Characterising the financial cycle: don’t lose sight of the medium-term!

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The views presented are those of the authors and do not necessarily represent those of the BIS.
Introduction

- Crisis underscored that we need to improve understanding of the financial cycle
  - What is this cycle?
  - What are the empirical regularities?
- Limited literature
  - Claessens et al (2011a,b)
  - Aikman et al (2010)
- This paper extends and complements the literature
  - Combines methods
  - Focus on medium-term cycle
  - Combine variables
Main results

- We can identify a distinct financial cycle by two different methods
  - Combines information from credit and property prices
- Peaks in the financial cycle are closely related to crises
  - Post 1985 only three non-crisis peaks → serious strains
- Characteristics of the financial cycle depend on the financial and monetary regimes
  - Length of the cycle doubled and relation with crisis tighter
- Policy makers should take account of the medium term cycle
  - “Unfinished recessions”
Data

- Business cycle:
  - GDP

- Financial cycle:
  - Credit to the private non-financial sector
  - Credit-to-GDP ratio
  - Property prices
  - Equity prices
  - Asset prices
  - Because of lack of data do not include other financial variables (e.g. spreads, profits, write-offs, leverage…)

- 7 countries: AU, DE, JP, NO, SE, UK, US
- Quarterly data from 1960 to 2011
Methodology

- Frequency based filters (Christiano and Fitzgerald, 2005, Comin and Gertler, 2006)
- Turning-point method (Burns and Mitchell, 1946, Harding and Pagan, 2002)

<table>
<thead>
<tr>
<th></th>
<th>Frequency based filters</th>
<th>Turning-points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short term cycle</td>
<td>5-32 quarters</td>
<td>Local maxima/minima: 5q window</td>
</tr>
<tr>
<td>(business cycle)</td>
<td></td>
<td>Minimum cycle length: 5 quarters</td>
</tr>
<tr>
<td>Medium term cycle</td>
<td>8-30 years</td>
<td>Local maxima/minima: 9q window</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum cycle length: 5 years</td>
</tr>
</tbody>
</table>
Looking at individual series
Medium-term versus short–term: Filters

- Volatility of medium-term component greater than short-term one for all variables
- Relative to GDP, ratio higher for financial variables, except equities
- Medium-term component becomes larger after 1985
What happens around crisis?

- All domestic crises coincide with medium term cyclical peaks
  - Independent of the method
  - German crisis in 2008 not captured
  - Peaks in credit and property prices closest to crises, equity prices peak well before crises
- Peaks in medium term cycles often coincide with crises
  - For credit and property prices 40-50% of peaks coincide with crises (65-70% after 1985)
  - For equity prices only 22% of peaks coincide with crises
  - For short term cycles the relationship much weaker (18-30%)

→ Medium-term frequencies are key!
Towards a measure of the financial cycle
Methodology

- Frequency based filters
  - Average of individual series
- Turning-point method (Hardin and Pagan (2005))
  - Peak in the common cycle if
    - there is a cluster when all individual series peak,
    - individual series are closest to their peak within the cluster
  - Impose same constraints as on dating method for individual series
- Cluster width
  - 3 years
  - 3 to 6 years (weak)
Which series should underpin the financial cycle?

- The financial cycle is derived from credit, the credit-to-GDP ratio and property prices
- Equity prices (and thus aggregate asset prices) are not included
  - Greater short term volatility
  - Medium-term cyclical peaks occur often without crisis
  - Medium-term cycle not well aligned with credit series or property prices
    - Low concordance (turning-point method)
    - Low correlation (frequency based filters)
## Peaks in the financial cycle

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
<th>Time to closest crises</th>
<th>Time to closest peak using filters</th>
<th>Country</th>
<th>Date</th>
<th>Time to closest crises</th>
<th>Time to closest peak using filters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Close to crises</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>Not close to crises</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GB</td>
<td>2009q1</td>
<td>-6</td>
<td>5</td>
<td>NO</td>
<td>2009q2</td>
<td>-74</td>
<td>3</td>
</tr>
<tr>
<td>SE</td>
<td>2009q1</td>
<td>-2</td>
<td>4</td>
<td>AU</td>
<td>2009q1</td>
<td>-77</td>
<td>1</td>
</tr>
<tr>
<td>US</td>
<td>2007q3</td>
<td>0</td>
<td>0</td>
<td>DE</td>
<td>1998q4</td>
<td>35</td>
<td>9</td>
</tr>
<tr>
<td>GB</td>
<td>1991q1</td>
<td>-3</td>
<td>-2</td>
<td>US</td>
<td>1979q3</td>
<td>42</td>
<td>-1</td>
</tr>
<tr>
<td>AU</td>
<td>1990q3</td>
<td>-3</td>
<td>-2</td>
<td>DE</td>
<td>1973q4</td>
<td>135</td>
<td>-1</td>
</tr>
<tr>
<td>US</td>
<td>1990q3</td>
<td>-2</td>
<td>-5</td>
<td>JP</td>
<td>1973q4</td>
<td>76</td>
<td>-2</td>
</tr>
<tr>
<td>SE</td>
<td>1990q2</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td>1989q3</td>
<td>5</td>
<td>-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GB</td>
<td>1973q4</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td>-0.4</td>
<td>-0.2</td>
<td><strong>Average</strong></td>
<td></td>
<td>25.7</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Not close to crises
Policy implications

- Regime dependence
  - Length and amplitude of the financial cycle increased after financial liberalisation and tighter monetary regimes
- Be aware of “unfinished” recessions!
Unfinished recessions

United States

Equity prices (rhs)²
Property prices (rhs)³
Credit, % GDP (lhs)
Conclusion

- We can identify a distinct financial cycle by two different methods
- Peaks in the financial cycle are closely related to crises
- Characteristics of the financial cycle depend on the financial and monetary regimes
- Policy makers should take account of the medium term cycle
Annex
Peaks in the financial cycle identified by just one method

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
<th>Time to closest crises</th>
<th>Time to closest peak using filters</th>
<th>Time to closes peak using the dating method</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>1976q2</td>
<td>58</td>
<td>51</td>
<td>0</td>
</tr>
<tr>
<td>US</td>
<td>1974q2</td>
<td>63</td>
<td>20</td>
<td>0</td>
</tr>
</tbody>
</table>

**Only peaks in the combined cycle using the cycle dating method**

<table>
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<th>Date</th>
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<th>Time to closest peak using filters</th>
<th>Time to closes peak using the dating method</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE</td>
<td>2001q1</td>
<td>30</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>JP</td>
<td>1999q3</td>
<td>-27</td>
<td>0</td>
<td>-29</td>
</tr>
<tr>
<td>DE</td>
<td>1982q2</td>
<td>99</td>
<td>0</td>
<td>-36</td>
</tr>
<tr>
<td>AU</td>
<td>1972q4</td>
<td>68</td>
<td>0</td>
<td>71</td>
</tr>
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