

Assessment of the USD Payment System in Hong Kong Against the Ten Core Principles for Systemically Important Payment Systems

Introduction

The US Dollar Clearing House Automated Transfer System (“USD CHATS”) is the USD payment system in Hong Kong. It commenced its operation on 21 August 2000 and is a designated system under the Clearing and Settlement Systems Ordinance of Hong Kong (“the CSSO”).

The purpose of the CSSO, which became effective on 4 November 2004, is to promote the general safety and efficiency of clearing and settlement systems designated under the Ordinance. The CSSO sets out the powers of the Hong Kong Monetary Authority (HKMA) in relation to the designation and oversight of clearing and settlement systems, the proper functioning of which is material to the monetary or financial stability of Hong Kong or to the functioning of Hong Kong as an international financial centre. The USD CHATS was designated under the Ordinance on 26 November 2004 and was granted a certificate of finality under the Ordinance to provide settlement finality within the system. Since then, all transactions settled through the USD CHATS are irrevocable and final.

In addition to complying with the requirements of the CSSO, the USD CHATS is encouraged to comply with internationally recognised standards related to payment and settlement systems. The objective of the assessment of the USD CHATS against the Core Principles for Systemically Important Payment Systems issued by the Committee on Payment and Settlement Systems of the Bank for International Settlements (“the Core Principles”)¹ is to evaluate the USD CHATS’ compliance with international standards. This report presents the HKMA’s views on the USD CHATS’ compliance with the Core Principles, based on its oversight experience on the USD CHATS and the performance of the system. The assessment result of the USD CHATS is published to further enhance the transparency of the system’s operation and also the oversight activities conducted by the HKMA.

The report is organised as follows: *Part I* briefly summarises the background of USD CHATS. *Part II* provides the methodology used for the assessment. *Part III* contains the detailed assessment of USD CHATS against each Core Principle. *Part IV* provides an overall summary of USD CHATS’ compliance with the Core Principles. Annex A provides a list of abbreviations used in this report.

¹ Information regarding the Core Principles is available at <http://www.bis.org/publ/cpss43.htm>.

Part I. Background of USD CHATS

The Monetary Authority (“MA”) of Hong Kong exercises authority delegated by the Financial Secretary of the Hong Kong Special Administrative Region (“HKSAR”) to maintain monetary and banking stability in Hong Kong. One of the mandates of the MA is to enhance the efficiency, integrity and development of the financial system, particularly payment and settlement arrangements. The purpose of establishing a USD payment system in Hong Kong is to facilitate the efficient settlement of USD transactions on a real-time basis within the Hong Kong time zone, thereby eliminating the settlement risks arising from the time gap of the settlement of a currency pair in different time zone when using traditional correspondent banking relationship. USD is one of the leading international currencies and the anchor currency for Hong Kong’s Linked Exchange Rate system (“LERS”). The holding of USD and the trading of USD-denominated assets is important to the maintenance of Hong Kong’s LERS and its status as a regional and international financial centre. An efficient and reliable payment system for settling USD transactions is therefore a crucial part of Hong Kong’s financial infrastructure. USD CHATS, which commenced operation on 21 August 2000, is the first foreign currency payment system operating in Hong Kong.

The settlement institution² (“SI”) for the USD CHATS is The Hongkong and Shanghai Banking Corporation Limited (“HSBC”), and the system operator³ (“SO”) for the system is the Hong Kong Interbank Clearing Limited (“HKICL”). The system operates from 08:30 to 18:30 Hong Kong time (GMT+8) on all business days from Monday to Friday. The key functions of the USD CHATS include the clearing and settlement of interbank payments in US dollar, payment-versus-payment transactions for US dollar/Hong Kong dollar, US dollar/Euro, US dollar/RMB and US dollar/Malaysian Ringgit, and delivery-versus-payment transactions for US dollar denominated debt securities through a link with the Central Moneymarkets Unit (“CMU”)⁴ in Hong Kong and RENTAS in Malaysia (for the transaction of USD bonds traded in Malaysia).

Participation in the USD CHATS is voluntary. Financial institutions may join as a Direct Participant (DP), an Indirect Participant (IP) or an Indirect CHATS User (ICU), based on their business needs. The system has been operating smoothly. There has been no court proceeding since the inception of the system. As at the end of December 2008, there were 76 direct

² Under the CSSO, “settlement institution” is a person providing settlement accounts to the participants and to any central counterparty in the system for the settlement of transfer orders within the system and, as the case may be, for extending credit to such participants and any such central counterparty for settlement purposes.

³ Under the CSSO, “system operator” means any person who, for the purposes of the system’s operating rules, is responsible for the operation of the clearing and settlement functions of the system.

⁴ CMU is a computerised clearing, settlement and custodian facilities for debt securities issued by both public and private sector entities.

participants, 19 indirect participants and 131 indirect CHATS users. In 2008, the system handled a daily average of about 10,000 transactions, involving a total daily average value of around USD 10.5 billion.

The USD CHATS is linked to other CHATS systems in Hong Kong, namely the Hong Kong dollar CHATS, the Euro CHATS and the RMB CHATS, to facilitate PvP transactions. It is also linked to the CMU and the Central Clearing and Settlement System (“CCASS”)⁵ in Hong Kong for delivery-versus-payment (“DvP”) transactions.

From 13 November 2006 onwards, the USD CHATS is linked with RENTAS, the Real-Time Electronic Transfer of Funds and Securities System in Malaysia, to facilitate real time US dollar/Malaysian Ringgit (MYR) payment-versus-payment (“PvP”) transactions. From 12 November 2007 onwards, this link also facilitates the settlement, in Hong Kong, of the payment leg of real time DvP transactions of USD bonds traded in Malaysia.

Other than the DvP and PvP links, the USD CHATS also have some form of linkage arrangements with other payment systems. For example the USD CHATS has established a USD cross-border payment arrangement with the USD RTGS system in the Mainland in March 2009, through which cross-border USD single leg payment can be made in a more structural and efficient manner⁶. But this type of linkage is essentially a correspondent banking payment arrangement with no interdependency between the USD payment made within the USD CHATS in Hong Kong and its subsequent USD payment to the Mainland which is outside the USD CHATS. As with other correspondent banking arrangements, this will not be particularly mentioned in the assessment.

The CHATS systems in Hong Kong were established to facilitate interbank transactions. Some of these transactions may be related to interbank settlement of obligations with regard to customer level payments (namely paper cheques and CCASS related payments). Since the Core Principles are intended for systemically important large-value payment systems, this assessment of USD CHATS against the Core Principles, where applicable, will focus on the interbank payment part of these settlement obligations.

The USD CHATS was designated under the CSSO on 26 November 2004 and has since been subject to the statutory oversight of the Hong Kong Monetary Authority (“HKMA”), the office of the MA. In its oversight of USD CHATS, the HKMA (through its Payment Systems Oversight (“PSO”) team), where appropriate, shares information with the

⁵ CCASS is a computerised book-entry clearing and settlement system for transactions in securities listed on the Stock Exchange of Hong Kong.

⁶ This is not a PvP link. There is no interdependency between the final settlement of USD payment in Hong Kong with the subsequent USD payment in the Mainland.

United States Federal Reserve System (“US Fed”) under the principles of co-operative oversight. This takes due account of the fact that the US Fed, as the central bank of the United States of America, has a particular interest in the integrity and prudence of the settlement procedures of USD CHATS.

Part II. Methodology

The assessment of the USD CHATS against the Core Principles is made with reference to the relevant documents (included as Annex B) provided by the HSBC (as the SI of the USD CHATS), the Hong Kong Interbank Clearing Limited (as the SO of the USD CHATS) and the Payment Systems Operation Division of the HKMA (as the system facilitator of the USD CHATS). In addition to the Core Principles, the assessment also makes reference to the “Guidance Note for Assessing the Observance of Core Principles for Systemically Important Payment Systems” issued by the International Monetary Fund and the World Bank, and the oversight experience accumulated by the HKMA. In forming the assessment, information and views regarding the USD CHATS had been sought from the SI and the SO.

The USD CHATS is basically an RTGS system for interbank payments. Some of these interbank payments are related to the bulk settlement of participants’ payment obligations with regard to customer level payments (namely paper cheques and CCASS related payments). Since the Core Principles are concerned with systemically important interbank payment systems rather than customer level payments that are mostly small-value, this assessment, when referring to customer-level payment items, will focus on the interbank payment and settlement part of these customer-level payments.

The assessment of each Core Principle includes the following:

Assessment Criteria – this part sets out the major components/criteria to be considered for assessing the USD CHATS against the Core Principle.

Description/Justification – this part provides the background and the detailed arrangements within the USD CHATS and describes how the system meets the requirements under the Core Principle.

Assessment of Compliance – this part presents the comments and assessments by the HKMA as the overseer of the system on how far the USD CHATS observes (or not) the relevant Core Principle.

Compliance with the Core Principles – this part concludes whether the USD CHATS observes (or not) the relevant Core Principle.

Part III. Detailed Assessment and Main Findings

The assessment of the USD CHATS conducted by the HKMA (through its Payment Systems Oversight team) as the overseer of the system against each Core Principle is presented in this part.⁷

⁷ Annexes A and B contain a list of abbreviations and relevant documents.

Core Principle I The system should have a well-founded legal basis under all relevant jurisdictions.

ASSESSMENT CRITERIA

1.1 The issues that are assessed under this Core Principle include the identification of the legal infrastructure of the system, the adequacy and completeness of the legal framework, the enforceability of the relevant rules and procedures in determining the rights and obligations arising from participation in the system; and the certainty of irrevocability and finality of payment instructions.

DESCRIPTION/JUSTIFICATION

Legal Framework of USD CHATS

1.2 The laws of Hong Kong form the legal basis of the operation of USD CHATS and the contracts underlying the system. All relevant documents for USD CHATS are governed by Hong Kong laws and are legally binding.

