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What Happens During Recessions, Crunches, and Busts?

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What Happens During Recessions, Crunches and Busts?

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Disclaimer! The views presented here are those of the authors and do NOT necessarily reflect the views of the IMF or IMF policy

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Issues Facing Us Today

- Financial systems under severe stress
- Very tight credit markets
- Sharp declines in house prices (US, UK, Spain, …)
- Substantial drops in equity prices globally
- Contraction in economic activity (US, EU, Japan, …)

- **Concerns about the length and severity of**
  credit market problems….
  house price declines... asset price declines….
  recessions…

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Some Issues Have Been Studied

- Some aspects of macro-financial linkages
- In particular, financial factors in business cycles

- Theory
  Wealth and substitution (direct) effects
  Financial accelerator (indirect) effects

- Empirical (procyclical nature of macro and financial variables)
  Macro data
  Micro data (Banks; firms; households)

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But Knowledge Still Limited

- What do we know about recessions as they relate to credit (crunches) and asset prices (busts)? So far, only a small sample of (case) studies, no global dimensions…

*"… asset-price-bust recessions do **not** appear to be necessarily more costly than other recession episodes. Specifically, …, recessions that follow swings in asset prices are **not** necessarily longer, deeper, and associated with a greater fall in output and investment than other recessions…"*

Roger W. Ferguson, January 12, 2005

Ferguson was the Vice Chairman of the FRB over 1997-2006

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Objective: Four Questions

- How long do recessions, credit crunches and asset price busts last, and how severe/deep are they?
- Are recessions associated with credit crunches and asset price busts different than other recessions?
- Do changes in financial variables relate to the cost of recessions?
- Are recessions, crunches and busts synchronized globally?

How? By providing a comprehensive analysis of a large sample of recessions, crunches, and busts
(purely statistical exercise; event study; no discussion of causation or potential sources)

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Results

- How long do recessions, credit crunches and asset price busts last and how severe/deep are they?

  Episodes of financial markets' difficulties last a long time, much longer than recessions, and can be deep
- Are recessions associated with credit crunches and asset price busts different than other recessions?

  Yes. Recessions associated with crunches and busts tend to be longer and deeper
- Do changes in financial variables relate to the cost of recessions?

  Yes. Larger drops in house prices tend to be associated with more costly recessions
- Are recessions, crunches and busts synchronized globally?

  Yes. They often do as they come in bunches

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Outline of Presentation

- Dataset & Methodology for Cycles

1. Recessions, Crunches, Busts
   - Duration, Amplitude, Typical Pattern
2. Associations: Recessions, Crunches, Busts
   - Overlap, Lead/Lag, Duration, Amplitude
3. Costs of Recessions
4. Global Dimensions

- Summary
- Caveats and Future Research

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Dataset: Period and Countries Included

- Large dataset of business and financial cycles
- Period 1960:1-2007:4
- Quarterly Data: Macro and Financial variables
- *(21 countries)*: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States

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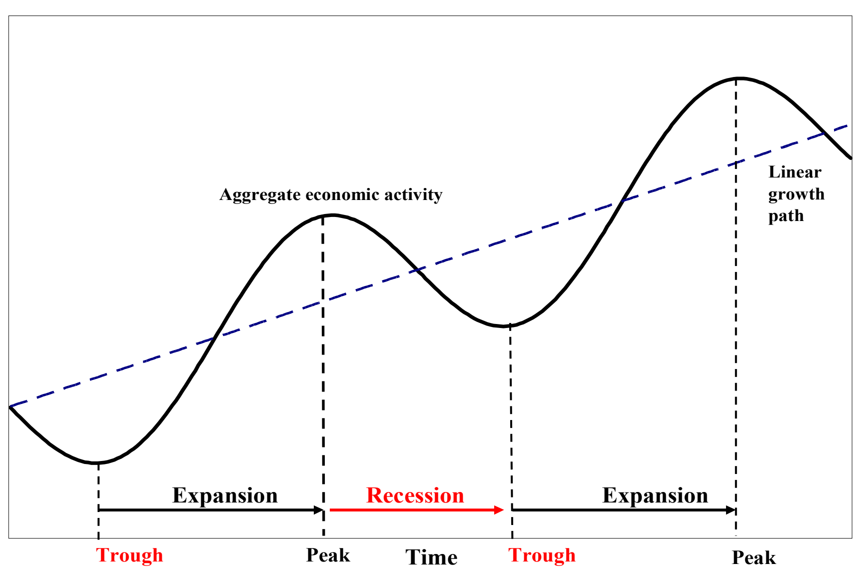
Methodology: Cyclical Turning Points

- Find turning points in macro and financial variables using a business cycle dating algorithm (Harding and Pagan, 2002)

- Episodes of recessions, Credit Contractions, Asset (House and Equity) Price Decline

  - **Severe Recession:** a peak-to-trough decline in GDP in the worst quartile of all declines
  - **Credit Crunch:** a peak-to-trough contraction in credit in the worst quartile of all credit contractions
  - **Asset Price Bust:** a peak-to-trough decline in asset prices in the worst quartile of all price declines

