

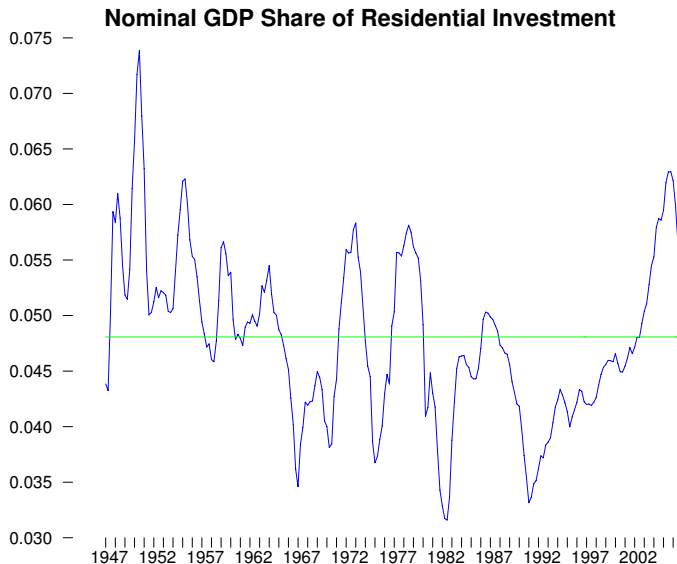
# The Great Turn-of-the-Century Housing Boom

Jonas D.M. Fisher  
Chicago Fed

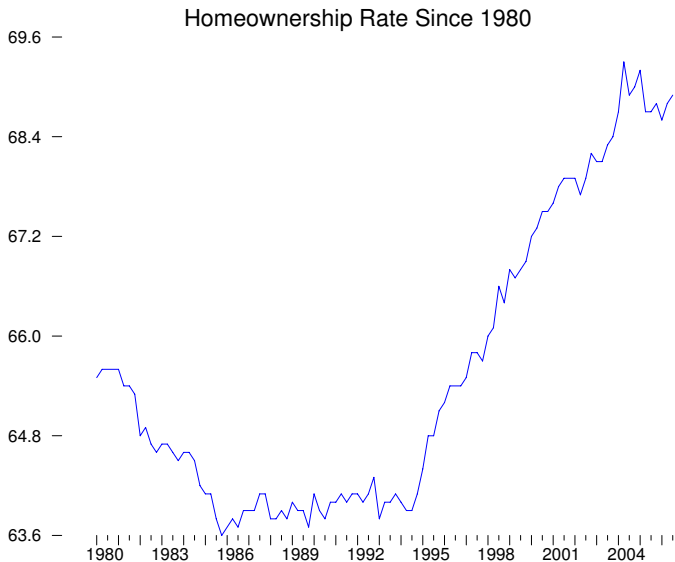
Saad Quayyum  
Chicago Fed

20th Economic Outlook Symposium, December 1, 2006

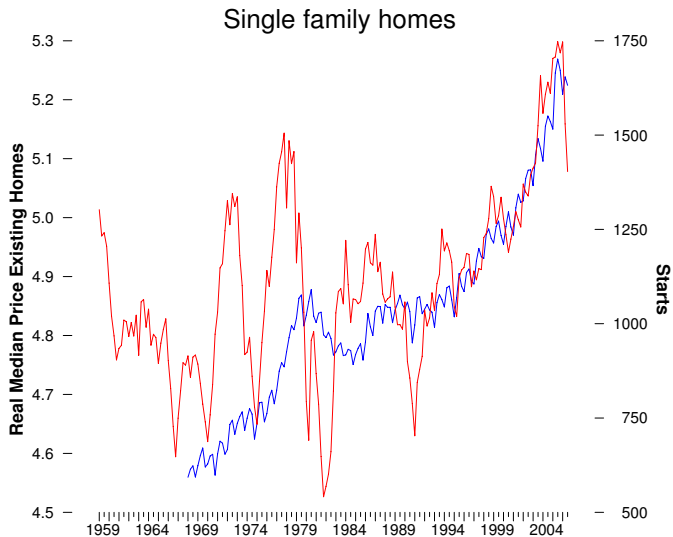
# Residential investment spending has been high ...