1.3 The HKMA, as facilitator of financial infrastructure in Hong Kong, adopted a private sector approach in establishing USD CHATS in Hong Kong. The HKMA (through its Financial Infrastructure Department ('FID')) appointed a commercial bank, the HSBC, as the SI for the USD CHATS ("USD SI") for a franchise period of five years commencing 28 August 2000. This franchise was renewed for another five years commencing 28 August 2005. The terms and conditions for the HSBC to act as the USD SI are specified in an agreement signed between the HKMA and the HSBC ("the Franchise Agreement") in March 2005 and three side letters signed in June 2006, April 2007 and October 2007. The arrangements of the franchise agreement are made known to the public through press releases and articles published by the HKMA.

1.4 In its capacity as the USD SI, the HSBC appointed the HKICL as the SO of the USD CHATS ("USD SO") to perform clearing services in respect of the USD CHATS. The terms and conditions of the clearing arrangements are specified in the US Dollar Clearing System Development and Clearing Services Agreement ("Services Agreement") signed between the HSBC and the HKICL in August 2005, and three side letters and an addendum to the Agreement signed from 2006 to 2008. The appointment of the USD SI and SO was also made known to the general public.

1.5 Licensed banks in Hong Kong may choose to join the USD CHATS as Direct Participants (“DPs”), Indirect Participants (“IPs”) or Indirect CHATS Users (“ICUs”) based on their own business needs unless otherwise provided by the HKMA or any applicable law.

1.6 Each DP is required to open a US dollar settlement account with the USD SI to clear and settle its US dollar payments. Institutions other than banks in Hong Kong may also join as DPs, IPs or ICUs if permission has been obtained from the USD SI and the HKMA (as the system facilitator).

1.7 An IP or an ICU of the USD CHATS is not required to open a US dollar settlement account with the USD SI and all its US dollar transactions are processed through a DP designated by it. An IP may conduct all types of transactions in the USD CHATS through its designated DP’s settlement account but an ICU may only make interbank payments through its designated DP’s settlement account. A bank in Hong Kong may become an IP or an ICU by agreement with a DP unless otherwise provided by the HKMA or any applicable law. Other local and overseas institutions may join as IP or ICU with the permission of the USD SI and the HKMA (as the system facilitator), and by agreement with a DP. Given that all the USD CHATS payments of an IP or an ICU are processed through its designated DP, such DP will enter into contractual arrangement with each of its IP(s) and ICU(s). The USD SO will assign a unique clearing code to each IP and ICU to facilitate the processing of their USD CHATS payments. An ICU is not classified as a member of the USD CHATS under the USD Clearing House Rules (“the Rules”). All rights and obligations vis-à-vis other USD CHATS Members, SI or the SO arising out of the giving of CHATS payment instructions for the account of an ICU are the rights and obligations of its designated DP.

1.8 All DPs and IPs, the HKICL (as the USD SO) and the HSBC (as the USD SI) are bound by the Rules, which govern the operation of the USD CHATS and set out the rights, obligations, liabilities and responsibilities of the respective parties to the system.

1.9 The Franchise Agreement (including all side letters to it), Services Agreement (including all side letters and addendum to it), Licence Agreement (including the side letter to it), Account Opening Agreement and the Rules specify the rights and obligations of the relevant parties to USD CHATS. The documents are reviewed from time to time by the relevant parties to take into account enhancements made to functions of the system. These legal agreements are governed by Hong Kong law. The Hong Kong courts have jurisdiction to settle disputes between the relevant parties arising from the abovementioned documents. No court proceedings in relation to USD CHATS has been initiated since the inception of the USD CHATS.

Enforceability of Relevant Rules and Procedures

1.10 All DPs and IPs, the USD SI and the USD SO are bound by the Rules. The Rules constitute a contract among the USD SI, the USD SO, DPs and IPs. The Rules set out the rights, obligations, liabilities and responsibilities of each party. Each DP and IP is required to sign a confirmation agreeing to be bound by the Rules before it can use the USD CHATS. The Rules may be amended from time to time, and all amendments to the Rules have to be approved by the USD SI and the HKMA as the overseer of the system. Furthermore, the Rules specify that the USD SO is entitled to issue Operating Procedures (“the Procedures”) to specify the detailed procedures for the operation of the USD CHATS. The Procedures, on the other hand, specify in plain language and in detail the system features, operating schedules, contingency measures, etc. The Procedures form part of the Rules and are legally binding among the USD SI, the USD SO, each DP and IP.

1.11 The Rules specify that each DP and IP, the USD SI and the USD SO shall comply with all obligations under the CSSO and all directions and regulations made by the HKMA as the overseer of designated systems under the CSSO, as may be applicable to each of them. The legal soundness of participants is ensured as the Rules state that only banks in Hong Kong are entitled to become DPs or IPs of the system. The participation of non-bank institutions or banks located overseas to be DPs has to be approved by the USD SI and the HKMA; and the participation of non-bank institutions or banks located overseas to be IPs and ICUs has to be approved by the USD SI and the HKMA, and by agreement with the designated DPs. The approval will be considered on a case-by-case basis. Since the operation of the USD CHATS in 2000, no approval has been granted for non-bank institutions or banks located overseas to become DPs of the system. In addition, banks in Hong Kong are subject to the supervision of the HKMA under the Banking Ordinance.

1.12 On liquidity provision, the USD SI provides uncollateralised intra-day overdraft and fully collateralised intra-day Repo facilities to the DPs. The USD SI made available to each DP on a bilateral basis the limit of the intra-day overdraft facility based on commercial terms. The intra-day Repo facility is subject to the signing of Master Sale and Repurchase Agreement (“Repo Agreement”) between the USD SI and the DP concerned.

Certainty of Irrevocability and Settlement Finality

1.13 The CSSO provides statutory protection to transfer orders settled through eligible designated systems from the insolvency and other laws in Hong Kong, and from the equivalent laws of a place outside Hong Kong. This is to ensure that transfer orders settled through such a designated system

are irrevocable and will not be reversed by the insolvency of a participant in such system, whereas any rights resulting from the underlying transaction of any such transfer order will be preserved. The HKMA will issue a certificate of finality to a designated system if the ultimate settlement of transfer orders is effected within the system and the system is in compliance with the safety and efficiency requirements of the CSSO.

1.14 The HKMA designated the USD CHATS on 26 November 2004 and has issued a certificate of finality to the system. All transactions settled through the USD CHATS are irrevocable and final, and have statutory backing to settlement finality from 26 November 2004 onwards. The Clearing House Rules state the time and conditions of which irrevocability and finality of a transfer order would start to apply. Once a payment is debited or credited to the settlement account, it shall be deemed made, completed, irrevocable and final.

Other Applicable Laws

1.15 USD CHATS operates in an electronic mode. The Electronic Transactions Ordinance (“ETO”) in Hong Kong facilitates the use of electronic transactions for commercial and other purposes. It gives electronic records and digital signatures used in electronic transactions the same legal status as that of their paper-based counterparts. Section 9 of the ETO provides that subject to any rules of evidence an electronic record shall be admissible in evidence in any legal proceeding.

1.16 On the Malaysian Ringgit leg of USD/MYR PvP transactions, the Payment Systems Act of Malaysia provides statutory backing to the finality of payment within RENTAS. According to the Act, these provisions that provide statutory backing to settlement finality will prevail over any written Malaysian or foreign law or rule of law relating to bankruptcy and insolvency that are in conflict or inconsistent with them. Settlement finality in RENTAS is therefore protected against bankruptcy or insolvency procedures in Malaysia and elsewhere. RENTAS members using the RENTAS/USD CHATS PvP and DvP links are bound by the relevant RENTAS Operating Rules which are governed under Malaysian laws.

ASSESSMENT OF COMPLIANCE

1.17 The relevant laws in Hong Kong provide comprehensive and well-founded legal framework for the establishment and operation of the USD CHATS in Hong Kong. The USD CHATS has been designated and granted a certificate of finality under the CSSO. The legal framework in Hong Kong provides the legal basis for the enforcement of rules governing irrevocability and finality of settlement. The use of collaterals for intra-day repo

transactions between the USD SI and any particular DP are supported by legally enforceable agreements.

1.18 The relevant laws in Malaysia also provide a sound legal framework for the establishment and operation of the RENTAS/USD CHATS PvP and DvP links. Settlement finality for transactions conducted through the RENTAS/USD CHATS PvP and DvP links are hence protected by the respective Hong Kong and Malaysian laws.

COMPLIANCE WITH THE CORE PRINCIPLE

1.19 The USD CHATS observes Core Principle I.

Core Principle II **The system’s rules and procedures should enable participants to have a clear understanding of the system’s impact on each of the financial risks they incur through participation in it.**

ASSESSMENT CRITERIA

2.1 The assessment of this Core Principle focused on the availability, clarity, up-to-datedness and comprehensiveness of the system’s rules and procedures that are relevant to the management and containment of financial risks and whether or not they specify clearly and adequately the rights and obligations of the participants; as well as the measures and the discretionary powers that may have to be taken in special situations or for handling abnormal situations.

DESCRIPTION/JUSTIFICATION

Rules and Procedures for Managing Financial Risks of the System

2.2 The HKMA signed a Franchise Agreement with the HSBC to specify the terms and conditions of the HSBC to act as the USD SI. As the USD SI, the HSBC appointed the HKICL, the SO, as its agent to perform clearing services in respect of the USD CHATS. The terms and conditions of the clearing arrangements are specified in the Services Agreement between the USD SI and the USD SO. All members (i.e. DPs and IPs), the USD SI and the USD SO are bound by the Rules which set out the rights, obligations, liabilities and responsibilities of the respective parties in the USD CHATS. The Procedures form part of the Rules and are issued by the USD SO, which specify the detailed procedures for the operation of USD CHATS and describes in detail the system features, operating schedules, and the contingency arrangements of the USD CHATS. The Account Opening Agreement signed between the USD SI and the DP specifies the terms and conditions for a DP in respect of its usage of the US dollar settlement account opened with the USD SI. A DP may also enter into a Repo Agreement with the USD SI for the usage of intra-day repo service in USD CHATS to facilitate its liquidity management.

