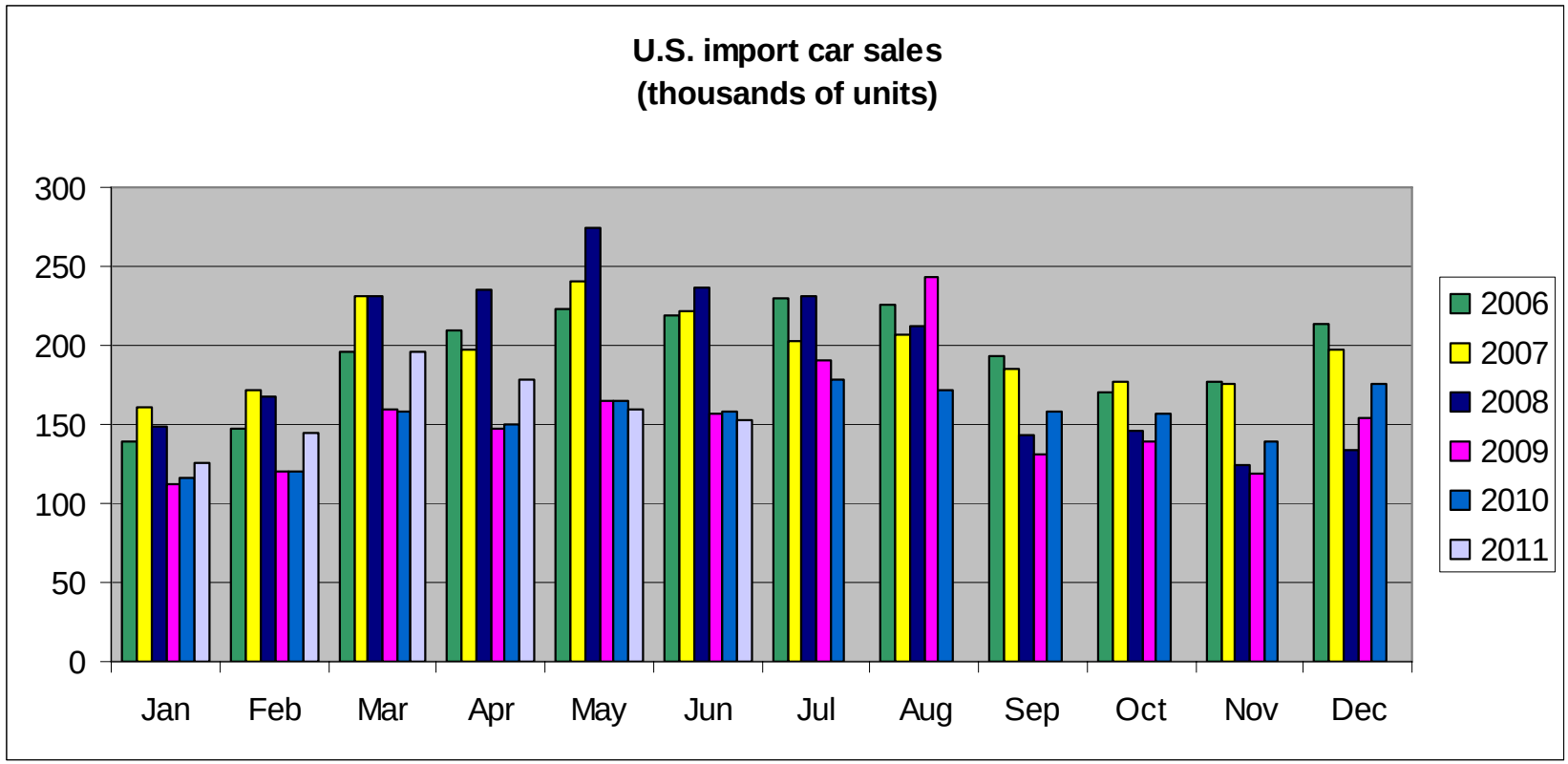


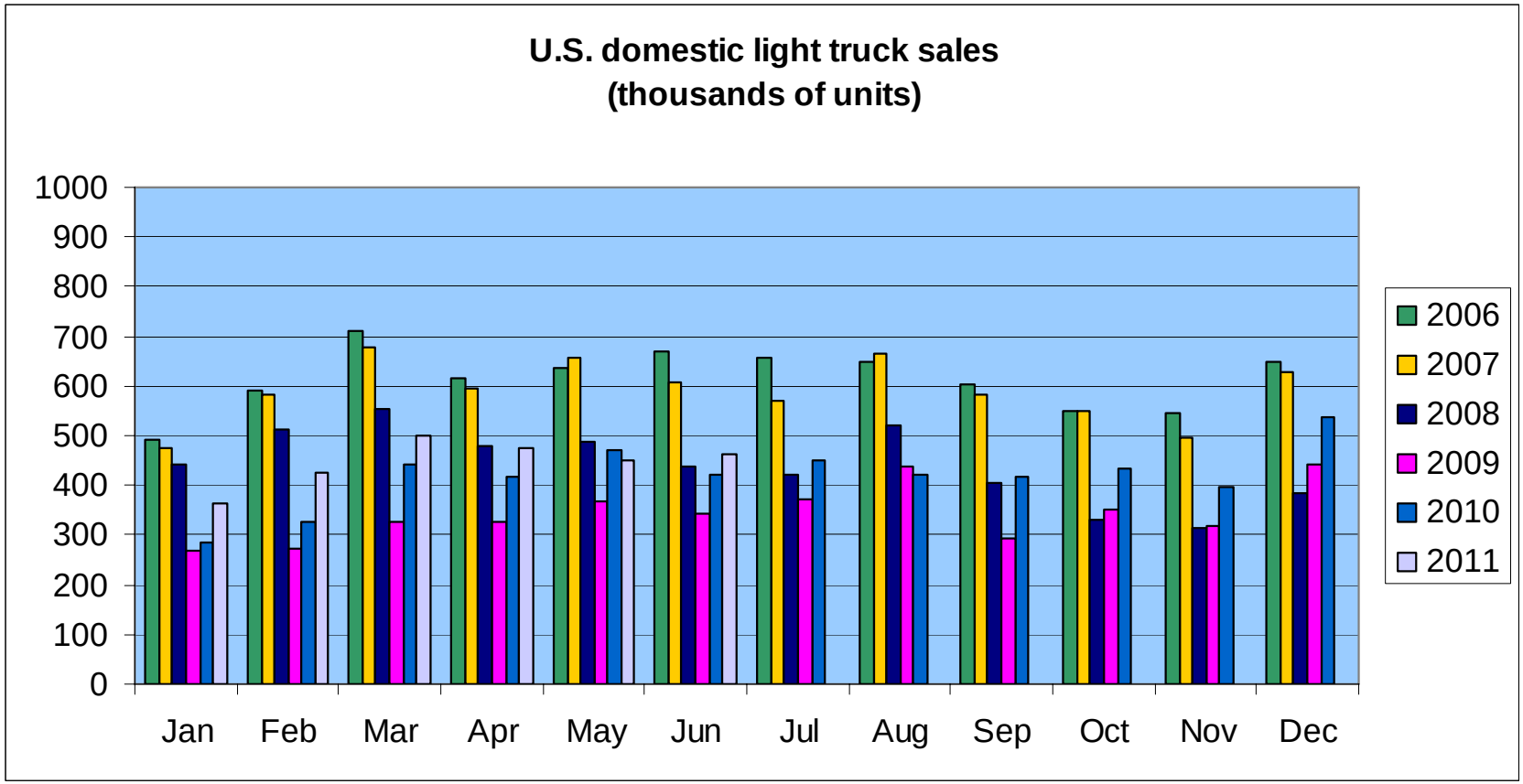
Reproduces Figure 8b-d in Edelstein and Kilian (2007)