... as homeownership has grown rapidly



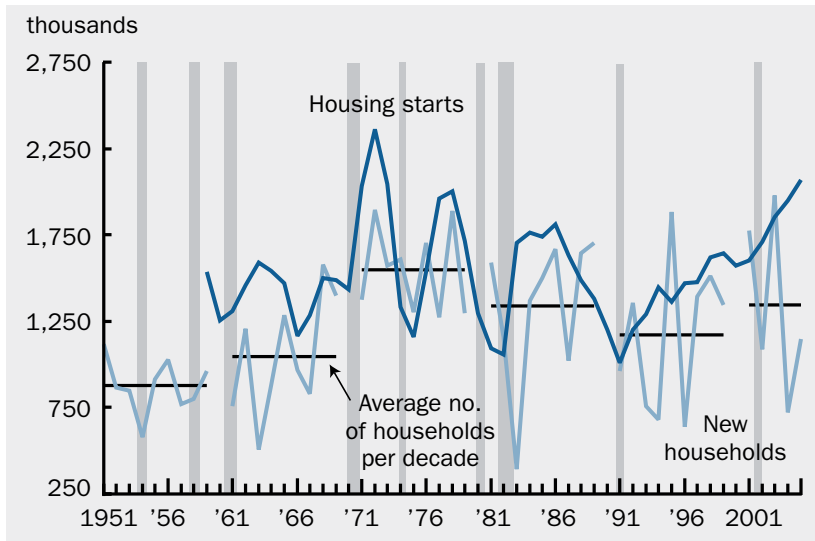
# What about prices?



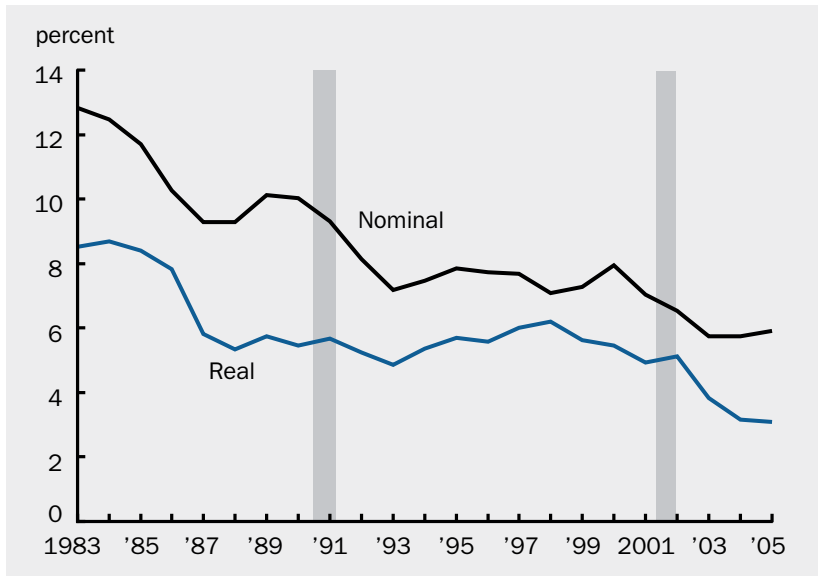
# How far will housing fall?

- Need to understand why it has been high
  - Factors determining spending on housing
  - Econometric evaluation of determinants
  
- What does the homeownership rate tell us?
  - Demographics, income, migration account for about half
  - Financial innovation the rest?
  
- Implications going forward
  - High spending and growth in homeownership are connected
  - Factors driving relatively high spending are here to stay