2.3 The Rules are written in legal terms and the Procedures are written in plain language which is easily understandable by the participants. On system design, the functional requirement, the technical setup, and the different system features available in the USD CHATS are specified. The layout of the screens, reports and other system messages are provided with explanation down to field by field level in the Procedures. The conditions of

using different system features in the USD CHATS are specified in the Rules. The processing of transactions, the system operating time, the various system cut-off schedules, the different cycles of a transaction processed within the USD CHATS, and the processing of different types of transactions in the USD CHATS are spelt out in the documents. The Rules, Procedures and the Account Opening Agreement clearly describe the rights and obligations of each party, and the risk management features in the USD CHATS are clearly and comprehensively explained in the relevant documents.

2.4 On liquidity management, the USD SI agrees mutually with each DP the terms and conditions for the provision of interest free intra-day non-collateralised overdraft facility by the USD SI based on commercial terms. Intra-day Repo facility is also available in the USD CHATS subject to the signing of the Repo Agreement between the USD SI and the DP concerned. The intra-day overdraft facilities are granted by USD SI on an uncommitted basis, while the terms and conditions for the provision of intra-day repo facilities are properly documented. The RTGS Liquidity Optimiser, a liquidity optimising feature, is also available in the USD CHATS to enhance efficiency of fund use in the system by reducing the amount of funds needed for clearing and settlement in the system through off-setting settlement obligations of DPs under some pre-set conditions.

2.5 As the liquidity provider for the USD CHATS, the USD SI adopts a number of measures to manage its financial risk in operating the system. The intra-day repo facility provided to DPs by the US SI is collateralised and in accordance with terms and conditions specified in the Repo Agreement. Only selected securities with very good credit ratings could be used as collaterals for this service. Details of the intra-day overdraft facility provided to individual DPs by the SI are determined by a host of factors including credit conditions of the individual DPs. The SI reviews regularly the intra-day overdraft limit offered to each DP, based on market situation and credit conditions of individual DP. The SI may withdraw or change this intra-day overdraft facility provided to individual DP without prior notice, giving it the flexibility to react to rapid changes in market and credit conditions.

2.6 The Rules and the Procedures will be updated to cater for new system features before a new system function is introduced to the USD CHATS. Risk assessments, if appropriate, will be carried out by the USD SI prior to the launch of the new services (e.g. the USD/MYR PvP link) provided by the USD CHATS. Approval from the USD SI and the HKMA as the overseer of the payment system is required before making changes to the Rules and the Procedures. Following any amendments to the Rules and the Procedures, a revised version will be sent to each member (i.e. DP and IP), and they are also available to DPs and IPs on the USD SO's website.

2.7 The USD SI and the USD SO may issue circulars to the members from time to time to keep them abreast of the information regarding the USD CHATS, such as the participation of new DPs, IPs or ICUs; or any new functions to be introduced to the USD CHATS. Where appropriate, briefings and seminars may be conducted by the HKMA, as developer and facilitator of financial infrastructure in Hong Kong, USD SI and the USD SO to further enhance the transparency of the operation of the USD CHATS and improve communication with the system users.

Handling of Special Events

2.8 The contingency procedures and backup arrangements of the USD CHATS are specified in the Rules and the relevant system procedures issued by the USD SO. The procedures different parties should take to handle abnormal incidents, such as the extension of system cut-off time in the USD CHATS, the failure of system participants in accessing the USD CHATS or in fulfilling their payment obligations, are specified in the documents. The approval process for triggering the contingency arrangements and the use of discretionary power under special circumstances by the relevant parties are also specified in the Rules and the Procedures.

2.9 On the USD/RENTAS CHATS PvP link, the USD SO and Bank Negara Malaysia (the operator of RENTAS) will activate their respective business continuity plans as appropriate and notify the relevant parties (e.g. the USD SO, the USD SI, Bank Negara Malaysia, and the HKMA) in cases of emergency that may affect the link, or if the business continuity plan of the USD SO is activated. Round-the-clock emergency contact points between the USD SO, the USD SI, the HKMA, and Bank Negara Malaysia are made available to all parties for communication purposes.

ASSESSMENT OF COMPLIANCE

2.10 Documents related to the USD CHATS set out clearly the rights and obligations of the involved parties in respect of the management and containment of the financial risks that may incur from the participation in the USD CHATS. The documents are available to the relevant parties and are updated from time to time to reflect new developments in the system where appropriate. DPs of the system have access to real-time information on their payment instructions and the settlement account balances, which help managing and monitoring liquidity risk. The arrangements for handling special events and the usage of discretionary powers during exceptional circumstances are available and clearly specified in the documents.

COMPLIANCE WITH THE CORE PRINCIPLE

2.11 The USD CHATS observes Core Principle II.

Core Principle III **The system should have clearly defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operator and the participants and which provide appropriate incentives to manage and contain those risks.**

ASSESSMENT CRITERIA

3.1 The focus of the assessment of this Core Principle was the clarity and comprehensiveness of the procedures for the management of credit risks and liquidity risks. The procedures should specify clearly the roles and responsibilities of the system operator, settlement agent, and the participants and provide the incentives and measurements to manage and contain the risks.

DESCRIPTION/JUSTIFICATION

Credit Risks

3.2 The real-time processing and immediate finality features of the USD CHATS as an RTGS system for interbank USD payments insulate receiving participants from credit risks. In other words, system-inherent credit risks to the receiving participants (due to bankruptcy of the paying participants) do not exist. Nevertheless, when a participant holds a positive balance in its settlement account, it may be exposed to credit risk to the USD SI, which is a private entity; and vice versa, the USD SI may be exposed to credit risk when extending uncollateralised intra-day overdrafts to DPs.

3.3 To contain such credit risk, the USD SI review, from time to time, the maximum level of intra-day overdraft extended to each DP by reviewing their credit worthiness. The level of intra-day overdraft facility extended to each DP is part of the overall overdraft facility extended to that particular DP by HSBC as a commercial bank. To allow the SI to react promptly to rapid changes in market and credit conditions, it may withdraw or change the intra-day overdraft facilities it provides to individual DPs without prior notice.

3.4 In addition to the intra-day overdraft facility, a DP may also utilise the repo facility to meet its intra-day liquidity needs. Details of the intra-day repo facility are specified in the Repo Agreement entered into between the USD SI and the DP concerned. In utilising this repo facility, a DP is required to pledge eligible securities to the USD SI as collaterals to obtain interest-free intra-day credit in USD. The USD SI maintains a list of eligible securities for intra-day repos, which is available to DPs on the USD SI's website. Hair-cut rates are applied to these securities to provide buffers

for the market risks arising from possible price fluctuations and market movements. The market price of the eligible securities are reviewed and updated by the USD SI two to three times a day on all business days. The USD CHATS allows the USD SI to monitor the usage of intra-day repo and intra-day overdraft facilities in the system continuously during the operating hours of the system.

3.5 To minimise exposure of DPs to the USD SI, there is no minimum balance requirement in the USD CHATS. DPs may even choose to utilise the uncollateralised intra-day interest-free overdraft facility and the repo facility provided by the USD SI to meet their payment obligations during the day before covering their short positions in the system at or before day end. The interests the USD SI pays to positive settlement account balances held overnight are low (currently set at the prevailing market savings rate or the investment rate that USD SI could achieve, whichever is lower), thus providing disincentive for DPs to hold a positive settlement account balance overnight. Under normal circumstances, DPs only maintain a minimal end-of-day balance in its settlement account with the USD SI.

Liquidity Risks

3.6 The USD SI has undertaken to provide intra-day liquidity and credit support to the USD CHATS to ensure smooth payment flows and to avoid gridlock within the system. The settlement account balance maintained by each DP in the USD CHATS is available for settlement purpose throughout the entire business day. As mentioned above, each DP may make use of the intra-day interest-free overdraft facility provided by the USD SI to facilitate its funding arrangement. In case the intra-day overdraft is exhausted, the DP may utilise the intra-day repo facility provided to it by the USD SI, provided that a Repo Agreement has been entered into by the two parties.

3.7 The USD CHATS has also built in a number of system features to facilitate the liquidity arrangement of the DPs, which include:

- *Real-time balance enquiry* – a DP is able to enquire real-time online settlement account balance to facilitate its funding arrangement.
- *Queue management* – payment instructions which cannot be settled due to insufficient funding will be pending in the payment queue. The USD CHATS adopts a first-in-first-out queuing algorithm. The DP is able to enquire the queue during the system operating hours and re-sequence the payments in the queue to facilitate its liquidity management. Since the operation of the system, the queue management function provides DPs with effective means of liquidity management.

- *Gridlock detector* – in case there are a lot of payment queues in the USD CHATS, the USD SI is able to make use of the gridlock detecting function of the system, which is based on pre-defined system logic, to detect whether there are any payment gridlocks in the system. The USD SI will follow up with the concerned DPs if any payment gridlock is identified. Possible solutions include splitting payments into smaller values and re-sequencing of payment queues. If a payment is not settled by the cut-off time of the system, it will be automatically cancelled. The DP concerned is required by the HKMA (as system facilitator) to report the reason of the fail trade via fax within 15 minutes after CHATS Bank cut-off.
- *Limit setting* - the USD SI is able to pre-define limits on intra-day credit exposures for each DP and for the USD CHATS as a whole. Each DP may also pre-define the amount to be triggered for each intra-day repo transaction to facilitate its liquidity management.
- *RTGS Liquidity Optimiser* – the mechanism allows simultaneous gross settlement of selected transactions on an individual basis (see Annex C for more information on RTGS Liquidity Optimiser).