Evolution of Business Cycle



Business and Financial Cycles

- Large number of recessions, crunches and busts
- Output Recessions: 122 **(30 Severe)** **[US, 7, 0]**
- Financial Contractions/Declines
  - Credit: 112 Contractions **(28 Crunches) [US, 5, 2]**
  - House Prices: 114 Declines **(28 Busts)** **[US, 7, 0]**
  - Equity Prices: 234 Declines **(58 Busts)** **[US, 14,1]**

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1. Duration and Amplitude

- Recessions typically last 4 quarters, but credit crunches and asset price busts last much longer, up to 10-18 quarters
- Recessions mean declines (peak to trough) in GDP of 2 percent, with severe recession declines of 5 percent
- Credit crunches and asset busts mean substantial declines in credit and asset prices, 15 to 50 percent

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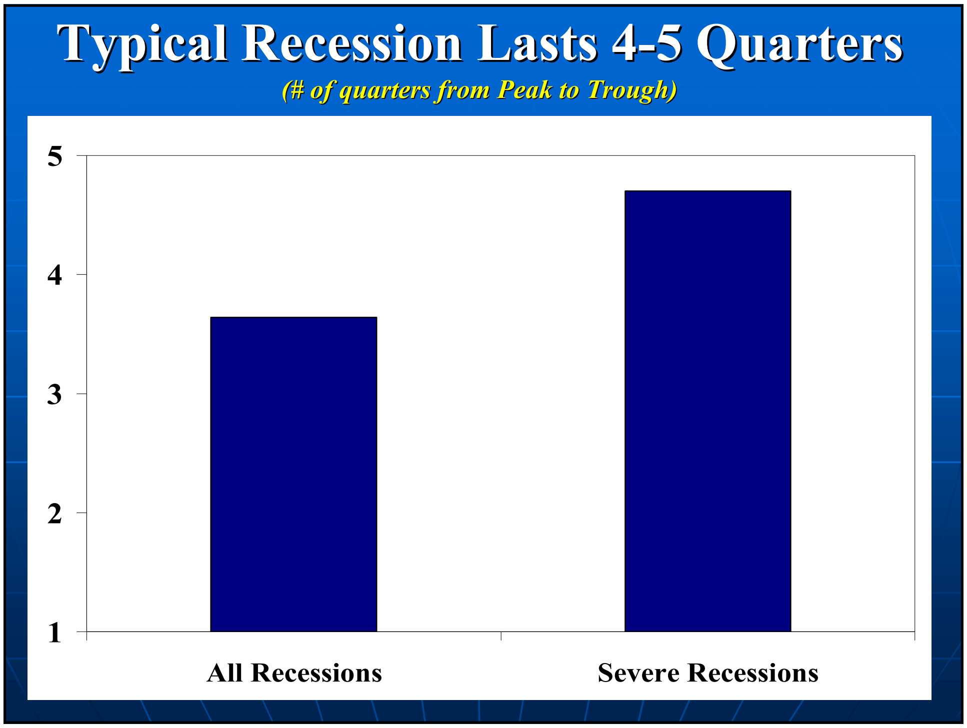
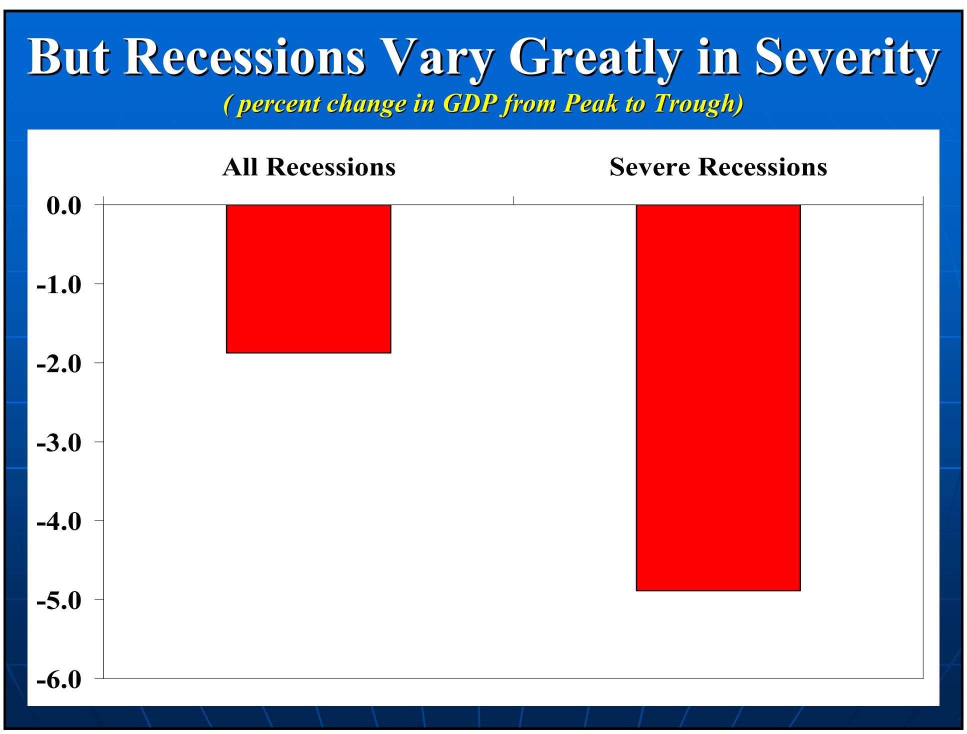
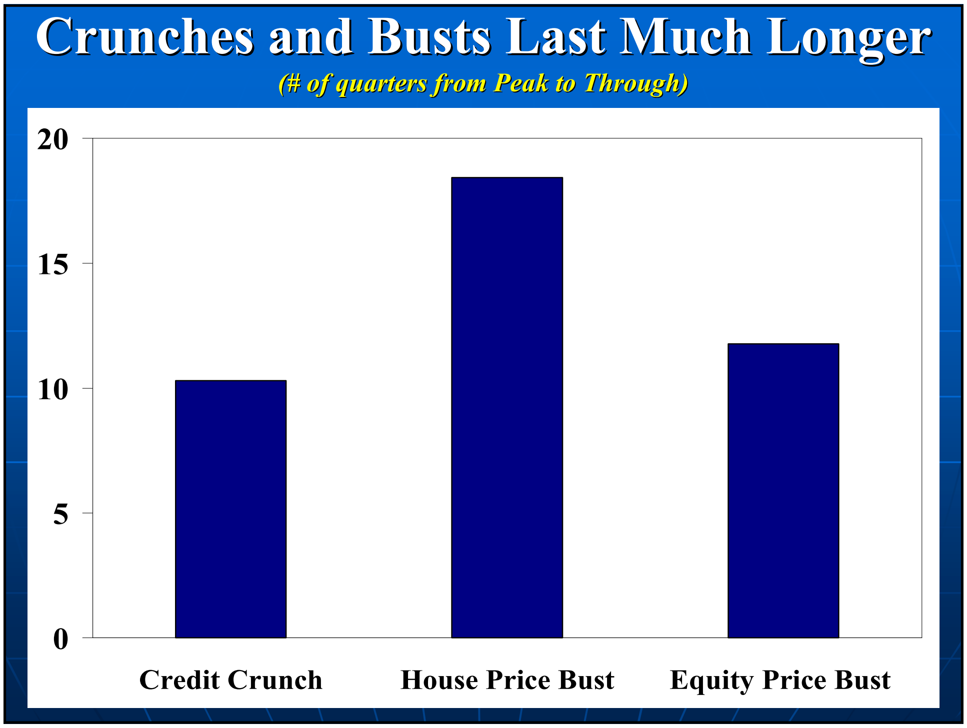
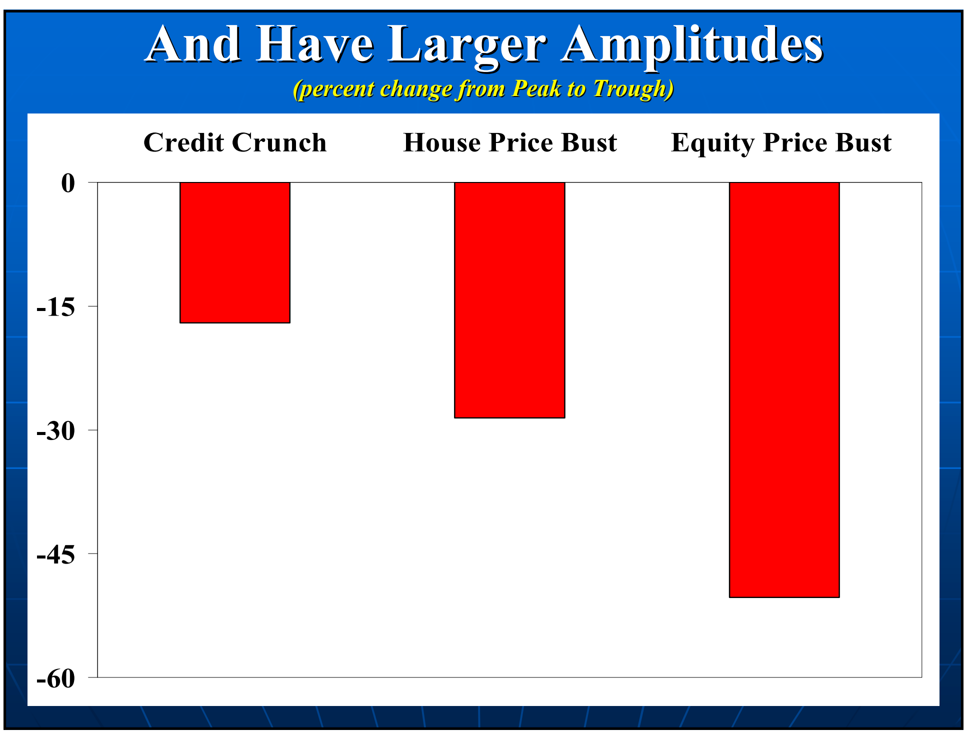