# Housing starts and household formation



# Effective mortgage rate



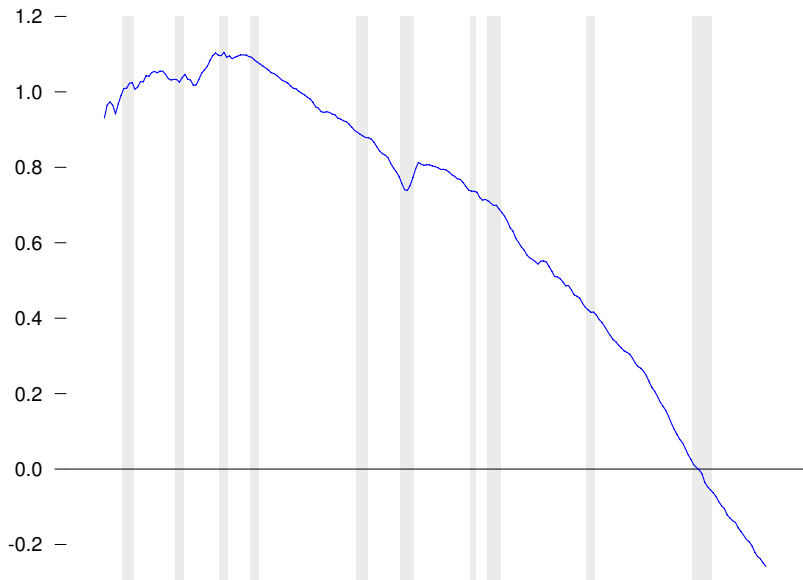
# Factors influencing residential investment

- Household formation
- Real mortgage rates
- Migration
- Wealth creation



- Everything is endogenous
  - need to identify *exogenous* shocks
- Investment shock
  - Only factor affecting real equipment price in the long run
- Neutral shock
  - Neutral and investment shock only factors affecting output in the long run
- Monetary Shock
  - Estimate a feedback rule for setting Fed Funds rate

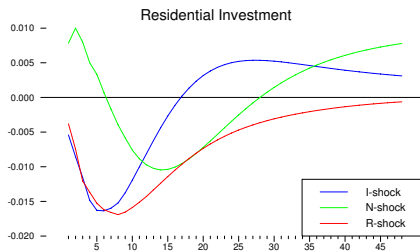
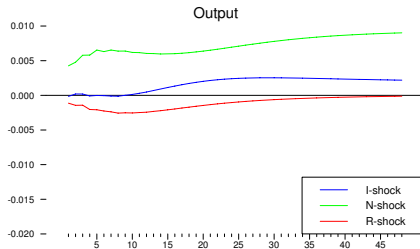
# Declining real price of equipment



Fisher and Quayyum

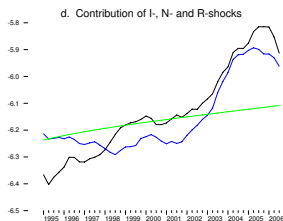
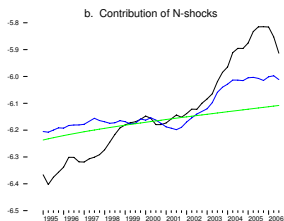
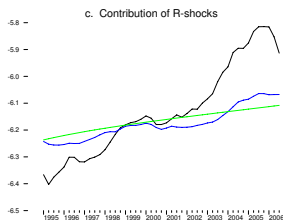
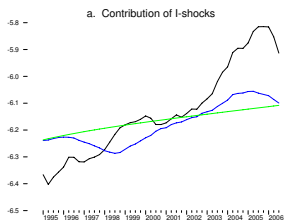
Housing Boom

