Money Creation and the Shadow Banking System

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Low Frequency Patterns

- ABCP outstanding doubled between 2004 and 2007.
- Similar patterns in other types of short-term shadow bank debt.
- What drove this growth?
Introduction

- One explanation: demand for “money-like” drove the rapid growth of the shadow banking system.
  - Money-like claims not necessarily used in transactions.
  - But have the safety and liquidity to be short-term stores of value.

- An old idea: Providing such claims is a key role of financial intermediaries.

- With two new twists:
  - Argue that investors treated short-term debt of shadow banks as a money-like claim.
  - Argue that there was rising demand for such claims in the mid 2000s.
Introduction

- Focus on establishing that ABCP is “money-like”.
- Imagine a world where:
  - Investors/households pay a premium for claims that provide money services.
  - Three types of claims: deposits, T-bills, and ABCP provide different amounts of money services.
  - Demand for monetary services is linked to monetary policy through a reserve requirement for deposits.
  - Banking sector can manufacture deposits and ABCP.
- Consider shocks to household demand for money services. Derive implications for:
  - Spreads (e.g., ABCP – Treasury bill spread)
  - Reserve injections by the Fed
  - ABCP issuance by the banking sector
Introduction

- Take these predictions to the data.
- Look at high-frequency (weekly) data in the pre-crisis (July 2001-June 2007) period.
  - At high frequencies there is likely to be variation in demand for money based on inventory/payroll schedules.
  - Strip out low-frequency variation to help rule out slower-moving variation in fundamentals in some specifications.
  - Focus on ABCP because of data availability.

Empirical Results

- The data suggest that the shadow banking sector caters to demand for money services by issuing ABCP.
- Evidence is inconsistent with other explanations.
Model: Overview

Investors/Households → Deposits → T-bills → ABCP → Banks

Demand θ → Federal Reserve

Reserves
Model Predictions

1. Shocks to money demand increase the ABCP – T-bill spread.
   - Increased demand drives down yields on both ABCP and T-bills.
   - But T-bill yields all further.

2. Banks respond to money demand shocks by issuing ABCP.
   - #1 and #2 $\rightarrow$ High spreads should forecast issuance.

3. ABCP outstanding is negatively correlated with T-bills outstanding.
   - ST debt issued by the government crowds out shadow bank debt.

4. Fed responds to money demand shocks by injecting reserves.
   - #1 and #3 $\rightarrow$ High spreads should forecast reserve injections.

5. Fed Funds is positively correlated with the ABCP – T-bill spread.
ABCP Net Issuance and Spreads

- Issuance increases when liquidity premia are high.
• T-bills can crowd out ABCP.
ABCP Gross Issuance and Spreads: OLS

\[
\ln(GROSS\_ISSUANCE_t) = \alpha + \beta \cdot SPREAD_{t-1} + \varepsilon_t.
\]

<table>
<thead>
<tr>
<th>Maturity(days):</th>
<th>1-4</th>
<th>5-9</th>
<th>10-20</th>
<th>21-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>4w ABCP - T-bill_{t-1}</td>
<td>0.258***</td>
<td>0.262</td>
<td>0.173</td>
<td>0.038</td>
</tr>
<tr>
<td>(0.094)</td>
<td>(0.188)</td>
<td>(0.152)</td>
<td>(0.20)</td>
<td></td>
</tr>
<tr>
<td>ln(Issuance_{t-1})</td>
<td>-0.022</td>
<td>-0.216***</td>
<td>0.052</td>
<td>0.04</td>
</tr>
<tr>
<td>(0.071)</td>
<td>(0.070)</td>
<td>(0.075)</td>
<td>(0.070)</td>
<td></td>
</tr>
<tr>
<td>ln(ABCP Out_{t-1})</td>
<td>-1.791</td>
<td>-0.45</td>
<td>-3.356</td>
<td>3.76</td>
</tr>
<tr>
<td>(1.511)</td>
<td>(3.023)</td>
<td>(2.666)</td>
<td>(2.805)</td>
<td></td>
</tr>
<tr>
<td>Residual R^2</td>
<td>0.023</td>
<td>0.039</td>
<td>0.005</td>
<td>0.003</td>
</tr>
<tr>
<td>N</td>
<td>303</td>
<td>303</td>
<td>303</td>
<td>303</td>
</tr>
<tr>
<td>Month FE</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

- Response is largely in short-maturity ABCP.
Reserve Injections and Spreads

- Reserve injections are high when liquidity premia are high.
Fed Funds and Spreads

\[ \Delta \text{SPREAD}_t = \alpha + \beta \cdot \Delta (\text{Fed Funds} - \text{Target})_t + \varepsilon_t \]

<table>
<thead>
<tr>
<th></th>
<th>Weekly</th>
<th>Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>4w ABCP - T-bill(_{t-1})</td>
<td>0.103 0.168**</td>
<td>0.165*** 0.196***</td>
</tr>
<tr>
<td></td>
<td>(0.100) (0.076)</td>
<td>(0.032) (0.030)</td>
</tr>
<tr>
<td>Residual R(^2)</td>
<td>0.006 0.224</td>
<td>0.044 0.056</td>
</tr>
<tr>
<td>N</td>
<td>251 251</td>
<td>1039 1039</td>
</tr>
<tr>
<td>Month FE</td>
<td>N Y</td>
<td>N Y</td>
</tr>
</tbody>
</table>

- Weak evidence in weekly data \(\rightarrow\) Fed is adjusting reserve supply to keep Fed Funds at target.
  - Stronger evidence in daily data \(\rightarrow\) Fed cannot instantaneously offset unanticipated shocks.
Low Frequency Patterns

- Low-frequency data:
  - ABCP outstanding grew from $660b to $1.2t between June 2004 and July 2007.
  - ABCP – T-bill spread was 21 bps higher (1σ) over this period than it was from June 2001-June 2004.
  - This is consistent with the idea that the growth in quantities was at least partially driven by demand.

- A large shift in quantities coupled with a relatively smaller change in prices.
  - If the low frequency changes are demand shifts, this suggests that supply is quite elastic.
  - Financial innovation means that the supply (issuance) response to demand shocks has gotten larger over time.
Conclusion

- Weekly data from the pre-crisis period are consistent with a model where the shadow banking system responds to money demand.

- Macro/financial stability implications:
  - Fed’s conduct of monetary policy may affect incentives for private money creation.
  - Liquidity premia (OIS – T-bill, ABCP – T-bill) may be a good measure of incentives for money creation.
  - Banking system may be more responsive to these incentives than it was in the past.

- Thanks!