Typical Recession Lasts 4-5 Quarters
(# of quarters from Peak to Trough)
5
4
3
2
1
All Recessions
Severe Recessions


But Recessions Vary Greatly in Severity
(percent change in GDP from Peak to Trough)
All Recessions
Severe Recessions
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0


Crunches and Busts Last Much Longer
(# of quarters from Peak to Through)
20
15
10
5
0
Credit Crunch
House Price Bust
Equity Price Bust


And Have Larger Amplitudes
(percent change from Peak to Trough)
Credit Crunch
House Price Bust
Equity Price Bust
0
-15
-30
-45
-60

2. Recessions, Crunches and Busts

- Identify recessions coinciding with credit crunches, asset price busts (starting before or occurring at the same time)

  - 18 Recessions overlap with Credit Crunches
  - 34 Recessions overlap with House Price Busts
  - 45 Recessions overlap with Equity Price Busts

- **Main Finding:** Recessions with credit crunches and housing price busts are on average associated with longer and deeper recessions, with greater declines in residential investment

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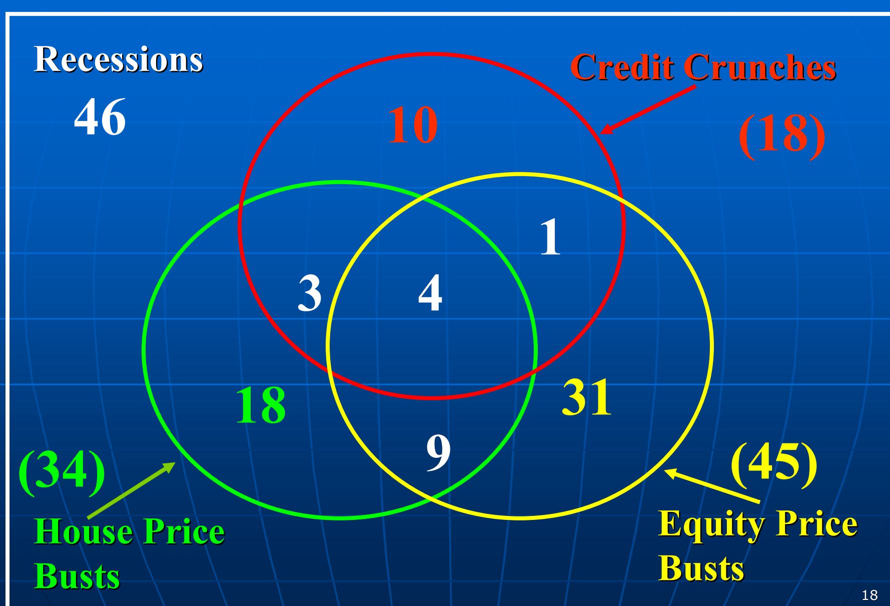
Associations: Recessions, Crunches & Busts