3.8 In addition to the provision of intra-day liquidity to DPs through overdraft and repo arrangements, the USD SI has also adopted the following measures to facilitate the liquidity management of the USD CHATS:

- *Throughput guideline* - all DPs of the USD CHATS are expected to follow guidelines on system throughput and to make payments in a timely and orderly manner throughout the day. Each DP is expected to release and settle at least 35% of the outgoing payments value by 1:30 p.m. and at least 70% by 4:30 p.m. The USD SI and the HKMA closely monitor the compliance with throughput guidelines by the DPs. The throughput ratios were maintained above the required levels during most of the days in 2008.
- *Intra-day funding from the US*: A DP may arrange intra-day funding for its US dollar settlement account by requesting its US correspondent bank to send HSBC USA a Fedwire payment for onward transmission to HSBC Hong Kong (the USD SI) for the credit of the DP's settlement account in the USD CHATS. In doing so, the settlement account balance of a DP in the USD CHATS can be increased according to needs. Such arrangement provides flexibility for DPs to manage their liquidity within the USD CHATS.
- *End-of-day funding from and to the US*: A DP may close the short position of its US dollar settlement account by sending payment to HSBC Hong Kong from the US before CHIPS cut-off time on the same

calendar day New York time. A DP may also defund the long position of its US dollar settlement account after CHATS Bank cut-off by giving instruction to HSBC Hong Kong to send payment to the US during US business hours.

Funding Arrangement of the USD SI

3.9 The USD SI has committed to provide intra-day liquidity and credit support to the USD CHATS to ensure smooth payment flows and to avoid gridlock within the system. Since its operation in August 2000, the USD CHATS has not encountered any problem in provision of liquidity. On average, less than a quarter of the intra-day liquidity facilities are utilised everyday by the DPs in 2008.

3.10 The financial risk to HSBC as the USD SI is managed in similar ways a commercial bank manages its counterparty risk. Subject to market conditions and the mutual agreement between the USD SI and the DPs, the credit exposure to a DP by the USD SI may be revised from time to time.

3.11 The USD SI, being a member of the HSBC Group, is supported, financially and operationally, by the HSBC Group in its role as the USD SI.

ASSESSMENT OF COMPLIANCE

3.12 The USD CHATS has built in a number of system features to facilitate the management of liquidity in the system. Appropriate measures have been adopted by the USD SI to manage the risks and enhance the liquidity management of USD CHATS.

3.13 The main form of credit risks and liquidity risks associated with the USD CHATS is the liquidity arrangement within the system, with HSBC, in its capacity of the USD SI, providing intra-day liquidity facilities to the DPs. On managing the credit risks the DPs exposed to USD SI, the USD SI does not require minimum balance in the settlement accounts. On managing the liquidity risks, the Account Opening Agreement and the Repo Agreement both specified clearly the arrangement and the terms and conditions for the usage of the settlement account or the intra-day repo facility. The responsibilities of the USD SI, USD SO and the DPs are clear. The SI manages its risks in a way similar to a commercial bank manages its counterparty risk. The intra-day liquidity facilities are provided on both collateralised and uncollateralised basis. In terms of risk management, the collateralised arrangement (e.g. the use of intra-day repo facilities) is preferable to the uncollateralised arrangement in the system, but this will mean additional liquidity holding cost for DPs. The availability of US liquidity supports the smooth functioning of USD CHATS.

COMPLIANCE WITH THE CORE PRINCIPLE

3.14 The USD CHATS observes Core Principle III.

Core Principle IV The system should provide prompt final settlement on the day of value, preferably during the day and at a minimum at the end of the day.

ASSESSMENT CRITERIA

4.1 The assessment of this Core Principle focused on the distinction of different stages of the processing of a payment instruction (i.e. its submission, validation, irrevocability and finality) and the information that is provided to participants on the status of the payment.

DESCRIPTION/JUSTIFICATION

Settlement Finality and Irrevocability

4.2 The HKMA designated the USD CHATS under the CSSO on 26 November 2004 and issued a certificate of finality to the system. As such, all transactions effected through the USD CHATS are irrevocable and final and have statutory backing to the settlement finality from 26 November 2004 onwards. The CSSO provides statutory backing to the finality of settlement for transactions made through the USD CHATS by protecting the final settlement of transactions from insolvency laws or any other laws in Hong Kong. This is to ensure that transfer orders settled through the USD CHATS are irrevocable and will not be reversed by the insolvency of a participant in USD CHATS, whereas any rights resulting from the underlying transaction of any such transfer order will be preserved.

4.3 The processing of payment instructions at each cycle⁸ and the various system cut-off arrangements are well-documented. The Rules and the Procedures specify the conditions and requirements for processing a payment under normal and abnormal circumstances. The time and conditions of irrevocability and the finality of a transfer order are also specified in the Rules. The Rules stipulate that all payments by or to each DP, its IPs and ICUs which are effected through the USD CHATS shall be settled by debiting or crediting the settlement account of such DP; and once debited or credited to such settlement account, such payments shall be deemed made, completed, irrevocable and final.

⁸ The processing of a payment instruction at each cycle refers to the processes involved in processing a payment instruction, which in general include inputting of a payment instruction by a DP to the system, validation checks of the payment, checking availability of funds, settlement and sending confirmation advice to the paying DP and receiving DP respectively.

Processing Cycle of USD CHATS Transactions

RTGS payments

4.4 All RTGS payments submitted to the USD CHATS will go through a validation process. Payment instructions with input errors will be rejected. All validated transactions will be settled immediately if there is sufficient balance in the settlement account of the paying DP in the USD CHATS. Otherwise, payment instructions will be queued in the system and settled on a first-in-first-out basis as funds become available in the settlement account of the paying DP. The paying DP is able to re-sequence the payment queue anytime before the transaction is settled or cancelled by the DP concerned. A payment transaction can be cancelled by the paying DP before it is settled. Real-time system hard-copy confirmations will be automatically generated to the paying DP at each stage – submission, validation, acceptance, settlement for reconciliation and record purpose. Upon settlement of a payment transaction, the system will automatically generate a hard-copy system report to both the paying and the receiving DPs for confirmation. Both paying and receiving DPs can also enquire at their own terminals for the settled transactions at any time during the business day. All settled transactions in the USD CHATS are final and irrevocable and cannot be unwound.

4.5 The USD CHATS normally operates from 08:30 to 18:30 Hong Kong time on all business days from Monday to Friday, and is available around-the-clock seven days a week for transaction inputting except during pre-scheduled system housekeeping tasks. Nonetheless, there is a need to have a cut-off time to distinguish payments for same-day value and payment of the next value day. There are various cut-off times in the USD CHATS: a) CHATS Customer cut-off at 18:00 Hong Kong time; b) CHATS Bank cut-off at 18:30 Hong Kong time; c) Cross Currency Payment Matching Processing (CCPMP)⁹ cut-off at 18:30¹⁰ Hong Kong time and d) CHATS Value Date cut-off (i.e. change of system date) at 18:35 Hong Kong time. There is flexibility in the USD CHATS to amend the pre-defined cut-off times if necessary. Depending on the types of payments, the outstanding payment instructions value for same day will be automatically cancelled by the system if they remain unsettled after the CHATS Bank cut-off or the CHATS Value Date cut-off.

4.6 During non-operating hours, which is the time after the CHATS Value Date cut-off and before the system-start of the next business day, a DP may submit payment instructions to USD CHATS. These transactions will be

⁹ CCPMP links USD CHATS with the HKD and EUR RTGS systems in Hong Kong, as well as RENTAS in Malaysia. It provides a PvP facility for foreign exchange transactions.

¹⁰ Except the MYR CCPMP which cuts off at 17:30 Hong Kong time.

stored and will be processed when the system commences its operation at the system start time on the next business day.

Payments settled on multilateral netting basis

4.7 As mentioned in Part II, some of the USD CHATS interbank payments are related to the bulk settlement of participants' payment obligations in regard to retail payment instruments (namely paper cheques and CCASS related payments). These interbank payments are settled on a multilateral netting basis via pre-scheduled daily system bulk settlement runs. These runs are automatic for participants in that they are not required to input payment instructions to execute their payments. At the end of a bulk settlement run, participants' settlement accounts will be debited or credited with the net settlement amount. A typical bulk settlement run would be completed in a matter of minutes and will not be initiated unless the USD SI is satisfied that all participants have already had sufficient funds (taking into account intra-day overdraft and intra-day repo limits) in their settlement accounts to complete the bulk settlement. Once a participant's settlement account is credited or debited with the net settlement amount, the payment is final and irrevocable. The multilateral netting settlement arrangement has the benefit of reducing liquidity needs of participants and is considered appropriate for the bulk settlement of a large number of mostly small-value payments at the interbank level.

4.8 All cheques submitted by the presenting banks for clearing on day D¹¹ (usually after close of system) will be cleared by the USD SO before the system start time on day D+1. All submissions by the presenting banks for this purpose are final: they are not allowed to add, change or remove any items after their submissions to the SO. Validation of settlement details (e.g. settlement amount) will be performed by paying banks in the morning of day D+1. The interbank settlement for these cheques is effected in a bulk settlement run for paper cheques on day D+1 (currently at 2:15 – 2:45 p.m.), the day the interbank payments are due to the presenting banks, with interest adjustments between day D and day D+1. Settlement finality occurs when presenting banks' and paying banks' accounts are credited or debited with their respective net settlement amounts, i.e. on day D+1. Advice or report is generated after each stage of the clearing and settlement process for the participants' reference. Real-time information regarding the settlement of paper cheques is available to DPs online at any time during the business day. The interbank clearing and settlement schedule of paper cheques is clearly stated in the Rules and Procedures. Hence it could be argued that, while the payments are recorded in the books or accounts of the participants and of their relevant cheque customers on day D, they are not expected to be due for settlement until day D+1. It follows that day D+1 will be deemed to be the "day of value" for the purpose of this Core Principle, i.e. the day on which the

¹¹ Day D is any business day of USD CHATS.

receiving bank and its relevant customer is expected to receive “good value” funds in their respective accounts as in the case of a foreign exchange transaction settlement.