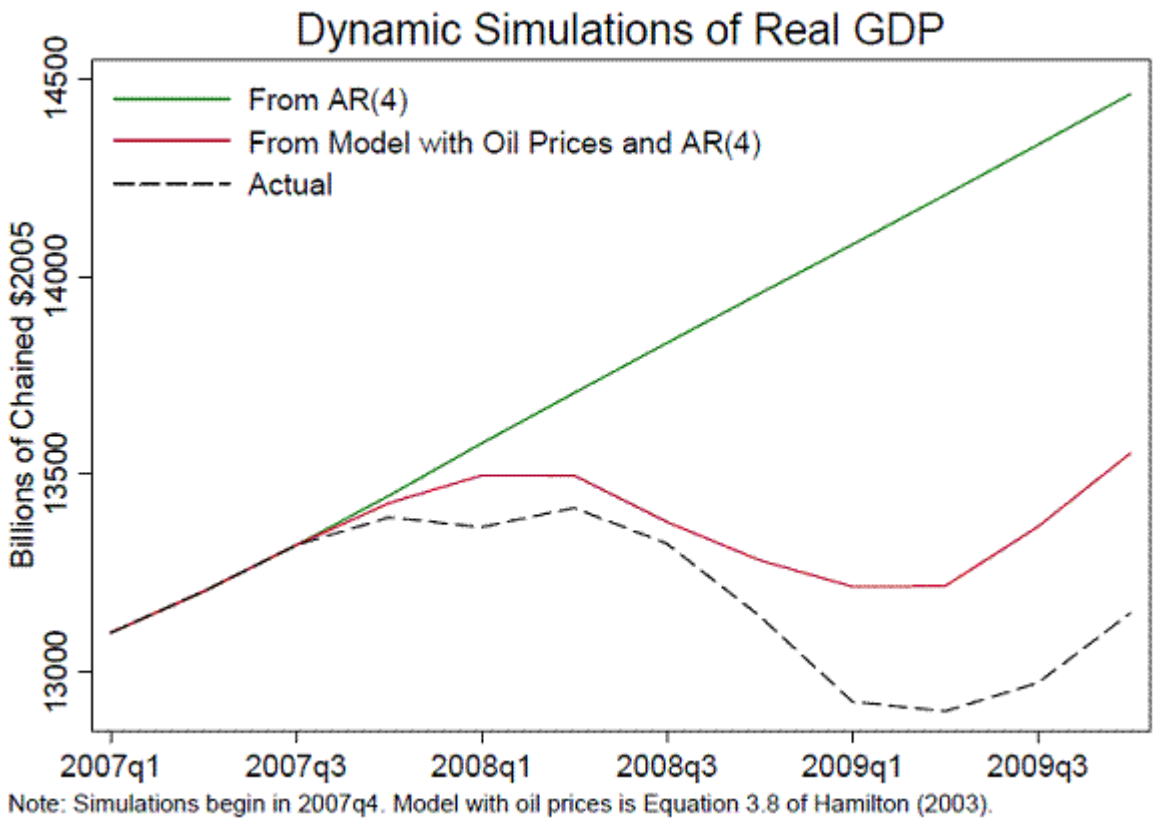
Pre-2007 estimated impulse-response functions.



Reproduces Figure 8e in Edelstein and Kilian (2007)