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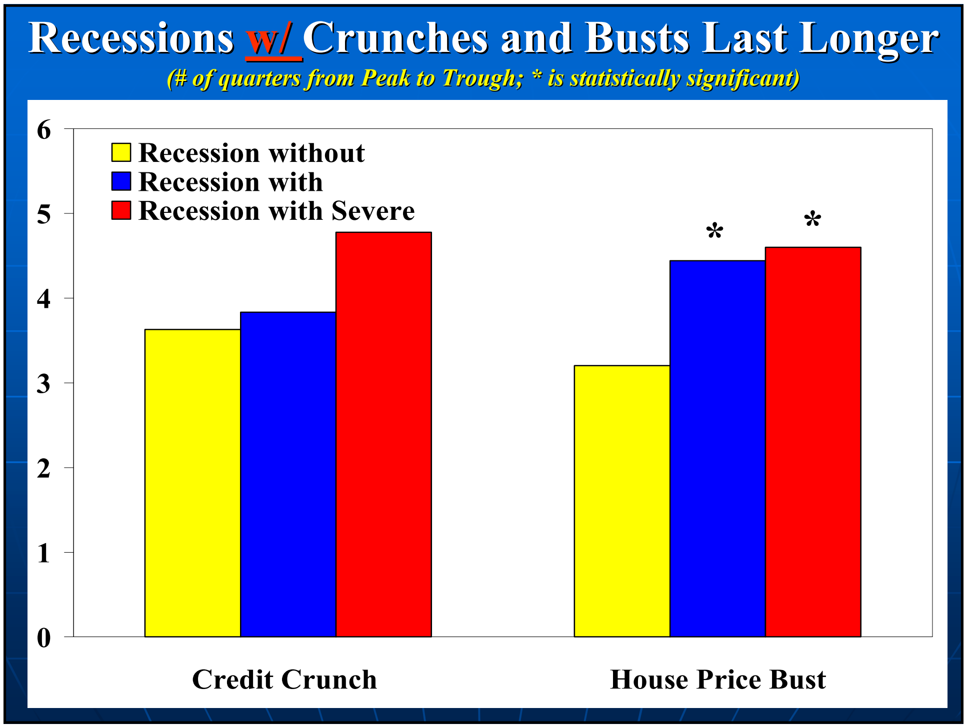
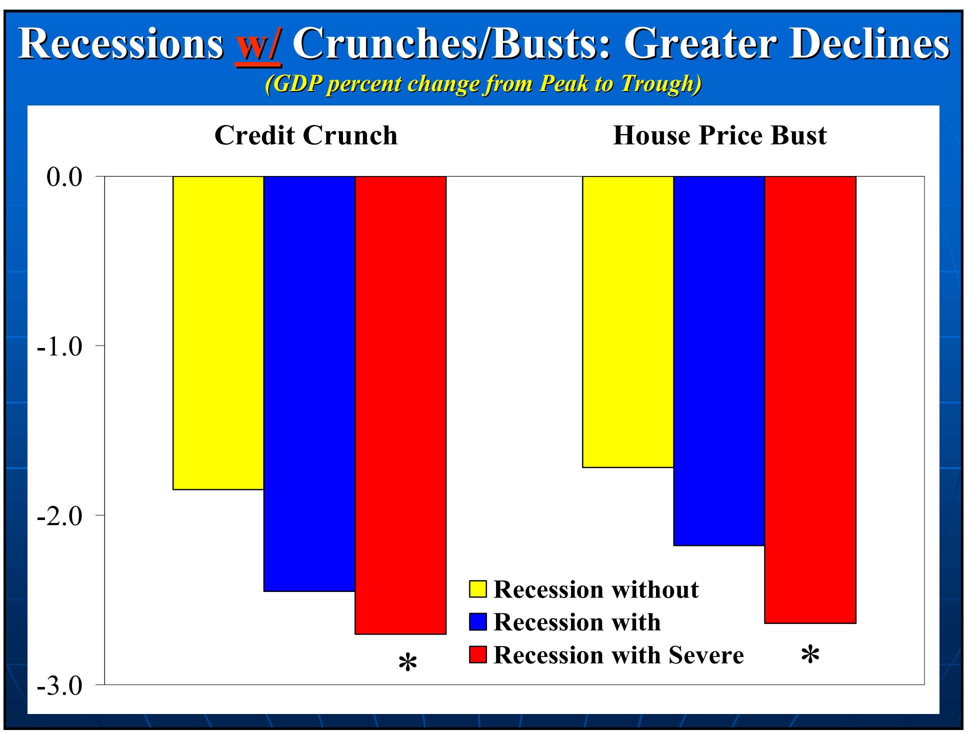
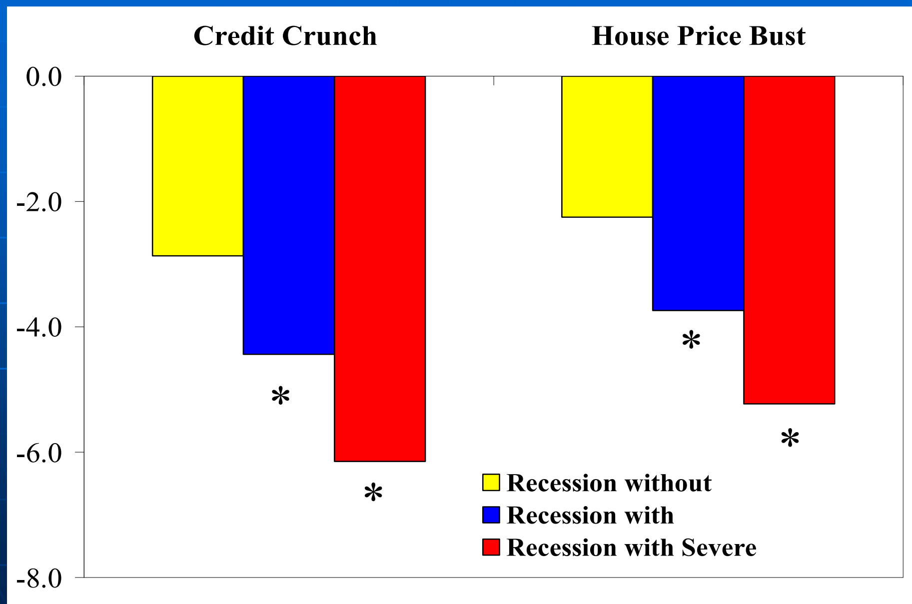

Recessions w/ Crunches and Busts Last Longer
(# of quarters from Peak to Trough; * is statistically significant)
Recession without
Recession with
Recession with Severe
6
5
4
3
2
1
0
*
*
Credit Crunch
House Price Bust


Recessions w/ Crunches/Busts: Greater Declines
(GDP percent change from Peak to Trough)
Credit Crunch
House Price Bust
0.0
-1.0
-2.0
-3.0
Recession without
Recession with
Recession with Severe
*
*

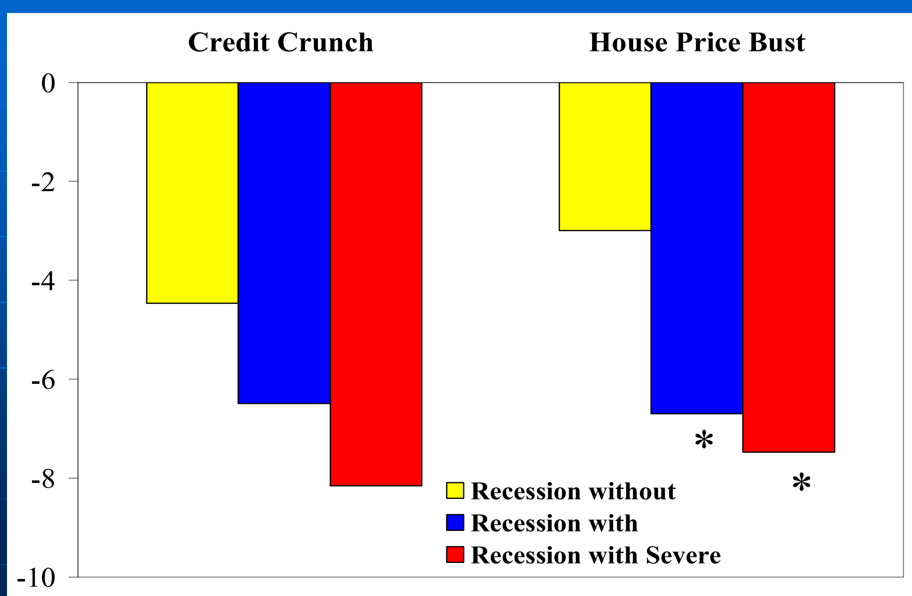
Recessions w/ Crunches/Busts: Larger Losses

