Deviation from Covered Interest Parity

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Credit Migration and Covered Interest Rate Parity

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Discussion
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The views expressed in this discussion are solely the responsibility of the author and should not be interpreted as reflecting views of the Bank of Japan.
Structure of USD/JPY FX swap market

Three types of arbitragers

1. Global banks (FX/XCCY swap desks)
   - Du, Tepper and Verdelhan
   - USD money market
   - JPY money market

2. USD/JPY FX/XCCY swap markets
   - Global banks (Treasury division)
   - USD corporate bond market
   - JPY corporate bond market

3. Real money (SWFs, reserve managers, private funds)
   - USD loans, bonds
   - USD TB/CP market
   - JPY TB/repo market

4. Japanese Banks, Life insurers
   - USD money market
   - JPY money market
   - USD TB/CP market
   - JPY TB/repo market

5. Bond issuers
   - USD money market
   - JPY money market
   - USD corporate bond market
   - JPY corporate bond market

### Structure of USD/JPY FX swap markets

#### Banks vs. Real money

<table>
<thead>
<tr>
<th></th>
<th>USD side</th>
<th>JPY side</th>
<th>No-arbitrage conditions (CIP)</th>
<th>Leverage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global banks</strong></td>
<td>Money market instruments</td>
<td>Money market instruments</td>
<td>USD LIBOR = USD-hedged JPY LIBOR</td>
<td>YES, Borrow USD in money markets and supply funds to FX swap market.</td>
</tr>
<tr>
<td>Global banks’ treasury division</td>
<td>USD LIBOR or short-term repo</td>
<td>JPY LIBOR or short-term repo</td>
<td>LIBOR-based cross-currency basis = 0</td>
<td></td>
</tr>
<tr>
<td><strong>Real money</strong></td>
<td>US TB or high-rated CP</td>
<td>Safe assets</td>
<td>US TB/CP rate = USD-hedged JP TB rate</td>
<td>No, Invest USD to spare in US TB/CP or USD-hedged products.</td>
</tr>
<tr>
<td>SWFs, reserve managers, private investment funds</td>
<td>USD-hedged JGSs</td>
<td></td>
<td>LIBOR-based cross-currency basis ≠ 0</td>
<td></td>
</tr>
</tbody>
</table>
Changes in major arbitragers: *from banks to real money investors*

Global banks’ arbitrage positions are almost flat since 2014. In contrast, real money investors are likely to accelerate their USD-hedged JGS investments.

![Graph showing changes in foreign banks' assets at Tokyo branch and amount outstanding of JGS holdings and net repo position by foreign investors](source:Bank of Japan.)
Changes in major arbitragers: from banks to real money investors

Accelerated USD-hedged JGS investments by real money investors: some evidence from public information

Private investment funds
<PIMCO foreign bond funds, USD hedged>

Foreign reserve managers
<RBA>

Sources: PIMCO, RBA
Changes in major arbitragers: from banks to real money investors

Cross-currency basis for real money investors may converge to the historical average in the long run, although the speed of convergence might be slow and the band might be wider.

Note: TB based cross-currency basis = US TB rate – USD-hedged Japanese TB rate
CP based cross-currency basis = USD CP rate (AA-rated) – USD-hedged Japanese TB rate
Source: Bloomberg
Background of recent basis **tightening**

USD demand side: Japanese banks sold a large amount of foreign bonds in the first quarter of 2017 but it seems not to affect their USD demands in the FX swap market. USD supply side: real money may increase USD-hedged JGS investments.

Japanese financial institutions’ USD demands in the FX swap market

Amount outstanding of TB holdings by sector

Sources: Money brokers association, Japan; Ministry of Finance, Japan; Bank of Japan.
Real money investors as arbitragers

• The priority of “making profit through arbitrage” may be much lower than that of “safety” for real money investors.

• Real money investors invest USD to spare in USD-hedged non-U.S. products as safe assets substitutable for U.S. TB/high-rated CP in tranquil times.

• Do real money investors continue to invest in USD-hedged products in times of stress?

• More research is needed!
USD-hedged non U.S. securities as “safe” but “illiquid” assets

- Bond investment flows into Japan tend to decline sharply in times of stress. EM reserve managers, aware of the potential need to protect their currencies, may refrain from supplying USD in the FX swap market. In times of stress, reserve managers/SWF could become liquidity demanders.

- Potential amplification mechanism?

Bond investment flows into Japan

Source: Ministry of Finance, Japan.
Offshore profits as USD to spare

- One important USD source of private investment funds is “offshore profits” of U.S. corporations. Some U.S. corporates purchase bank’s CD/CP or offer USD in FX swap markets by using their offshore separate accounts.

- *Would another repatriation tax holiday decrease USD to spare of U.S. corporates?*

### Offshore profits of U.S. corporates

<table>
<thead>
<tr>
<th>Company</th>
<th>Offshore profit</th>
<th>Cash held overseas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>215</td>
<td>230</td>
</tr>
<tr>
<td>Pfizer</td>
<td>194</td>
<td>n.a.</td>
</tr>
<tr>
<td>Microsoft</td>
<td>124</td>
<td>116</td>
</tr>
<tr>
<td>GE</td>
<td>104</td>
<td>4</td>
</tr>
<tr>
<td>IBM</td>
<td>68</td>
<td>n.a.</td>
</tr>
<tr>
<td>Merck</td>
<td>59</td>
<td>n.a.</td>
</tr>
<tr>
<td>Google</td>
<td>58</td>
<td>86</td>
</tr>
<tr>
<td>Cisco</td>
<td>58</td>
<td>62</td>
</tr>
<tr>
<td>J&amp;J</td>
<td>58</td>
<td>41</td>
</tr>
<tr>
<td>Exxon Mobil</td>
<td>51</td>
<td>n.a.</td>
</tr>
<tr>
<td>Total</td>
<td>2,492</td>
<td>1,039</td>
</tr>
</tbody>
</table>

Sources: Bloomberg; CTJ.

### Reinvested earnings and repatriations to U.S.

- Source: BEA.