New Developments in Large Value Payment Systems

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Structure of the report

◆ Drivers of new developments
◆ Descriptive analysis of payment systems
  – presentation of recent developments
◆ Risk and efficiency analysis
◆ Outlook for the future
◆ Annex with comparative tables on selected large value payment systems
Main Drivers

- Technological change
- Globalisation, regionalisation and financial integration
- Regulatory action
- Changing needs of users and end-users
  - Cost efficiency
  - Liquidity and operational efficiency
  - Service harmonisation and standardisation
  - Service differentiation and modification
  - Safety, resilience and operational reliability

Descriptive analysis

- Legal and regulatory framework
- Governance and market structure
- Payment process
- Funding and credit
- Communication and information
New developments in large value payment systems

- Mixing RTGS and netting features
  - New CHIPS (USA)
  - PNS (France)
  - RTGSplus (Germany)
- Implementation of CLS and its implications
- Liquidity control measures
- New arrangements in correspondent banking
  - USD and euro CHATS (Hong Kong)
  - euroSIC (Switzerland)

Liquidity and delay

DNS is cheaper because only net amounts are settled
RTGS is safer because settlement is immediate
Mixing RTGS and netting features

- DNS systems adopt RTGS features → NewCHIPS, PNS
- RTGS systems adopt DNS features → RTGS$^{\text{plus}}$

Liquidity available/required

<table>
<thead>
<tr>
<th>Bank A</th>
<th>Bank B</th>
<th>Bank C</th>
<th>Bank D</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>70</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>10</td>
<td>60</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>40</td>
<td>80</td>
<td>70</td>
<td>40</td>
</tr>
<tr>
<td>50</td>
<td>30</td>
<td>30</td>
<td>40</td>
</tr>
</tbody>
</table>

Liquidity needed:
- max. 450
- min. 130

Liquidity needs with bilateral net settlement

Liquidity needs with multilateral net settlement

Delay

Pure RTGS

Lower bound

Upper bound

Liquidity needed:
- max. 250
- min. 130

Liquidity needed:
- max. 250
- min. 130

Liquidity needed:
- max. 130
- min. 130
New CHIPS (USA)

Until 9 am
- Predetermined initial prefunding
- Submission of payment messages
  Algorithm settles payments with immediate finality if:
  - the sending participant’s current position is sufficient to cover the payment
  - the receiving participant’s current position would not exceed twice its initial prefunding requirements (=credit cap)

5 pm
- Credit cap is removed in order to settle as many payments as possible
- Multilateral netting for residual payments
- Transfer from Fedwire for funding negative final positions

RTGS\textsuperscript{plus} (Germany) and PNS (France)

Submission of payment message

Check funds

\begin{itemize}
  \item enough funds (\textit{+ other conditions}) \rightarrow \text{Real-time gross settlement}
  \item not enough funds \rightarrow \text{Queue}
\end{itemize}

Check possible offsetting

\begin{itemize}
  \item Bilateral netting
  \item Different algorithms \rightarrow Multilateral netting
\end{itemize}
Bilateral offsetting

Account balance: 50

Bank A

100
50
50
75
25

300

275

200
75

Account balance: 150

Bank B

Conclusion on new systems

- New CHIPS and PNS with intraday finality are safer than DNS systems but probably more costly

- RTGS\textsuperscript{plus} with continuous offsetting is as safe as RTGS and probably less costly in terms of liquidity
Liquidity control measures

- Throughput guidelines (Hong Kong, France PNS)
- Sender limits (Germany RTGS\textsuperscript{plus}, PNS)
- Credit caps (USA New CHIPS)
- Pricing structure (Switzerland SIC)

Reduction of risk in foreign exchange transaction

- Introduction of CLS in September 2002
  - Necessity for changes in national LVPS

  - Operating hours
    - ie. Fedwire, Australia
  - Time critical payments
    - subaccounts
    - liquidity reservation
  - Payments of very high value
    - introduction of intraday credit
    - creation of Scandinavian cash pool
New requirements in correspondent banking

- Hong Kong USD and euro systems
  - USD CHATS
  - EUR CHATS

- Swiss euro system
  - euroSIC

### Similarities of Hong Kong and Swiss arrangements

<table>
<thead>
<tr>
<th></th>
<th>Hong Kong</th>
<th>Hong Kong</th>
<th>Switzerland</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System</strong></td>
<td>USD CHATS</td>
<td>EURO CHATS</td>
<td>euroSIC</td>
</tr>
<tr>
<td><strong>Replica of</strong></td>
<td>HKD CHATS (RTGS)</td>
<td>HKD CHATS (RTGS)</td>
<td>SIC (RTGS)</td>
</tr>
<tr>
<td><strong>Settlement institute</strong></td>
<td>HSBC</td>
<td>Standard Chartered Bank</td>
<td>Swiss Euro Clearing Bank</td>
</tr>
<tr>
<td><strong>Intraday liquidity</strong></td>
<td>Overdraft and repo</td>
<td>Overdraft and repo</td>
<td>Pledge</td>
</tr>
<tr>
<td><strong>Links with SSS</strong></td>
<td>DVP model 1</td>
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<td>DVP model 1</td>
</tr>
<tr>
<td><strong>Foreign exchange</strong></td>
<td>PVP: USD – HKD - EURO</td>
<td>PVP: USD – HKD – EURO</td>
<td>no links (CHF – EURO through CLS)</td>
</tr>
</tbody>
</table>
Advantages of new correspondent banking arrangements

- Much higher standardization (STP)
- Settlement in real time with immediate finality
- Possibility to achieve DVP and PVP