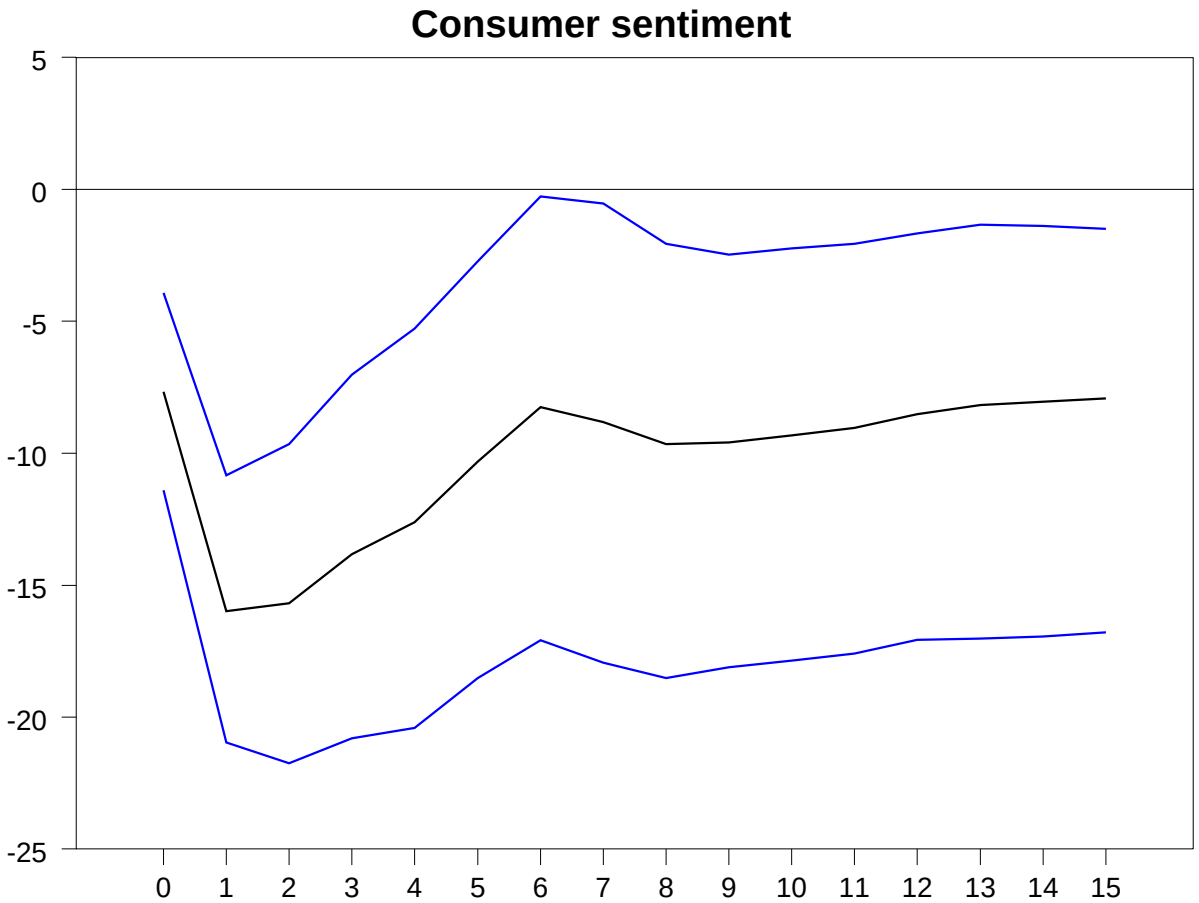

U.S. import car sales
(thousands of units)
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2006
2007
2008
2009
2010
2011


U.S. domestic light truck sales
(thousands of units)
1000
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2006
2007
2008
2009
2010
2011