(Cumulative GDP loss, percent, from Peak to Trough)



Recs w/ Crunches/Busts: Res'l Inv Falls More

(percent change from Peak to Trough)



3. Cost of Recessions & Financial Factors

- Analysis of the empirical links between the cost of recessions and changes in financial market conditions
- Regress the declines in output during recessions on changes in financial variables (credit, house price and equity price) during recessions
- Also control for
  - Changes in domestic and global economic conditions
  - Changes in oil prices; Changes in economic policies;
  - Great Moderation; financial crisis; duration of recessions
- Main Result: Declines in house prices are significantly positively correlated with the costs of recessions

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Table 13.A. Cost of Recessions

(Percent change in real variables unless otherwise indicated)

	(1)	(2)	(3)	(4)	(5)	(6)
Credit	**0.036**	**…**	**…**	**-0.090*****	**-0.088*****	**-0.060**
	[0.034]	**…**	**…**	**[0.033]**	**[0.033]**	**[0.040]**
House Price	…	***0.174******	…	***0.224******	***0.220******	***0.167******
	…	***[0.043]***	…	***[0.049]***	***[0.046]***	***[0.052]***
Equity Price	**…**	**…**	**0.023***	**…**	**0.016**	**0.011**
	…	**…**	**[0.013]**	**…**	**[0.010]**	**[0.011]**
Exports	0.109***	0.073*	0.035	0.087**	0.083*	0.081*
	[0.039]	[0.042]	[0.051]	[0.040]	[0.042]	[0.042]
Initial Output	0.177**	0.192**	0.163**	0.173**	0.165*	0.163*
	[0.074]	[0.074]	[0.080]	[0.084]	[0.086]	[0.083]
Oil Price	-0.006	-0.008*	-0.002	-0.007	-0.006	-0.004
	[0.005]	[0.005]	[0.005]	[0.004]	[0.004]	[0.004]
Great Moderation	-0.803	-0.981**	-0.742	-1.010**	-1.002**	-0.952**
	[0.560]	[0.482]	[0.546]	[0.467]	[0.462]	[0.456]
Financial Crisis	0.133	-0.231	0.413	-0.068	-0.034	-0.209
	[0.507]	[0.432]	[0.428]	[0.385]	[0.373]	[0.369]
Duration of Recession	…	…	…	…	…	0.261**
	…	…	…	…	…	[0.125]
Constant	1.888***	1.292*	1.478**	1.039	1.001	0.280
	[0.650]	[0.689]	[0.693]	[0.679]	[0.667]	[0.769]
Adjusted R-squared	0.191	0.355	0.095	0.404	0.412	0.432
Number of observations	117	95	109	95	95	95

Table 13.B. Cost of Recessions

(Percent change in real variables unless otherwise indicated)

	(1)	(2)	(3)	(4)	(5)	(6)
Credit	**0.036**	**...**	**...**	**-0.087****	**-0.083****	**-0.052**
	[0.033]	**...**	**...**	**[0.035]**	**[0.034]**	**[0.041]**
House Price	***...***	***0.165******	***...***	***0.216******	***0.209******	***0.157******
	...	***[0.043]***	***...***	***[0.052]***	***[0.047]***	***[0.055]***
Equity Price	**...**	**...**	**0.028****	**...**	**0.021****	**0.015**
	...	**...**	**[0.014]**	**...**	**[0.009]**	**[0.011]**
Exports	0.109***	0.063	0.014	0.079*	0.070	0.076
	[0.041]	[0.047]	[0.054]	[0.045]	[0.047]	[0.047]
Initial Output	0.191*	0.198**	0.200**	0.179*	0.169*	0.171*
	[0.100]	[0.087]	[0.099]	[0.094]	[0.097]	[0.096]
Oil Price	-0.007	-0.008*	-0.003	-0.007	-0.005	-0.003
	[0.005]	[0.005]	[0.004]	[0.004]	[0.004]	[0.004]
Great Moderation	-0.885*	-1.001**	-0.842*	-1.024**	-1.008**	-0.941**
	[0.525]	[0.456]	[0.502]	[0.441]	[0.435]	[0.422]
Financial Crisis	-0.015	-0.240	0.241	-0.077	-0.009	-0.097
	[0.558]	[0.456]	[0.459]	[0.408]	[0.387]	[0.361]
Government Consumption	0.008	0.062	0.157	0.050	0.080	0.135
	[0.149]	[0.164]	[0.169]	[0.154]	[0.145]	[0.153]
Short-Term Interest Rate	0.088	0.082	0.246	0.061	0.071	0.009
	[0.154]	[0.116]	[0.151]	[0.111]	[0.107]	[0.100]
Duration of Recession	...	...	...	...	...	0.297**
	...	...	...	...	...	[0.128]
Constant	1.831***	1.294*	1.312*	1.055	1.039	0.316
	[0.697]	[0.693]	[0.754]	[0.693]	[0.685]	[0.744]
Adjusted R-squared	0.186	0.334	0.149	0.381	0.396	0.419
Number of observations	115	94	107	94	94	94

3. Cost of Recessions & Financial Factors

- Declines in house prices are significantly positively correlated with the costs of recessions
- Changes in other financial variables (credit and equity prices) are not associated with the costs of recessions
- Results are robust to the inclusion of other controls, fixed effects, and outliers etc.