# Responses to shocks



# Contributions of the shocks

## Residential Investment, 1995:1-2006:3



# Changes in homeownership by demographics

	Percent of population			Homeownership rates		
	1993	2003	Change 1993-2003	1993	2003	Change 1993-2003
<b>Overall</b>				64.68	68.39	3.71
<b>Race of household head</b>						
White	84.50	82.69	-1.81	68.62	72.32	3.70
Black	11.77	12.31	0.60	42.96	47.58	4.62
Other	3.73	4.99	1.26	44.04	54.53	10.49
<b>Age of household head</b>						
18-24	4.90	4.81	-0.09	12.43	15.91	3.48
25-29	8.55	7.20	-1.35	34.63	39.64	5.01
30-34	11.49	9.88	-1.61	50.98	54.75	3.77
35-39	12.08	10.06	-2.02	61.55	64.59	3.04
40-44	11.03	11.37	0.34	69.05	70.96	1.91
45-54	17.35	20.79	3.44	75.42	76.02	0.60
55-74	25.01	25.35	0.34	80.63	81.71	1.08
>74	9.59	10.54	0.95	72.54	78.48	5.94
<b>Gender of household head</b>						
Male	70.68	70.50	-0.18	70.95	74.31	3.36
Female	29.32	29.50	0.18	49.51	54.21	4.70
<b>Marital status of household head</b>						
Married, spouse present	54.02	51.51	-2.51	79.41	83.37	3.96
Unmarried, or spouse absent	45.98	48.49	2.51	47.38	52.47	5.09
<b>Children in the household</b>						
None	61.28	62.77	1.49	64.77	68.17	3.40
One	15.73	15.48	-0.25	63.36	68.04	4.68
Two	14.59	13.76	-0.83	67.59	71.26	3.67
Three	5.84	5.65	-0.19	64.98	68.00	3.02
Four or more	2.57	2.34	-0.23	53.50	60.42	6.92
<b>Adults in the household</b>						
One	30.87	32.54	1.67	45.65	52.27	6.62
Two	54.34	52.47	-1.87	71.88	75.47	3.59
Three	10.61	10.64	0.03	77.32	78.55	1.23
Four or more	4.18	4.35	0.17	79.40	78.67	-0.73
<b>Region</b>						
North East	19.85	18.66	-1.19	62.16	64.64	2.48
North Central	23.89	23.12	-0.77	67.85	73.14	5.29
South	35.54	37.00	1.46	66.33	70.08	3.75
West	20.72	21.22	0.50	60.69	63.79	3.10
<b>Education of household head</b>						
Less than high school	19.33	17.44	-1.89	58.77	57.75	-1.02
High school graduate	35.50	28.35	-7.15	64.67	68.52	3.85
Some college	19.88	27.26	7.38	63.20	67.71	4.51
College graduate	14.08	17.30	3.22	67.25	73.25	6.00
Postgraduate	11.20	9.64	-1.56	74.35	80.40	6.05

# Changes in homeownership by income

1993 income decile	Percent of population	Homeownership rates		
	Change 1993–2003	1993	2003	Change 1993–2003
1	-0.33	0.39	0.43	0.04
2	-1.67	0.45	0.49	0.04
3	-0.81	0.52	0.52	0.00
4	0.75	0.54	0.58	0.04
5	-1.29	0.63	0.61	-0.02
6	-1.25	0.64	0.67	0.03
7	0.18	0.72	0.75	0.03
8	-0.55	0.79	0.82	0.03
9	0.90	0.86	0.88	0.02
10	4.06	0.92	0.93	0.01

# Contributions to changes in homeownership

<b>Included variables</b>	<b>Base year</b>			
	<b>1993</b>		<b>2003</b>	
	<b><math>\Delta h</math></b>	<b><math>\Delta w</math></b>	<b><math>\Delta h</math></b>	<b><math>\Delta w</math></b>
Age only	2.56	1.14	2.45	1.25
Demographic + regional	3.51	0.20	3.51	0.19
Demographic + regional + ed. + inc.	1.86	1.84	1.94	1.76

Notes: The figures reflect actual 1993–2003 data. The change in the homeownership rate is 3.70.

# Contributions to changes in homeownership

	<b>Base year</b>	
	<b>1993</b>	<b>2003</b>
Demographic and regional	0.48	0.47
Age	1.15	1.29
Sex	0.01	0.01
Marital status	-0.35	-0.36
Household size and composition	-0.13	-0.21
Race	-0.22	-0.27
Region	0.02	0.01
Education and income	1.36	1.29
Education	0.15	0.06
Income	1.21	1.24



# Spending and homeownership connected

- Financial innovation
  - IT, deregulation, secondary market: lower costs
  - New mortgage products
- Expanded pool of potential homeowners
- Any given home-buyer can afford more
  - From 1995 to 2005 median new home 20% bigger
  - More bathrooms, etc

# Interpretation of recent developments

- Higher desired stock of housing
  - Transition to higher desired stock
  - Factors here to stay
  
- Slowdown was expected
  - Tighter monetary policy
  - Transition had to come to an end
  
- Plenty of factors keeping spending relatively high
  - Wealth creation
  - Mortgage market
  - Low interest rates
  - No regulation Q, lower real rates, secondary market

- Factors underlying the boom suggests that housing will not be a major drag on the economy going forward