4.9 Payment instructions for CCASS-related items (there are two types of them: one for CCASS participants which are mainly financial institutions and another for individual CCASS account holders (IAH)) are generated by the Hong Kong Securities Clearing Company Limited (HKSCC) for the USD SO’s processing before 9:00 p.m. on day D¹¹ (usually after close of system). Clearing of these payment instructions are conducted before day D+1. Details of the settlement (e.g. settlement amount) are available for validation by participants from about midnight on day D/D+1. The settlement of these instructions, effected through two bulk settlement runs (one for CCASS-participants-related items and another for IAH-related items), is conducted on day D+1 (10:00 a.m. for CCASS-participants-related items and 2:15 p.m. for IAH items), the day the interbank payments are due to the receiving participants, with interest adjustments between day D and day D+1. Again, settlement finality occurs when DPs’ accounts are credited or debited with their respective net settlement amounts, i.e. on day D+1. Advice or report is generated after each stage of the clearing and settlement process for the reference of all parties concerned. Real-time information regarding the settlement of CCASS and IAH items is available to DPs online at any time during the business day. The interbank clearing and settlement schedule of CCASS-related items is also clearly stated in the Rules and Procedures. Again, it is argued that the day D+1 will be regarded as the day of value as explained in the previous paragraph.

ASSESSMENT OF COMPLIANCE

4.10 Payments settled in the USD CHATS on an RTGS basis provide real-time and immediate finality, if all risk management controls are positively checked. Under normal circumstances¹², payments related to the settlement of paper cheques and CCASS-related items at the interbank level are settled on the day it is due to the receiving participants, which is the day on which good value funds are expected to be transferred or the day of value. Settlement finality occurs when the settlement is completed. The USD CHATS has been designated and granted a certificate of finality under the CSSO. The processing of different stages of a transaction going through the USD CHATS is clearly specified in the Rules and the Procedures. Information regarding the processing of payment transactions in USD CHATS is available to the DPs online and in hard copy format with full details of the transactions.

¹² “Abnormal circumstances” include days that are deemed not to be a working day (because of typhoon or rainstorm warning) for the purpose of clearing and settlement of paper cheque and the settlement of CCASS related items according to the Rules.

COMPLIANCE WITH THE CORE PRINCIPLE

4.11 The USD CHATS observes Core Principle IV.

Core Principle V **A system in which multilateral netting takes place should, at a minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement obligation.**

ASSESSMENT CRITERIA

5.1 When assessing this Core Principle, emphasis is put on the applicability of the Core Principle to the system. If it does, assessment is done on the appropriate amount and organisation of additional liquidity available to the system and the existing of a loss sharing agreement among participants in case of failure of the largest participant.

DESCRIPTION/JUSTIFICATION

5.2 The USD CHATS is basically an RTGS system for interbank payments. As mentioned above, some of these interbank payments are related to the settlement of participants' payment obligations after multilateral netting regarding customer level payments (namely paper cheques and CCASS-related payments). The assessment below will focus on the part of interbank payment of the clearing and settlement processes of these retail payment instruments.

5.3 The interbank settlement of payment obligations related to the bulk settlement of customer level payments is conducted on a multilateral netting basis in the USD CHATS. The interbank settlement of each of these items is conducted daily through a system bulk settlement run at a pre-scheduled time during the day. A settlement run will not be initiated unless the USD SI is satisfied that all DPs have already had sufficient funds (taking into account intra-day overdraft and intra-day repo limits) in their settlement account to complete the bulk settlement.

5.4 If a participant is not able to come up with sufficient funds for the settlement of its bulk settlement obligation, the USD SI will declare the participant default after consulting the HKMA (FID). The settlement obligation of all participants concerned will then be recalculated by taking away transactions related to the default participant before the bulk settlement run of the day is conducted. The default arrangements in the case of a participant defaulting are set out in the Rules and are therefore known to all participants. Since the value of payments in USD CHATS that are related to the bulk settlement of customer level payments, which are settled on a multilateral netting basis, amounts to only a very small portion (an average of 2 to 3%) of the overall transaction value of the system, the change in settlement

obligation resulting from the failure of even the participant with the largest single settlement obligation is expected to be within the intra-day overdraft limit of most DPs. The system is therefore expected to be able to complete the daily bulk settlement runs even if the largest participant of the system has defaulted.

5.5 Meanwhile, the participant with the largest single settlement obligations contributes on average only about 5 to 7% of payments in value in the multilateral netting arrangement of the USD CHATS (i.e. about 0.2% of the total USD CHATS turnover). Since the default arrangements are set out in the USD Clearing House Rules and are known to other participants, the default of any participant should not prohibit other participants from fulfilling their settlement obligations in bulk settlement runs in USD CHATS.

ASSESSMENT OF COMPLIANCE

5.6 Only a very small portion of the USD CHATS interbank transactions (about 2 to 3%) are settled on a multilateral netting basis, and the largest participant only contributes about 5-7% of these multilateral netting payments. Judging from the value of transaction involved, participants of the USD CHATS are expected to be able to complete the settlement of these transactions even if some (or more than one) large participants default. The default arrangements are made known to all participants, and appropriate procedures are in place to handle the default situation should it occur.

COMPLIANCE WITH THE CORE PRINCIPLE

5.7 USD CHATS observes Core Principle V.

Core Principle VI **Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk and little or no liquidity risk.**

ASSESSMENT CRITERIA

6.1 The observance of this Core Principle was verified with a particular focus on the provider of the settlement asset, possible credit and liquidity risks inherent to the respective asset and the arrangement in case of failure.

DESCRIPTION/JUSTIFICATION

Private Sector Solution

6.2 The HKMA, as developer and facilitator of financial infrastructure in Hong Kong, adopts a private sector solution approach for developing multi-currencies payment systems in Hong Kong. Accordingly, the HKMA appointed large commercial banks with good credit standing and sound financial position as settlement institutions for foreign currencies payment systems in Hong Kong. The HKMA only assumes the role of settlement institution for the local currency payment system.

6.3 The HSBC was appointed by the HKMA as the settlement institution for the USD CHATS in August 2000. All payment instructions effected through USD CHATS are settled across the books of HSBC in the form of commercial money.

Management of Credit Risks and Liquidity Risks

6.4 US dollar is widely circulated and a globally recognised reserve currency, and it carries little or no credit and liquidity risk.

6.5 HSBC is the settlement institution for the USD CHATS in Hong Kong. As an authorised institution in Hong Kong, HSBC is subject to the prudential supervision by the Banking Supervision Department of the HKMA under the Banking Ordinance. In 2007, Hong Kong became one of the first jurisdictions to implement Basel II, the new international standard for capital and risk management. HKMA adopts a risk-based approach for banking supervision, while credit and liquidity risks are among the major risks being critically assessed for the purposes of evaluating and monitoring the capital adequacy of individual authorised institutions.

6.6 HSBC is one of the three note-issuing banks and a major retail bank in Hong Kong. It enjoys a high credit rating from reputable credit rating agencies. As at end-2008, HSBC obtained a credit rating of Aa1 from Moody's and AA from Standard & Poor's. Asset size of HSBC as at the end of 2008 was US407.15 billion.

6.7 As an RTGS system, the credit risk involved for the receiving participant in the USD CHATS is generally eliminated as payment is settled immediately if sufficient funds are available in the settlement account of the paying DP. The assessment on Core Principle III provides background on the credit risk involved in the USD CHATS and the measures adopted to address it. Generally speaking, the USD SI grants each DP an intra-day interest free overdraft facility based on commercial terms. The USD SI may also provide intra-day repo facility to the DP to facilitate its liquidity management within the system. To manage and control the credit exposure, each DP is granted a limit on the intra-day overdraft amount and the repo usage in USD CHATS. Real-time information is also available in the system to help monitor the usage of the credit facilities extended by the USD SI. A DP may choose to remit the surplus USD fund in the settlement account of the USD CHATS out of the system after CHATS Bank cut-off to its US correspondent bank or to maintain the surplus USD fund in the settlement account of USD CHATS at the end of the business day. To facilitate the USD SI and the DPs to monitor the balances of the settlement accounts in the USD CHATS, real-time balance enquiry and day-end reports are available in the system. The actual balance left in the US dollar settlement account by DPs is a commercial decision of individual DP, based on its own risk assessment of the exposure to the USD SI.

6.8 The USD SI has committed to provide intra-day liquidity and credit support to the USD CHATS to ensure smooth payment flows and to avoid gridlock within the system. The assessment on Core Principle III provides background on the liquidity risk involved in the USD CHATS, the measures adopted by the USD SI, and the system features built into the system to facilitate liquidity management in the system. In short, the USD SI provides liquidity to the system through the provision of uncollateralised intra-day overdraft and fully collateralised intra-day repo facilities to the DPs. To enable DPs to better manage their funding, the USD SI facilitates DPs' transfer of USD funds into USD CHATS anytime during the operating hours of the system or at day end. It also facilitates the defund of long positions of DPs' USD settlement accounts at the end of the day. DPs are expected to follow the throughput guidelines to ensure their payments are made and settled in a timely manner throughout the day. System features including real-time balance enquiry, queue management, gridlock detector, limit setting and RTGS liquidity optimiser are available to the USD CHATS participants to facilitate liquidity management.

Risk Management of USD SI

6.9 The USD SI has put in place a number of measures to secure its access to USD funding. The way to manage the risk is to make the risk known to other participants of the system: the Rules and other relevant documents have clearly described the rights and liabilities of the participants to let them be aware of the risks involved, including the risk in case of a failure of the USD SI, in participating in the system. Participation in USD CHATS is voluntary and there are alternatives to settle USD funds.

ASSESSMENT OF COMPLIANCE

6.10 Under the private sector solution approach adopted by the HKMA, USD CHATS payments are settled across the books of HSBC in its capacity of the USD SI. HSBC is a note-issuing bank in Hong Kong under the direct supervision of the HKMA, and has continuously obtained very high credit ratings. The bank managed to withstand the current world-wide financial crisis on its own without the need for government support, which reaffirms its credit position. Though the transactions are not settled in the form of central bank money per se, a number of measures have been put in place to manage and minimise the credit risk and the liquidity risk involved. The risks, if any, are known to the participants who choose to join the system voluntarily. The USD CHATS has been operating smoothly for over nine years since 2000 amid various economic cycles including the recent world-wide financial crisis. So far, no issue relating to credit or liquidity risk has been observed. Based on the above, it can be concluded that in the case of the USD CHATS where commercial bank money is used, it carries little credit or liquidity risk.