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4. Global Business and Financial Cycles

- Recessions have moderated over time
  - Fewer recessions
- Yet, recessions still often coincide
- And episodes of financial markets' difficulties tend to overlap with recessions
  - Credit contractions: most often coincide
  - House declines: quite often coincide
  - Equity price declines: more independent

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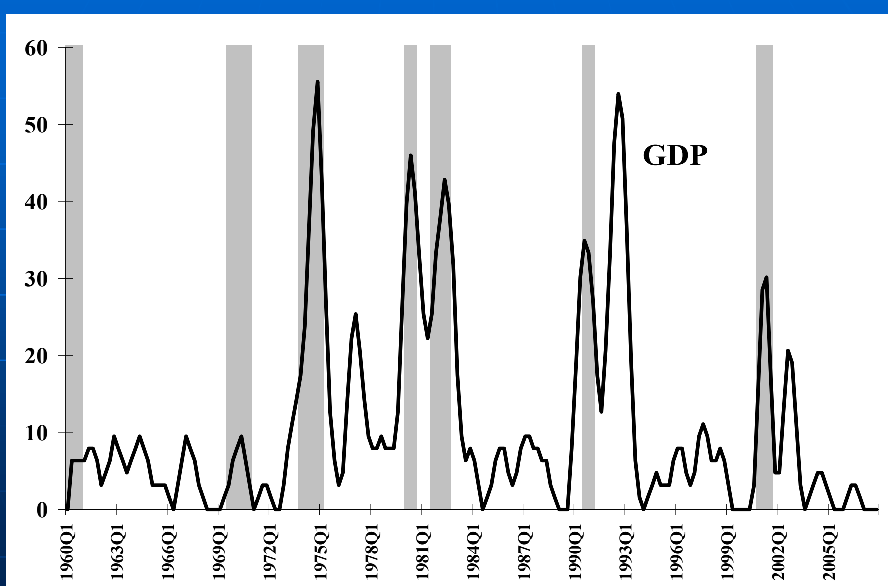
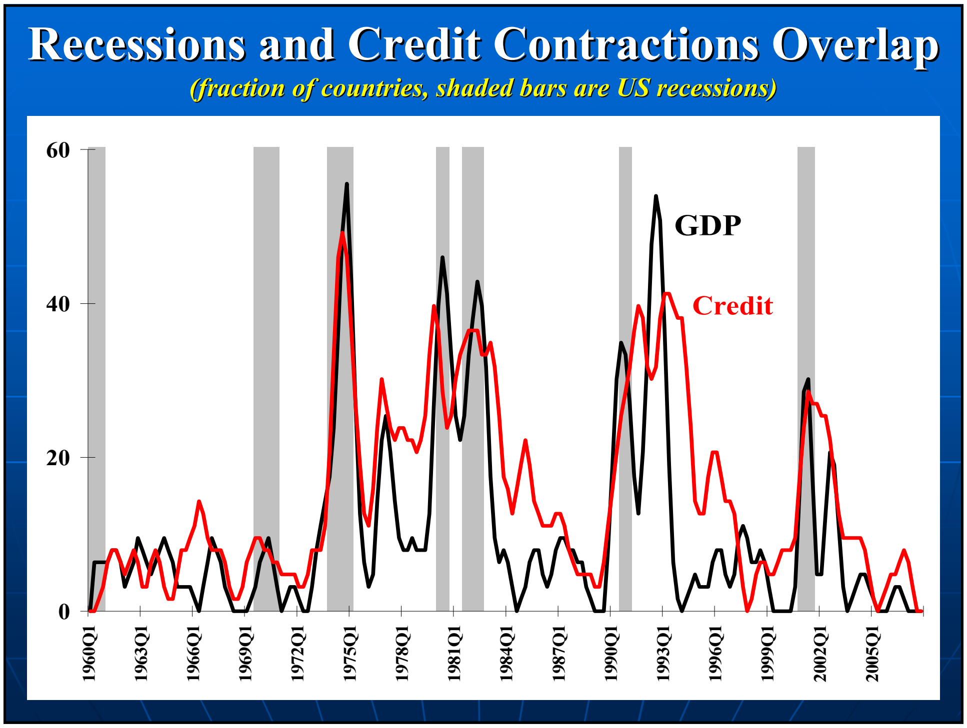
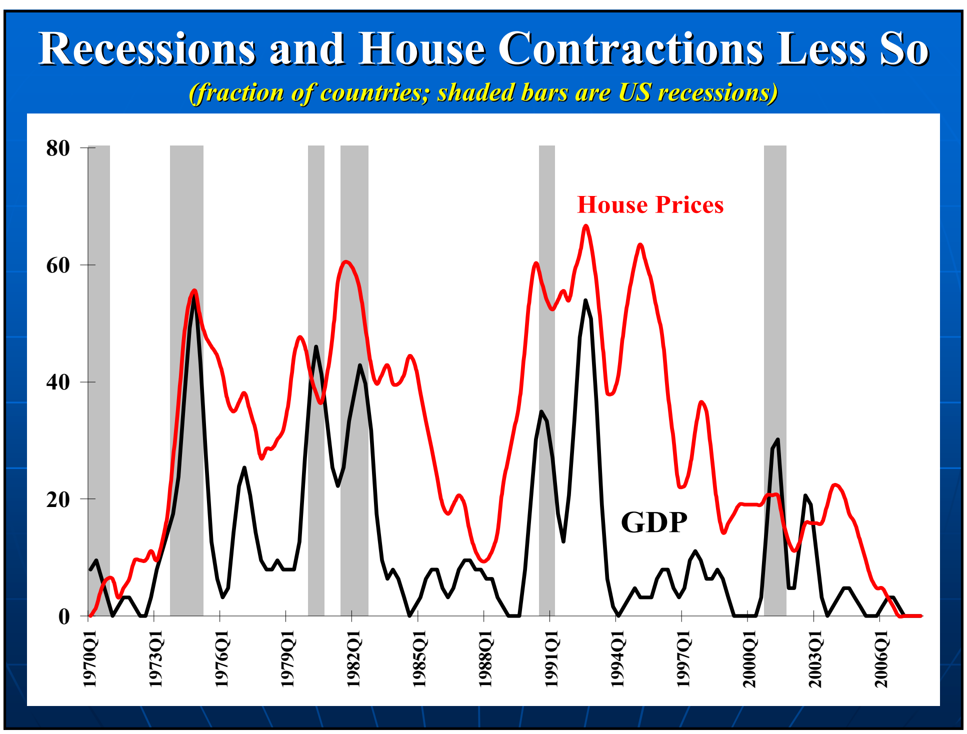
Recessions Come in Bunches

