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

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…
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)

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
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)

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**
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

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
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]

## 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
Typical Recession Lasts 4-5 Quarters

(\# of quarters from Peak to Trough)

<table>
<thead>
<tr>
<th></th>
<th>All Recessions</th>
<th>Severe Recessions</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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</table>

All Recessions

Severe Recessions

But Recessions Vary Greatly in Severity

(\ percent change in GDP from Peak to Trough)

<table>
<thead>
<tr>
<th></th>
<th>All Recessions</th>
<th>Severe Recessions</th>
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<tbody>
<tr>
<td>-6.0</td>
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<td>-4.0</td>
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<td>-6.0</td>
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</table>
Crunches and Busts Last Much Longer
(# of quarters from Peak to Through)

And Have Larger Amplitudes
(percent change from Peak to Trough)
2. Recessions, Crunc hes 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

Associations: Recessions, Crunches & Busts
Recessions \( \text{w/} \) Crunches and Busts Last Longer

(\# of quarters from Peak to Trough; * is statistically significant)

- Credit Crunch
  - Recession without
  - Recession with
  - Recession with Severe

- House Price Bust
  - Recession without
  - Recession with
  - Recession with Severe

Recessions \( \text{w/} \) Crunches/Busts: Greater Declines

(GDP percent change from Peak to Trough)

- Credit Crunch
  - Recession without
  - Recession with
  - Recession with Severe

- House Price Bust
  - Recession without
  - Recession with
  - Recession with Severe
Recessions vs. Crunches/Busts: Larger Losses

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

<table>
<thead>
<tr>
<th>Credit Crunch</th>
<th>House Price Bust</th>
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Recessions vs. Crunches/Busts: Res’l Inv Falls More

(percent change from Peak to Trough)

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<thead>
<tr>
<th>Credit Crunch</th>
<th>House Price Bust</th>
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- Recession without
- Recession with
- Recession with Severe
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

<table>
<thead>
<tr>
<th>Table 13.A. Cost of Recessions</th>
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<tbody>
<tr>
<td>(Percent change in real variables unless otherwise indicated)</td>
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<td>Credit</td>
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<td>Equity Price</td>
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<td>Exports</td>
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<td>Initial Output</td>
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<td>Oil Price</td>
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<td>Great Moderation</td>
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<td>Financial Crisis</td>
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<tr>
<td>Duration of Recession</td>
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<td>Constant</td>
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<td></td>
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<tr>
<td>Adjusted R-squared</td>
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<tr>
<td>Number of observations</td>
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</tbody>
</table>
### 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.

#### Table 13.B. Cost of Recessions

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<thead>
<tr>
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<td>Credit</td>
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<td>-0.087**</td>
<td>-0.083**</td>
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<td>[0.033]</td>
<td></td>
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<td>[0.035]</td>
<td>[0.034]</td>
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<tr>
<td>House Price</td>
<td>...</td>
<td>0.165***</td>
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<td>0.209***</td>
<td>0.157***</td>
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<tr>
<td></td>
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<td>[0.043]</td>
<td></td>
<td>[0.052]</td>
<td>[0.047]</td>
<td>[0.055]</td>
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<tr>
<td>Equity Price</td>
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<td>...</td>
<td>0.028**</td>
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<td>[0.014]</td>
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<td>Exports</td>
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<td>0.063</td>
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<tr>
<td>Initial Output</td>
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<td>0.198**</td>
<td>0.200**</td>
<td>0.179*</td>
<td>0.169*</td>
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<td>Oil Price</td>
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<td>[0.004]</td>
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<tr>
<td>Great Moderation</td>
<td>-0.885*</td>
<td>-1.001**</td>
<td>-0.842*</td>
<td>-1.024**</td>
<td>-1.008**</td>
<td>-0.941**</td>
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<td>-0.097</td>
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<td></td>
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<td>[0.408]</td>
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<td>Government Consumption</td>
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<td>0.062</td>
<td>0.157</td>
<td>0.050</td>
<td>0.080</td>
<td>0.135</td>
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<td>[0.149]</td>
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<td>[0.169]</td>
<td>[0.154]</td>
<td>[0.145]</td>
<td>[0.153]</td>
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<td>Short-Term Interest Rate</td>
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<td>0.082</td>
<td>0.246</td>
<td>0.061</td>
<td>0.071</td>
<td>0.009</td>
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<td>[0.154]</td>
<td>[0.116]</td>
<td>[0.151]</td>
<td>[0.111]</td>
<td>[0.107]</td>
<td>[0.100]</td>
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<tr>
<td>Duration of Recession</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>0.297***</td>
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<td></td>
<td></td>
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<td>[0.128]</td>
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<tr>
<td>Constant</td>
<td>1.831***</td>
<td>1.294*</td>
<td>1.312*</td>
<td>1.055</td>
<td>1.039</td>
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<td>[0.697]</td>
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<td>[0.754]</td>
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<td>[0.685]</td>
<td>[0.744]</td>
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<td>0.381</td>
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<td>0.419</td>
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<td>94</td>
<td>107</td>
<td>94</td>
<td>94</td>
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</tbody>
</table>

(Percent change in real variables unless otherwise indicated)
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

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)

Recessions and House Contractions Less So
(fraction of countries; shaded bars are US recessions)
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**
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

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
Questions & Comments

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