6.11 Nonetheless, in the light of the increasing importance of the USD CHATS in the overall financial infrastructure of Hong Kong, the USD SI should on an ongoing basis review the risk measures taken to ensure that they are sufficient to manage the financial risks involved, in particular, the credit risks that the USD SI and the DPs are exposed to each other.

COMPLIANCE WITH CORE PRINCIPLE

6.12 The USD CHATS observes Core Principle VI.

Core Principle VII The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.

ASSESSMENT CRITERIA

7.1 The assessment of this Core Principle was mainly related to the existence of the security objective and relevant policy, the robustness of overall system security, operational reliability, the availability of sufficient well-trained staff, the regular performance of a risk assessment, a regular independent security review and the establishment of business continuity arrangements (including contingency and crisis management procedures).

Arrangements of the USD SI

7.2 The USD SI has established procedures and controls for the operation of the USD CHATS. Relevant policies and procedures are in place to govern physical access controls to restricted areas. Access to the premises of the production and backup sites, and data centres is limited to authorised individuals with a legitimate need. Moreover, there are backup arrangements to ensure the USD SI 's operation can be recovered in a timely manner during contingency. There are policies and procedures in place to set out the arrangements on the back up of relevant computer files and the storage arrangement.

7.3 The USD SI has maintained a Business Continuity Plan ("BCP"), which aims at maintaining the operation of the USD CHATS in full services. The BCP documents the detailed arrangements for recovering the USD SI's operation under various contingency situations. The arrangements include the event management procedures, human and system resource arrangements, etc. The contingency site is located away from the primary site to mitigate the effects of power outage in a certain district or of the main site becoming inaccessible. Regular drills/tests are performed to ensure that the BCP arrangements remain suitable and executable.

Arrangements of the USD SO

7.4 The USD SO, the HKICL, has established security objectives and policies, which aim at ensuring that security measures and features, in terms of confidentiality, integrity, authentication, non-repudiation and availability of information, as well as auditability of processes and procedures that meet industry practices have been implemented for the computer systems and related networks. The computer systems and the networks are operated according to

the established objectives and policies. The security objectives and policies are reviewed periodically and any major change in the security objectives and policies has to be approved by the HKICL Board of Directors, which includes representatives of the HKMA and the Hong Kong Association of Banks (HKAB).¹³ All DPs use the same system platform, which runs on the same AS/400 system application to connect to the host system of the USD SO. The AS/400 application provides many security features for DPs to secure their payment operations and safeguard their payment data. The same level of security is maintained after the switch to the SWIFTNet platform in May 2009.

7.5 Contingency measures are in place to provide continuous access, as far as possible, to the system by all the DPs. Regular drills/tests are conducted by the USD SO together with the USD SI and the participants, where appropriate, to verify the effectiveness of the contingency measures formulated by the USD SO.

Overall System Security

7.6 The system security of the USD CHATS conforms to a commercially-reasonable level in terms of confidentiality, integrity, authentication, availability and auditability. The USD CHATS runs on IBM platforms before its migration to the SWIFTNet platform in May 2009. All platforms are subject to the “Evaluation Assurance Levels (“EAL”)” evaluation, which are common standards currently adopted by the information technology industry to evaluate security level of system platforms. IBM assesses the EAL of its products and announces the results in its website. A dedicated unit of the USD SO is set up to handle all security administration functions and security related incidents. The security features are tested regularly. The USD SO conducts regular security risk analyses and proactively monitors technological advances to keep the system’s security risk analysis up to date. The same level of system security and control will be adopted for the new SWIFTNet platform.

Physical and Logical Access Controls

7.7 The USD SO has established explicit security requirements and controls. In terms of physical and logical controls, the USD SO has set up related arrangements to prevent and detect unauthorised access to data, programme and hardware for the operation of USD CHATS. The requirements on logical access controls are spelt out in the relevant policies and procedures. The USD SO has installed access control software to enforce control on access to data (including both physical and electronic), programmes and other information resources. Access cards are assigned to each individual for entering into different parts of the premises and access rights are granted to authorised personnel to reflect their functional needs. Formal authorisation

¹³ The HKAB is an industry association of licensed banks in Hong Kong.

procedures are established for creating, changing and deleting user profiles. Access to the premises of the production and back-up sites is limited to authorised individuals with a legitimate need. The access by visitors is properly controlled. Security guards are employed and surveillance system with recording function is installed to monitor access to different restricted areas.

7.8 The USD SO has procedures in place to ensure confidential and sensitive information is being protected from access by unauthorised personnel. Inspection will be carried out to ensure relevant data has been deleted before the unused equipment and other electronic media are disposed of or re-deployed for other use.

Operational reliability

7.9 The USD CHATS is designed with sufficient capacity, which is monitored and upgraded in line with business needs. System availability since the implementation of the USD CHATS had always exceeded 99.95%. The production capacity and the disk storage capacity are monitored and reviewed regularly and upgraded when appropriate. The operational and technical procedures are documented and any change or update to the procedures requires approval of the management of the USD SO.

7.10 The processing of individual transactions can be traced from the transaction logs of the front-end terminal and host systems. Production incidents are logged, reported and followed up according to the service requirements as defined in the problem management procedures. System integrity is assured by using the Customer Information Control System (“CICS”) design, application level database reconciliation and cross-system reconciliation arrangement.

7.11 On-site back-up facilities are in place to deal with failure of the primary computer processing facility except the mainframe processor on account of substantial cost.

7.12 An information technology audit, which reviews the security and reliability of computer system and networks, is conducted annually by external auditor. The operation of the USD SO is subject to a two-year audit cycle and the last operational audit was conducted in 2008. No major issue was identified in the audit reviews by external auditor. If necessary, specific audit task, e.g. audits before launching a large scale enhancement to the USD CHATS, may be performed from time to time by the USD SO. The USD SO submits audit reports related to the USD CHATS to the HKMA, and the HKMA makes reference to these reports in performing its oversight duties. Where appropriate, the HKMA may request the USD SI and the USD SO to make improvements to the system. In 2008, the USD SI and SO also took part

in an exercise to review the recommendations as suggested in the BIS report on interdependencies of payment and settlement systems, and no adverse findings were identified so far.

Business Continuity Arrangements of USD SO

7.13 The business continuity procedures are documented in the HKICL's Business Continuity Plan ("BCP"). The objectives of the BCP are to provide plans for the USD SO to respond to unplanned service disruption arising from failure of critical data centre infrastructure. It is also used to facilitate timely resumption of the USD CHATS (as well as other CHATS systems) in the event of a disruption. The BCP covers areas on hardware, software, system network, staff, data replication, etc. The BCP also includes procedures for crisis management and information dissemination, the setting up of a command centre to manage recovery, and the procedures to deal with emergency response and external liaison. The BCP is endorsed by the management of the USD SO. The BCP is subject to regular reviews and update when necessary. Procedures are in place to ensure that the BCP has reflected the latest system changes or enhancements. A drill on the BCP using live production data is conducted annually. All staff concerned (including the management), and the system participants, will participate in the annual contingency drill. In additions, drills of various functions of the system have been conducted regularly.

7.14 Apart from having on-site backup arrangements at the primary site, the USD SO has set up a hot backup site and standby arrangement is in place to ensure timely resumption of services if the primary production site failed to operate. The primary site and the backup site are located at a considerate distance from each other (one on the Hong Kong island and the other on the Kowloon peninsular) to mitigate the effects of power outages or other disruptions. The risk profiles of the two sites are different.

7.15 The hot back-up site employs real-time mirroring technology to replicate production data from the production site to the back-up site. To minimise the recovery time, the computer hardware in backup data centre is kept running at all times, and can be operated remotely from the production data centre. The real-time mirroring technology mirrors the transaction details at the backup data centre. In the case that the primary production site or processing environments experience a serious problem, USD CHATS service can be resumed at the back-up site within 30 minutes after declaration of failure at the primary site. Furthermore, the USD SO has a standby arrangement with IBM, its hardware vendor, as a second-level protection to cater for an extreme situation that either the primary or the secondary site becomes permanently inoperable. In this unlikely situation, the USD SO will be exposed to the risk of having only one data centre without any back-up site until a new data centre

is ready for use. The standby back-up service is therefore implemented as a second level protection. Under the standby arrangement, IBM is to make available a back-up site for the USD SO within a specified timeframe. The backup arrangement is reviewed from time to time in the light of changing conditions.

Manpower contingency

7.16 To cater for the loss of key personnel at the USD SO, a split team comprising designated HKICL staff members with the essential skills and the capability of providing adequate support to the continual operations of the production systems are deployed to work at the back-up data centre. In the event that the USD SO loses its facilities and staff at the primary production data centre, the surviving team together with the off-duty staff members who are away from the production data centre at the time of disaster will resume the operations at the backup data centre. The unit heads of Information Technology Department will be in charge of the operation and work at the backup data centre on a rotational basis. The manpower contingency arrangement is reviewed from time to time to take into account of changing conditions.

ASSESSMENT OF COMPLIANCE

7.17 The USD CHATS maintains a high degree of system security and operational reliability. Thorough business continuity arrangements and contingency operations are in place and being tested on a regular basis to ensure effectiveness. Regular independent audits on the information technology systems and operation of the USD CHATS by the USD SO are conducted. A secondary site is available, with real-time data mirroring implemented between both sides. Arrangements are also in place to cater for the extreme situation that both the primary and secondary data centres are not available for operation. The disaster recovery procedures for the operation of the system are also properly described and documented. The BCPs are reviewed, updated and regularly tested to cater for the needs of new developments.

COMPLIANCE WITH THE CORE PRINCIPLE

7.18 The USD CHATS observes Core Principle VII.

Core Principle VIII The system should provide a means of making payments, which is practical for its users and efficient for the economy.

ASSESSMENT CRITERIA

8.1 When assessing the compliance of this Core Principle, attention was paid to the efficiency of the system in the provision of service to balance between the cost and benefit, and the practicality.

