What Happens During Recessions, Crunches, and Busts?

Stijn Claessens
International Monetary Fund

and

Ayhan Kose
International Monetary Fund

and

Marco Terrones
International Monetary Fund

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What Happens During Recessions, Crunches and Busts?

Stijn Claessens, M. Ayhan Kose and Marco E. Terrones

Macro-Financial Linkages Unit, Research Department
International Monetary Fund

presentation at the
9th Annual Research Conference
IMF, November 13-14 2008

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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…
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)

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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
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

- Linear growth path
- Trough, Peak, Expansion, Recession
- Aggregate economic activity
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)

But Recessions Vary Greatly in Severity
(percent change in GDP from Peak to Trough)
Crunches and Busts Last Much Longer
(# of quarters from Peak to Through)

Credit Crunch House Price Bust Equity Price Bust

And Have Larger Amplitudes
(percent change from Peak to Trough)
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.

**Associations: Recessions, Crunches & Busts**

- Recessions: 46
- Credit Crunches: 10 (18)
- House Price Busts: 18 (34)
- Equity Price Busts: 9 (45)
Recessions w/ Crunches and Busts Last Longer
(# of quarters from Peak to Trough; * is statistically significant)

Recessions w/ Crunches/Busts: Greater Declines
(GDP percent change from Peak to Trough)
Recessions w/ Crunches/Busts: Larger Losses
(Cumulative GDP loss, percent, from Peak to Trough)

<table>
<thead>
<tr>
<th>Credit Crunch</th>
<th>House Price Bust</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
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Recessions w/ Crunches/Busts: Res’l Inv Falls More
(percent change from Peak to Trough)

<table>
<thead>
<tr>
<th>Credit Crunch</th>
<th>House Price Bust</th>
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<tbody>
<tr>
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</tbody>
</table>
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></th>
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<tbody>
<tr>
<td></td>
<td>Credit</td>
<td>House Price</td>
<td>Equity Price</td>
<td>Exports</td>
<td>Initial Output</td>
<td>Oil Price</td>
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<tr>
<td>Credit</td>
<td>0.036</td>
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<td>0.109***</td>
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<td>[0.042]</td>
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<tr>
<td>House Price</td>
<td>-0.090***</td>
<td>-0.088***</td>
<td>-0.060</td>
<td>-0.006</td>
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<td>[0.040]</td>
<td>[0.051]</td>
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<tr>
<td>Equity Price</td>
<td>0.174***</td>
<td>0.224***</td>
<td>0.220***</td>
<td>0.005</td>
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<tr>
<td>Initial Output</td>
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<td>0.163**</td>
<td>0.165*</td>
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<td>Duration of Recession</td>
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<td>...</td>
<td>0.261**</td>
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<td>[0.125]</td>
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<td>1.292*</td>
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Table 13.A. Cost of Recessions

(Percent change in real variables unless otherwise indicated)
### Table 13.B. Cost of Recessions
(Percent change in real variables unless otherwise indicated)

<table>
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<td><strong>Credit</strong></td>
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<td>...</td>
<td><strong>-0.087</strong></td>
<td><strong>-0.083</strong></td>
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<td>...</td>
<td>[0.035]</td>
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<td>[0.041]</td>
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<tr>
<td><strong>House Price</strong></td>
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<td>0.165***</td>
<td>...</td>
<td><strong>0.216</strong>*</td>
<td><strong>0.209</strong>*</td>
<td><strong>0.157</strong>*</td>
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<td>...</td>
<td>[0.052]</td>
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<td>[0.055]</td>
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<tr>
<td><strong>Equity Price</strong></td>
<td>...</td>
<td>...</td>
<td>0.028**</td>
<td>...</td>
<td>0.021**</td>
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<td>Exports</td>
<td>0.169***</td>
<td>0.063</td>
<td>0.014</td>
<td>0.079*</td>
<td>0.070</td>
<td>0.076</td>
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<td>[0.045]</td>
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<tr>
<td>Initial Output</td>
<td>0.191*</td>
<td>0.198**</td>
<td>0.200**</td>
<td>0.179*</td>
<td>0.169*</td>
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<td>[0.004]</td>
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<td>0.241</td>
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<td>-0.009</td>
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<td>[0.169]</td>
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<td>[0.111]</td>
<td>[0.107]</td>
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<tr>
<td>Duration of Recession</td>
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<td>...</td>
<td>...</td>
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<td>94</td>
<td>107</td>
<td>94</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.
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

M. Ayhan Kose

akose@imf.org