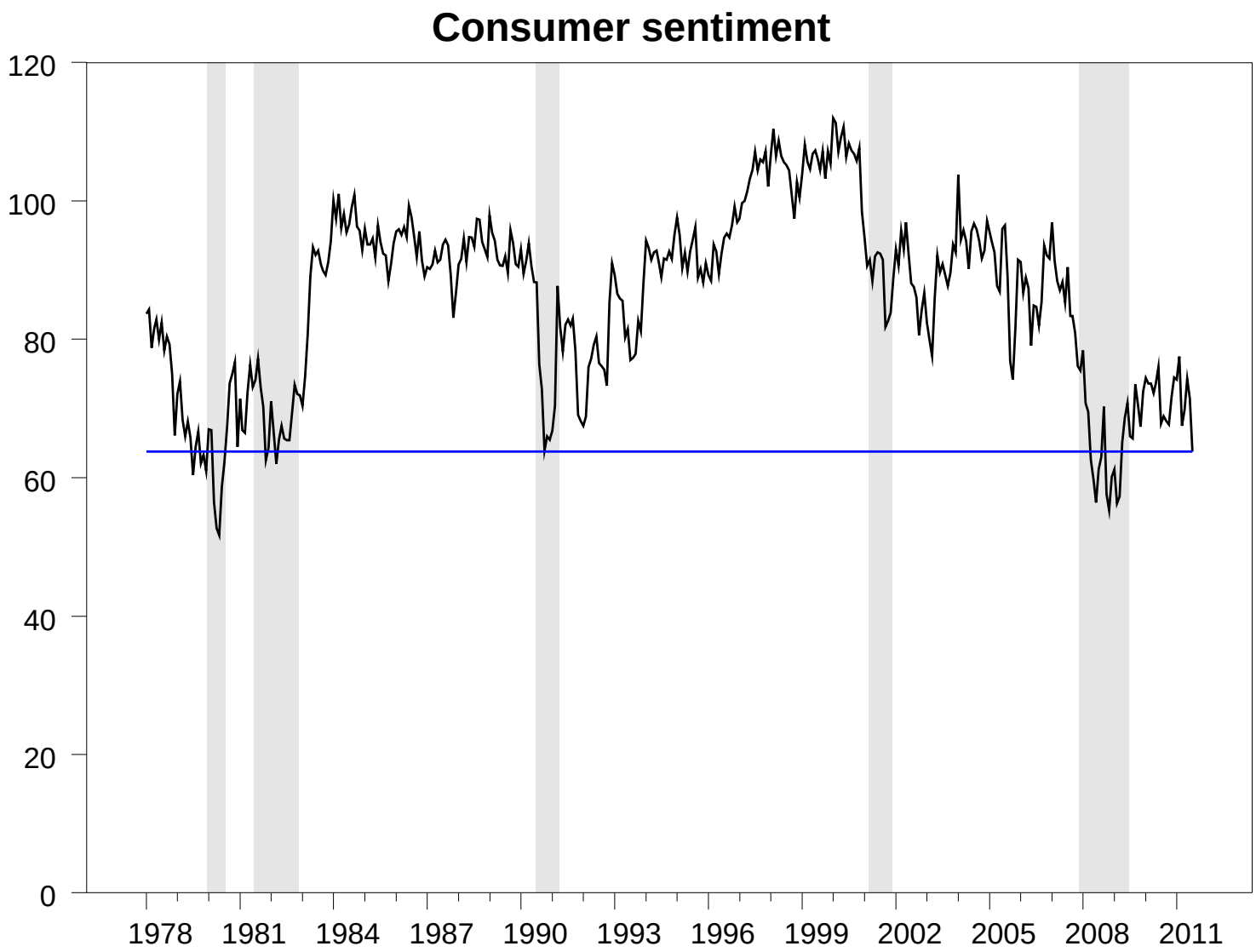


According to this model, we're still OK
(2011:Q2 price below 2008:Q2 means NOPI = 0)

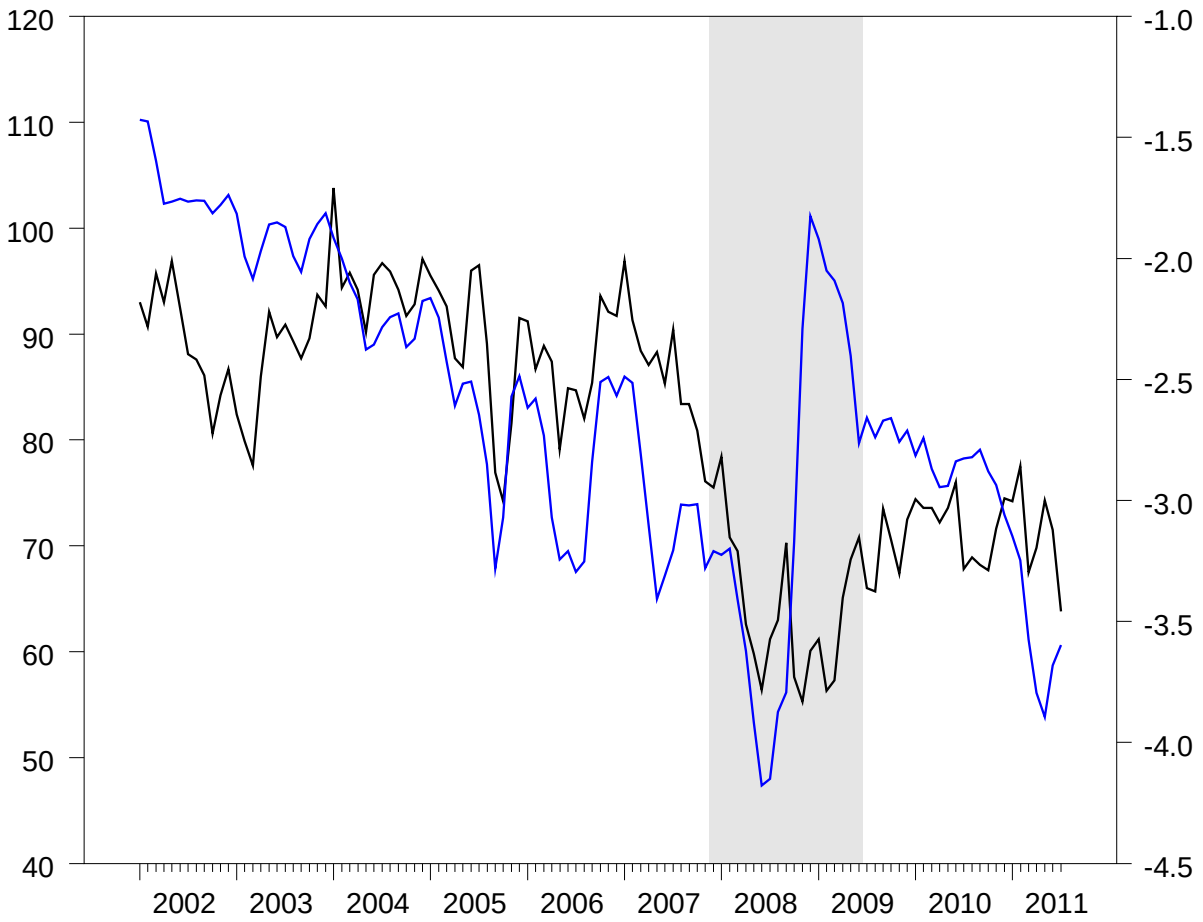
Pre-2007 estimated impulse-response functions.