DESCRIPTION/JUSTIFICATION

Establishment of the USD CHATS in Hong Kong

8.2 The purpose for the establishment of the USD CHATS in Hong Kong is to facilitate efficient settlement of USD transactions on a real-time basis within the Asian business hours. The real-time settlement of USD transactions in the Asian time zone would help eliminate settlement risks arising out of having to transact across different (namely Asian and US) time zones. In addition to helping private-sector entities eliminate settlement risk, the establishment of a USD clearing and settlement system in Hong Kong is conducive to the maintenance of Hong Kong as an international financial centre and a regional settlement hub.

8.3 In the course of examining options for implementing the USD clearing system in Hong Kong, the HKMA had widely consulted the banking sector and had been in dialogue with the Federal Reserve Bank of New York. In the end, the HKMA adopted a private sector solution approach as this approach has the advantage of not having central banking authority to get involved in correspondent banking business involving foreign currencies. Subsequently the HKMA appointed HSBC as the USD SI after a stringent tendering process. It is also in line with the recommendations by the BIS.

8.4 The USD CHATS provides clearing and settlement services for the following transactions:

- USD RTGS payments
- USD PvP transactions for USD/HKD, USD/Euro, USD/RMB and USD/Ringgit foreign exchange transactions
- USD DvP transactions for USD denominated debts and securities through its links with CMU and CCASS in Hong Kong, and RENTAS in Malaysia

(see Annex D for more information on P v P and D v P links in USD CHATS).

8.5 The USD CHATS operates from 08:30 to 18:30 Hong Kong time on all business days from Monday to Friday. Subject to the requirements of the Rules, both local and overseas financial institutions are eligible to join and participate in the USD CHATS. The system has adequate buffers to provide necessary capacities to deal with an unexpected rise in transaction volume. No system capacity issue has arisen so far.

System Design and Feature

8.6 The design of the USD CHATS is similar to that of the HKD CHATS. The USD SI appointed the HKICL as the USD SO, who also performs the same role in the HKD CHATS. The system functions in the USD CHATS are almost an exact replica of the HKD CHATS.

8.7 A DP can access to the USD CHATS via a Member Bank Terminal (“MBT”) operating under IBM AS/400 platform as the front-end processor. Under Phase 1 of the SWIFTNet migration project, the existing MBT will be retained and be enhanced to support enquiry and control of payment in SWIFT message format. However, the payment construction functions of MBT will be removed, and a participant has to submit the payment instructions in SWIFT message format via its own SWIFTNet messaging systems.

Maintenance and Development of the USD CHATS

8.8 The USD SI and the HKMA closely monitor the performance and the turnover of the USD CHATS. The HKICL keeps track of the technical performance of the USD CHATS to ensure the system has enough capacity to support the business demand and that payment instructions can be processed swiftly. In terms of system safety and efficiency, given that the USD CHATS is designated under the CSSO, the USD SI and the USD SO are required to comply with the safety and efficiency requirements as stipulated under the CSSO.

8.9 The USD SI and the HKMA communicate with the industry from time to time to understand their practices and requirements for the settlement of USD transactions in Hong Kong, and consider whether existing services of the USD CHATS can be further enhanced or whether there is a need to introduce new services to the system. The USD SI and the HKMA promote the USD CHATS’ services to potential users, both locally and overseas, to understand their interest in using the system. For example, Bank Negara Malaysia (BNM) has become an ICU of USD CHATS since November 2006 to facilitate

USD/MYR foreign exchange PvP transactions via the USD CHATS during Asian hours.

8.10 A major development of the USD CHATS is the two-phase migration of the system from the existing proprietary platform to the SWIFTNet platform (first phase in May 2009 and the second phase in mid-2010) in the light of the advancement of information and communication technology. The project has gone through a consultation process with the banks in Hong Kong and has been endorsed by HKAB. Both the USD SI and the USD SO have formulated a migration plan of the project. The Payment Systems Oversight team of the HKMA has closely monitored the migration project, mainly through reviewing project documentation and regular meetings with the SI and SO. This is to ensure that the USD CHATS will continue to meet the safety and efficiency requirements as stipulated in the CSSO.

Pricing Policy

8.11 The USD CHATS adopts a user-pay principle. The tariff is determined by the USD SI in consultation with the HKMA. The DPs and IPs of the system are aware of the pricing methodology and the fee schedule. Users are charged on a per transaction basis with a minimum monthly amount. A tier-pricing structure is adopted for USD RTGS payments under which a lower per transaction charge is applied on higher volumes.

8.12 The fee schedule is made available to all participants of the USD CHATS. Any changes to the fees have to be approved by the USD SI, the HKMA as the system facilitator, and the HKICL Board of Directors, which comprises representatives of the HKMA and HKAB.

ASSESSMENT OF COMPLIANCE

8.13 The set up of the USD CHATS allows financial institutions in Hong Kong and in the region to settle USD transactions real-time in the Asian time zone, thus eliminating settlement risks for their USD transactions. It is also conducive to the maintenance of Hong Kong as an international financial centre and a regional settlement hub. The development of the USD CHATS has taken into account the needs of relevant users by consulting the parties concerned.

8.14 The USD CHATS operates basically on a cost-recovery basis. Given participation is on a voluntary basis and there are alternatives for settlement of USD funds, there are competitive incentives to keep the system efficient.

8.15 The system design of the USD CHATS is considered easy and convenient to operate and suits the needs of the users. Overall speaking, it is considered that the USD CHATS has maintained an appropriate balance between the cost and benefit and has achieved efficiency for users to process USD payments in the system. No complaints were received from the participants regarding the operation and efficiency of the system.

COMPLIANCE WITH THE CORE PRINCIPLE

8.16 The USD CHATS observes Core Principle VIII.

Core Principle IX **The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.**

ASSESSMENT CRITERIA

9.1 The assessment of this Core Principle concentrated on the transparency and fairness of access and exit criteria to the system, and the monitoring of the fulfilment of membership criteria.

DESCRIPTION/JUSTIFICATION

9.2 The general principle for access to the USD CHATS by a participant is stated in the Franchise Agreement. The Rules provides in detail the requirements for participating in and exiting from the USD CHATS, and the rights and obligations of a participant in settling through the USD CHATS. The terms and conditions governing the US dollar settlement account are documented in the Account Opening Agreement.

Access to the USD CHATS

9.3 Access to the USD CHATS in Hong Kong is voluntary. Financial institutions may join as DPs, IPs or ICUs. The Franchise Agreement specifies that any company having a current authorization to carry on banking business under the Banking Ordinance (Cap 155) shall not be restricted from joining the USD CHATS unless otherwise provided by the HKMA or any applicable law. The Rules also specify that these institutions are entitled to becoming DPs or, by agreement with a DP, becoming an IP or an ICU through a designated DP. Other institutions (i.e. those institutions other than banks) may also become DP, IP or ICU if they have been permitted by the USD SI and the HKMA. The granting of membership to a non-bank institution or a bank located overseas is subject to evaluation of the USD SI and the HKMA through FID (as system facilitator) on a case by case basis. So far, the only non-bank DP of the USD CHATS is the HKMA.

9.4 A DP is required to open and maintain a US dollar settlement account with the USD SI for the purpose of clearing and settlement of USD payments through the USD CHATS. An IP does not maintain a US dollar settlement account with the USD SI but maintain an account with a DP. IP's and ICU's payments are settled through their respective designated DP's USD CHATS settlement account.

9.5 Institutions which are not DPs of the USD CHATS in Hong Kong may also participate in the USD CHATS by opening a USD account with a DP as a customer, an IP or an ICU; or by routing their USD transactions to their Hong Kong branch office for settlement.

Exit from the USD CHATS

9.6 There are arrangements in place to facilitate a participant's exit from the USD CHATS in an orderly manner. The Rules specifies that DPs and IPs may withdraw from their USD CHATS membership by giving 90 days' prior written notice to the USD SI and the USD SO. An IP shall at the same time notify the relevant DP. In the case of an ICU, the relevant DP is required to inform the USD SI 10 working days before the withdrawal of its ICU from the USD CHATS. After receipt of withdrawal notice, the USD SO will arrange with the outgoing participant the exit procedures.

Suspension of access of a participant to the USD CHATS

9.7 The Rules specifies that the USD SI, with the prior consent of the HKMA, may suspend or terminate the operation of a settlement account in the USD CHATS if there is a material breach by a DP of its obligations under the conditions governing the usage of the USD CHATS settlement account, the Procedures and the Rules. The suspension and/or termination of a member is determined by the USD SI with prior approval of the HKMA (as the system facilitator).

Monitoring the fulfilment of access criteria

9.8 Both the HKMA as the system facilitator and the USD SI administer the membership of the USD CHATS with reference to the established rules and procedures as stipulated in the Rules and the Procedures. On the technical setup and system maintenance, the USD SO is responsible for the access arrangements with new DPs. Both the USD SI and the USD SO are responsible for the continuous monitoring the fulfilment of access criteria of USD CHATS. Currently, all the DPs are banks in Hong Kong, which are subject to the supervision of the Banking Supervision Department of the HKMA.

ASSESSMENT OF COMPLIANCE

9.9 The access, exit and suspension criteria to the USD CHATS are laid down in the relevant documents which are available to system participants. Nevertheless, the access and exit requirement for those companies which are not authorized to carry on banking business in Hong Kong (including, for example, overseas banks and non-bank institutions) could be more explicitly

spelt out in relevant documents so as to promote transparency and help the interested parties to get better prepared for admission. The monitoring of access criteria being fulfilled by existing participants is effective. The procedures appear to be fair and transparent.

COMPLIANCE WITH THE CORE PRINCIPLE

9.10 The USD CHATS observes Core Principle IX. .

Core Principle X The system’s governance arrangements should be effective, accountable and transparent.

ASSESSMENT CRITERIA

10.1 Under this Core Principle, the main aspects that were assessed include the transparency of the system organisation and the decision-making procedures, the clarity of the roles and responsibilities of each involved parties, and the relevance of the service provided to users.

DESCRIPTION/JUSTIFICATION

10.2 The governing structure related to the USD CHATS involves the HSBC (as the USD SI), the HKICL (as the USD SO) and the HKMA (as (a) the system facilitator of the USD CHATS; and (b) as payment system overseer of the USD CHATS). Each party performs different roles in terms of governance arrangement.