(fraction of countries in recession; shaded bars are US recessions)

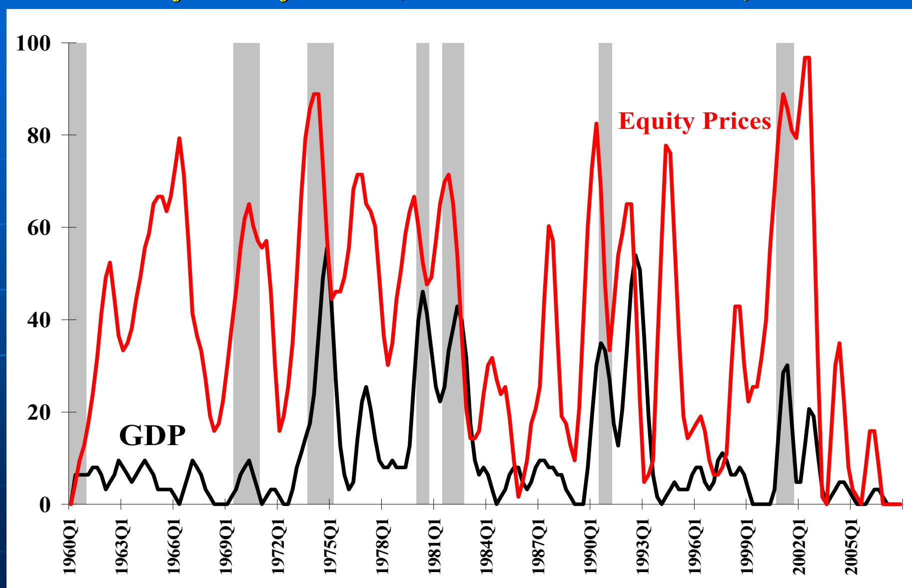



Recessions and Credit Contractions Overlap
(fraction of countries, shaded bars are US recessions)
GDP
Credit
60
40
20
0
1960Q1
1963Q1
1966Q1
1969Q1
1972Q1
1975Q1
1978Q1
1981Q1
1984Q1
1987Q1
1990Q1
1993Q1
1996Q1
1999Q1
2002Q1
2005Q1


Recessions and House Contractions Less So
(fraction of countries; shaded bars are US recessions)
House Prices
GDP
80
60
40
20
0
1970Q1
1973Q1
1976Q1
1979Q1
1982Q1
1985Q1
1988Q1
1991Q1
1994Q1
1997Q1
2000Q1
2003Q1
2006Q1

Recessions and Equity Coincide Even Less

(fraction of countries, shaded bars are US recessions)



Results

- How long do recessions, credit crunches and asset price busts last and how severe/deep are they?

  Episodes of financial markets' difficulties last a long time, much longer than recessions, and can be deep

- Are recessions associated with credit crunches and asset price busts different than other recessions?

  Yes. Recessions associated with crunches and busts tend to be longer and deeper

- Do changes in financial variables relate to the cost of recessions?

  Yes. Larger drops in house prices tend to be associated with more costly recessions

- Are recessions, crunches and busts synchronized globally?

  Yes. They often do as they come in bunches

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Some Caveats

- No causal inferences made or intended as to how financial variables affect macroeconomic outcomes or vice-versa
- Initial conditions and policy responses affect the paths economy and financial markets follow
- External conditions, demand and supply shocks matter as well

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Future Research

- Large sample of business and financial cycles
- Identifying causes/shocks driving these recessions
- Alternative metrics of economic activity (output gap)
- Different patterns in financial stress/crisis episodes
- Interactions with global business cycles and emerging market cycles
- Micro/corporate behavior around recessions/busts

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