



# **Interdependencies among payment and settlement systems Overview of forms and challenges for risk management**

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## What are interdependencies, and Why do they matter?

- Interdependencies arise when the settlement flows, operational processes or risk management procedures of one system are related to those of other systems
- Interdependencies potentially can simultaneously:
  - Improve the safety and efficiency of payment and settlement processes
  - Allow financial disruptions to be passed more easily and more quickly across systems, their participants and related markets, accentuating their role in transmitting disruptions (Ferguson report)



## Forms of interdependencies

- Interdependencies arise from:
  - Direct relationships among systems
  - Indirect relationships among systems due to the activities of financial institutions,
  - “Environmental” factors: the dependence of multiple systems on common third-parties, on common markets, etc
- That reflect multiple activities and purposes:
  - Clearing and settlement channels/arrangements
  - Operational processes and facilities
  - Risk management



## ● Taxonomy

**Table 1: Selected examples of interdependencies arising from relationships**

Type of Relationship:	Clearing and Settlement	Risk management	General Operations
Form of Interdependencies : <b>System-based</b>	CCP and CSD links to LVPS systems for money settlements	Cross-margining between two CCPs	Shared operational resources or facilities between systems under common ownership
<b>Institution-based</b>	Direct and indirect participation of large financial institutions in multiple systems	Provision of back-up liquidity to a system by large financial institutions	Provision of operational services to systems by large financial institutions
<b>Environment-based</b>		Common collateral valuation methodologies for CCPs	Common third-party IT or telecommunications service providers to multiple systems



## Factors influencing interdependencies

- Four key and interrelated forces and policies:
  - Globalisation and regional integration
  - Consolidation
  - Public policies
  - Technological innovations
- The influence of these forces and policies take place in the context of the effort of central banks and other authorities together with market participants to increase efficiency and reduce risks in systems.
- Central banks have promoted some forms of interdependencies, particularly system-based (eg DVP and PVP links)



## Extent of Interdependencies

- Interdependencies are particularly strong on a domestic basis
  - Comprehensive web of clearing and settlement relationships among key domestic systems (CCP to CSD, CCP to LVPS, LVPS to CSD)
  - Significant overlap in the participant base of domestic systems, leading to strong interdependencies of liquidity flows across systems
  - To a lesser degree, some reliance on common service providers, and some risk-management links (cross-margining, common default definitions, etc)
- Focused interdependencies on a cross-border basis
  - CLS-related relationships are well known
  - Widespread reliance on SWIFT
  - But, role of institution-based links currently less clear; may continue to grow in importance going forward



Profiles of global banks			
<i>Global settlement activity</i>	<i>Reliance on correspondents and custodians</i>	<i>Mixed approach</i>	<i>Significant self-clearing</i>
		<u>Self-clearing</u> Less    More	
Very significant		0	4
Significant	2	1	3
Moderate	10	12	3



## Implications for risks in payment and settlement systems

- Specific sources of several risks have been eliminated, or reduced
  - Principal credit risk: implementation of DVP and PVP
  - Operational risk: links among systems can help with STP
  - Liquidity risk and settlement asset risk: central bank money has lower credit risk and liquidity risk (more assurance in its provision vs correspondents)
- But, new sources of risk have been introduced
  - These risks are often cross-system in nature, meaning that a disruption in one system may have direct implications for the smooth functioning of a second system
  - Obvious examples at the system level (DVP links, CLS, etc); but, can also be at the institution level if flows in one system are conditional on those in another
- And, concentration in the sources of risks have been accentuated
  - Multiple systems now face common risks from key systems (RTGS), large financial institutions, and key service providers (eg SWIFT)





## Implications for transmission of disruptions

- Specific sources of several risks have been eliminated, or reduced
  - Principal credit risk: implementation of DVP and PVP
  - Operational risk: links among systems can help with STP
  - Liquidity risk and settlement asset risk: links among systems facilitate the use of central bank money
- But, new sources of risk have been introduced
  - These risks are often cross-system in nature, meaning that a disruption in one system may have direct implications for the smooth functioning of a second system
  - Obvious examples at the system level (DVP links, CLS, etc); but, can also be at the institution level
- And, concentration in the sources of risks have been accentuated
  - Multiple systems now face common risks from key systems (RTGS), large financial institutions, and key service providers (eg SWIFT)



## challenges for risk management?

- field of vision
- Operational and liquidity risk management of systems, institutions and service providers at the centre of key interdependencies
- Testing
- Information sharing and coordination