Bank Lending and Property Prices in Hong Kong

Motivation

- Hong Kong has experienced a number of property price “cycles” since 1980.
  - Severe and frequent!
  - Have been associated with movements in bank lending.

- International experience:
  - Credit expansion and property price booms.
  - Banking sector fragility.

Several issues arise:

- What was the role of bank lending in residential property price cycles?
  - Did bank lending “trigger” the cycles?
  - Did banks merely expand lending in response to a growing demand for loans?

- Understanding the correlation may be important for policy.

- Given the currency board, monetary policy can not be used to guard against asset price cycles.
  - Little evidence that interest rates drive property prices.

- Focus shifts to regulatory policy:
  - “Loan-to-value” ratio of ≤ 70% in 1991.
  - January 1997 ≤ 60% for luxury properties (withdrawn).
  - Limit on share of property lending to 40% 1994 (withdrawn).
  - The 70% ratio can be exceeded if the excess is covered by mortgage insurance (and, recently, to facilitate refinancing of loans with negative equity).

- How have these policies impacted on bank lending?
Empirical Work

- Focus on three variables:
  - Bank lending.
    - Total domestic loans.
    - Alternative measure: mortgage loans.
  - Property prices.
    - Residential.
    - Alternative measure: commercial.
  - Real GDP.

Appendix — Table 2
Trace Tests for Cointegration

<table>
<thead>
<tr>
<th>Null hypothesis of</th>
<th>r = 0</th>
<th>r = 1</th>
<th>r = 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace test statistics</td>
<td>29.80</td>
<td>12.90</td>
<td>4.10</td>
</tr>
<tr>
<td>p-value</td>
<td>0.05</td>
<td>0.12</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Appendix — Table 3
Cointegration Tests: β and α Vectors

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real bank lending</td>
<td>1.00</td>
<td>-0.09</td>
</tr>
<tr>
<td>Real GDP</td>
<td>-0.90</td>
<td>-0.02</td>
</tr>
<tr>
<td>Real property price</td>
<td>-0.43</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Note: Numbers in parentheses are standard errors for α.
Table 1. Long-run Relationship

<table>
<thead>
<tr>
<th>CI vector</th>
<th>Loading coefficient</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real bank lending</td>
<td>1.00</td>
<td>-0.13</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td></td>
</tr>
<tr>
<td>Real GDP</td>
<td>-1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Real property price</td>
<td>-0.36</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note: Number in parentheses is the standard error for α.

Cointegration

- Cointegration results:
  - One CI vector:
    - Lending - RGDP - 0.36*Property Price.
  - Weak exogeneity:
    - Loans adjust.

- Dynamic (short-run) analysis:
  - Models for quarterly changes in:
    - Real bank lending.
    - Real property prices.
  - Strongly contemporaneously correlated.
    - ρ = 0.43 in the data.
    - ρ = 0.41 in the VAR system.
  - What explains the correlation?
    - “Lending driving property prices”.
    - “Property prices driving lending”.
    - Simultaneity!

- Strategy:
  - Use general-to-specific modelling to obtain models for:
    - \( \Delta l = g(\Delta p, CI, ... ) \).
    - \( \Delta p = f(\Delta l, CI, ... ) \).
  - Expect CI to be insignificant in the second relationship.
  - Obvious simultaneity bias:
    - Use Hausman tests to see whether one or both regressions are subject to simultaneity.

- Results as expected:
  - \( \Delta p \) and CI are both significant.

\[ \Delta l = +0.244*\Delta l - 0.313 + 0.239*\Delta r + 0.176*\Delta p - 0.078*\Delta l + 0.357*(\Delta r - \Delta r) \]
\( (SE) \ (0.083) \ (0.107) \ (0.034) \ (0.101) \ (0.142) \)
\( R^2 = 0.57; \) Sample period: 1984:1 - 2001:4

\[ \Delta p = +0.283*\Delta p - 0.008 + 0.900*\Delta l - 0.034*\Delta l + 0.041*\Delta l \]
\( (SE) \ (0.097) \ (0.007) \ (0.248) \ (0.013) \ (0.024) \)
\( R^2 = 0.49; \) Sample period: 1984:1 - 2001:4

- Results as expected:
  - \( \Delta l \) significant.
  - CI insignificant.
• Simultaneity bias:
  – Use predetermined variables as instruments.
  – Δl-equation:
    • p-value = 0.55.
    • Property prices enter equation as structural variable.
  – Δp-equation:
    • p-value = 0.01.
    • Lending growth subject to simultaneity.
    – ‘reverse causation’.
  – Estimate with IV:
    • Lending growth not structural determinant of property prices.

• Property prices appear to be driven by:
  – State of the economy.
  – Supply of new housing.

• Further analysis of lending equation:
  – Did this constrain the growth of lending?
    • Did the parameter on Δp decline around 1991?
  – Note, Hansen test does not point to instability.
    • Assumes unknown breakpoint (lacks power).
  – Recursive estimates.

Suggests break.

• Test:
  – Assumes knowledge of break date.
  – Add dummy*Δp.
  – Dummy = 0 before 1991:2.
  – β = -0.27 (se = 0.09).
  – β declined from 0.40 to 0.13.
• The restriction on banks’ ability to lend is likely to have given them some price making power.

• Some evidence that spread between BLR and interbank rates rose around 1990.
  – Much less volatile.

• Spread significant and negative if included.
  – Signs of instability.

\[
\Delta l = 0.211*\Delta l_{-2} - 0.269 + 0.214*\Delta y + 0.196*\Delta p + 0.349*(\Delta r_1 - \Delta r_2) \\
\text{(SE)} (0.081) (0.105) (0.099) (0.034) (0.137) \\
- 0.070*CI_1 - 0.419*\text{spread} \\
\text{(0.026) (0.178)} \\
R^2 = 0.61; \text{Sample period: 1984:1 - 2001:4}
\]

Conclusion

• Strong co-movements between lending and property prices.

• Appear to reflect reactions of bank lending to demand for credit rather than impact of lending on property market.

• Evidence that the introduction of loan-to-valuation ratio in 1991 reduced the impact of property prices increases on bank lending.