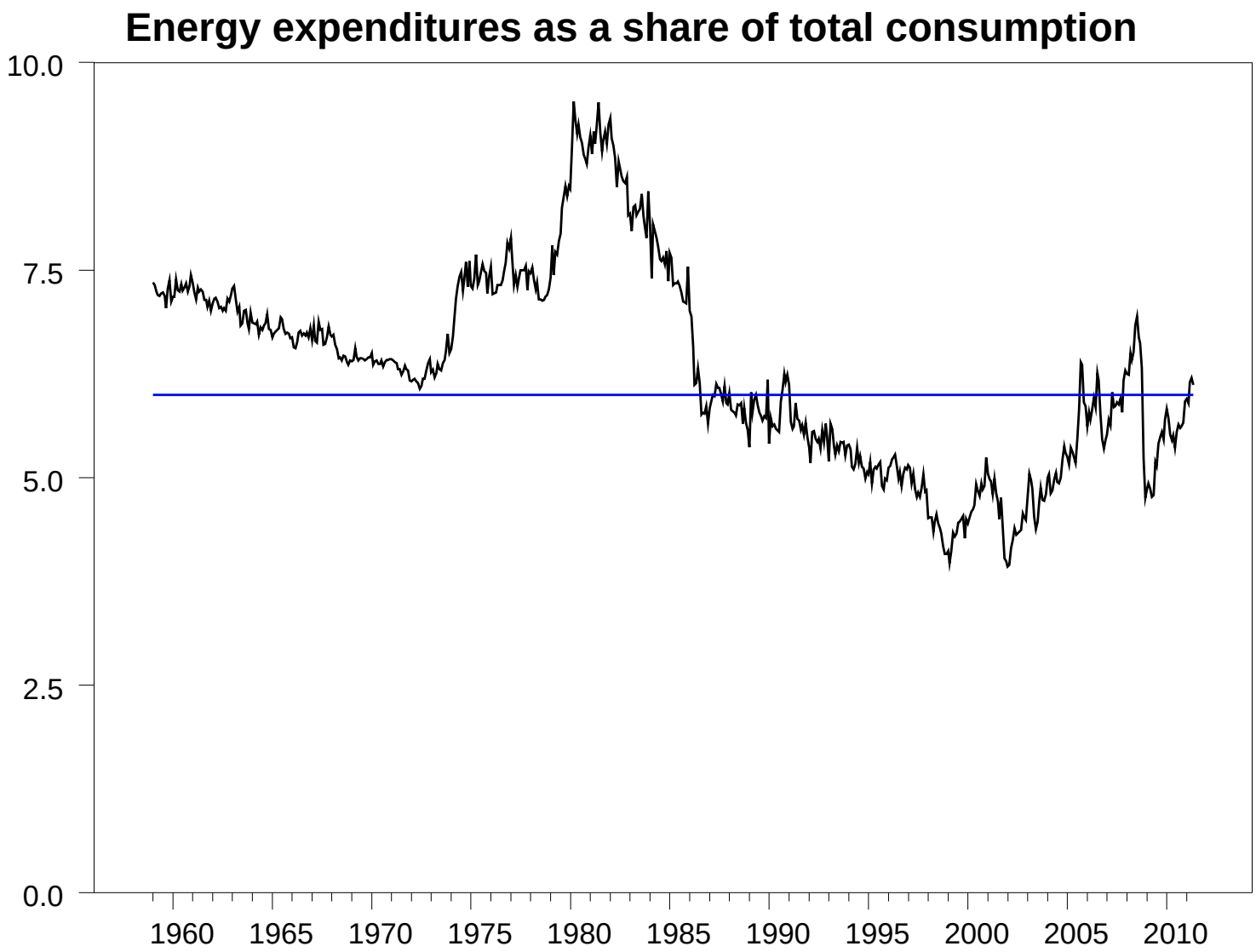


Reproduces Figure 11a in Edelstein and Kilian (2007)


Consumer sentiment
120
100
80
60
40
20
0
1978
1981
1984
1987
1990
1993
1996
1999
2002
2005
2008
2011

Consumer sentiment (black) and negative of real gasoline price (blue)




Energy expenditures as a share of total consumption
10.0
7.5
5.0
2.5
0.0
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010