10.3 With a mandate under the Exchange Fund Ordinance to develop Hong Kong’s financial infrastructure and to maintain Hong Kong as an international finance centre, the HKMA (through its Financial Infrastructure Department (“FID”)¹⁴) serves as the system facilitator of the USD CHATS and took a leading role to establish the USD CHATS in Hong Kong in 2000. After the establishment of the system, the HKMA (through its FID) as the system facilitator performs an ongoing monitoring performance of the USD CHATS to ensure that the system functions properly under the operation of the USD SI and the USD SO. The HKMA (FID) meets regularly with the USD SI and the USD SO to review the performance of the system, explore new business opportunities, and discuss any other matters that are relevant to the USD CHATS. Any major decisions which may affect the design and operation of the USD CHATS have to be approved by all three parties.

10.4 Apart from the role as a system facilitator, a separate unit in the HKMA, the PSO team of the Payment Systems Oversight and Licensing (PSOL) Division, was set up in 2004 after the enactment of the CSSO to oversee the USD CHATS and other designated payment systems in Hong Kong. While the HKMA is the primary overseer of the USD CHATS, oversight information of this system is shared and consulted with the Federal Reserve System under the Lamfalussy Principles for co-operative oversight. As a

¹⁴ The Financial Infrastructure Department was set up in 2008 to take up the role of the former Market Systems Development Division. This new department has two divisions: Financial Infrastructure Development Division and Payment Systems Operations Division.

designated system under the CSSO, the USD CHATS has to comply with the safety and efficiency requirements as stipulated under the CSSO. The FID (as facilitator) and the PSOL Division (as overseer) have segregated their duties and separate reporting lines up to the deputy chief executive level (different DCEs) to ensure there are sufficient checks and balances within the HKMA.

10.5 HSBC is appointed as the USD SI by the HKMA (FID). The day to day operation of the USD CHATS is placed under the Global Markets Operations Department of HSBC. Designated staff members are responsible for the USD SI's operation and serve as contacts for the USD SI. HSBC has in place established procedures, internal controls and reporting lines regarding the operation of the USD SI.

10.6 The HKICL as the USD SO is responsible for the operation and the management of the computer system of the USD CHATS. It is also responsible for the development, upgrade and maintenance of the USD CHATS.

10.7 The Chief Executive Officer of the HKICL reports directly to the HKICL Board of Directors, which comprises officials from the HKMA (FID) and representatives from HKAB. Approval from the Board of Directors would be obtained for major issues affecting the operation of the USD CHATS. Under the Board of Directors, there is a Board Sub-Committee, which is also formed by officials from the HKMA (FID) and representatives from HKAB. Matters are first discussed and reviewed in the Board Sub-Committee, taking into account the views from both the public and private sectors. The matters endorsed by the Board Sub-Committee will be submitted to the Board of Directors for further discussion and approval. The dual process is to ensure proper oversight of the decision making process at the Board Sub-Committee. The HKICL is required to obtain approval for any changes, including those to the Rules and the functionalities of the system, made to the USD CHATS from both the FID (as system facilitator) and the PSOL Division (as overseer) of the HKMA and the USD SI.

10.8 To maintain transparency of the USD CHATS, the HKMA provides information related to the USD CHATS via its annual reports, Quarterly Bulletins and press releases from time to time. The USD SI also provides general information regarding the USD CHATS to banks which want to join in as DPs. The USD SO disseminates information regarding the operation of USD CHATS via various channels, including the publication of Rules and Procedures, circulars, letters and on its website.

ASSESSMENT OF COMPLIANCE

10.9 It is considered that a clear governance structure is adopted by the USD CHATS with distinct roles and responsibilities to be performed by the HKMA, HSBC and the HKICL. Proper approval is required from all relevant parties on important decisions related to the USD CHATS to ensure the interests/concerns of the parties concerned are addressed properly. The process is also made transparent to system users via various channels.

COMPLIANCE WITH THE CORE PRINCIPLE

10.10 The USD CHATS observes Core Principle X.

Part IV Overall Assessment Summary

Overall, the assessment by the HKMA, as overseer, concludes that the USD CHATS observes all the Core Principles. In particular, the Hong Kong law provides a well-established legal foundation for the USD CHATS and settlement finality. The Rules and Procedures of the system are comprehensive and clear, and enable participants to understand the financial risks resulting from participating in the system. Final settlement is achieved in the USD CHATS either immediately (for RTGS payments) or during the day on the due day when payments are made to their recipients (for payments settled on a multilateral netting basis). A commercial bank with strong financial position is appointed as the SI. The risk of using a commercial bank as the SI is minimised as far as possible and well known to the participants who choose to join the system. USD CHATS operates effectively and efficiently, providing secure, reliable, and practical services to the participants. The system's governance arrangements are considered effective, accountable and transparent.

Although the assessment results are favourable, there is still room for further improving the safety and efficiency of the USD CHATS from the perspective of the overseer. More use of collateralised intra-day credit facility instead of intra-day overdrafts will be useful to further strengthen the management of financial risks in the system. DPs may consider maintaining a lower or close to zero balance in their settlement accounts at the end of the day to further minimise the risk of being exposed to the USD SI. However remote the possibility, contingent measures should be in place to deal with the unlikely event of the default of the USD SI. As regards participation in the system, while the access of banks in Hong Kong to the USD CHATS is determined against a set of objectives and publicly disclosed criteria, the access of non-bank institutions or banks located overseas are on a case-by-case basis subject to the approval of both the HKMA (FID) and the USD SI. More precise criteria for the access of non-banks to become DP will be helpful in the interest of promoting transparency, although there is no such request for the time being.

As part of its continuing oversight of the system, the HKMA (through its PSO team in the PSOL Division) encourages the USD CHATS to comply with internationally recognised standards. An assessment of the system against the Core Principles will be performed once every two years. All relevant parties are encouraged to take necessary measures to ensure the system is in line with international best practices.

Abbreviations

CCASS	Central Clearing and Settlement System
CSSO	Clearing and Settlement Systems Ordinance
CMU	Central Moneymarkets Unit
DvP	Delivery versus Payment
ETO	Electronic Transactions Ordinance
FID	Financial Infrastructure Department
USD CHATS	USD Clearing House Automated Transfer System
HKAB	The Hong Kong Association of Banks
HKICL	Hong Kong Interbank Clearing Limited
HKSAR	Hong Kong Special Administrative Region of the People's Republic of China
MA / HKMA	Monetary Authority / Hong Kong Monetary Authority. (The Monetary Authority refers to the person who is appointed under the Exchange Fund Ordinance to assist the Financial Secretary of the HKSAR and perform the functions as the Financial Secretary may direct. The Hong Kong Monetary Authority is the name of the organization responsible for carrying out the functions of the Monetary Authority. The two abbreviations are used interchangeably in this context.)
MBT	Member Bank Terminal
PSO team	Payment Systems Oversight team
PSOL	Payment Systems Oversight & Licensing Division
PvP	Payment versus Payment
RTGS	Real Time Gross Settlement
HSBC	The Hongkong and Shanghai Banking Corporation Limited
SI	Settlement Institution
SO	System Operator

Documents used as reference for the assessment

1. Account Opening Form for US Dollar Settlement Account (*“Account Opening Agreement”*)
2. An Agreement between the Hong Kong Monetary Authority and The Hongkong and Shanghai Banking Corporation Limited in relation to the US Dollar Clearing System in Hong Kong (dated 16 March 2005) (*“Franchise Agreement”*)
3. Side Letter to the Franchise Agreement between HKMA and HSBC - Rentas-USD CHATS PvP Link (dated 9 June 2006)
4. Side Letter to the Franchise Agreement between HKMA and HSBC – Revised interest rate on DP with negative settlement account balance by the New York CHIPS cutoff time (dated 12 April 2007)
5. Side letter to the Franchise Agreement between HKMA and HSBC - Rentas-USD CHATS Link for DvP Link (dated 25 October 2007)
6. Clearing Operating Procedures: RTGS – Member Bank Terminal/400 (MBT/400) (*“User Manual”*)
7. Clearing Services Enrolment Form for Direct Participant of USD Clearing
8. Clearing Services Enrolment Form for Indirect Participant/Indirect CHATS User of USD Clearing
9. USD Clearing Settlement Institution Backup Site at HKICL Service Agreement (dated 12 October 2001)
10. USD Clearing House Rules, Rainstorm Procedures, and Typhoon Procedures (*“Clearing House Rules”*)
11. USD Clearing Operating Procedures for CHATS Special Posting
12. USD Clearing Operating Procedures for Clearing Facilities Suspension
13. USD Clearing Operating Procedures for Non-Clearing Day
14. USD Clearing Settlement Institution: Business Continuity Plan
15. Amendment Agreement for the US Dollar Clearing System Development and Clearing Services Agreement between The Hongkong and Shanghai Banking Corporation Limited and Hong Kong Interbank Clearing Limited (dated 23 August 2005) (*“Services Agreement”*)

16. Side letter to the Services Agreement – Rentas-USD CHATS PvP Link (dated 21 July 2006)
17. Side letter to the Services Agreement – 5-day clearing (dated 21 July 2006)
18. Addendum to the Services Agreement between The Hongkong and Shanghai Banking Corporation Limited and Hong Kong Interbank Clearing Limited – Centralized Payment Filter System (dated 20 October 2006).
19. Side letter to the Services Agreement – Rentas-USD CHATS Link for DvP Link (dated 26 July 2007)
20. Hong Kong Interbank Clearing Limited Business Contingency Plan (“*BCP*”)
21. Master Sale and Repurchase Agreement (USD Clearing System) (“*Repo Agreement*”)
22. Licence Agreement for Malaysian Ringgit Cross Currency Payment Matching Processor between the HKMA (Market Systems Development (renamed Payment Operations Division later) and Bank Negara Malaysia (dated 1 June 2006). (“*Licence Agreement*”)
23. Side letter to the Licence Agreement between the HKMA (Market Systems Development (renamed Payment Operations Division later) and Bank Negara Malaysia regarding delivery-versus-payment service (dated 25 October 2007).

RTGS Liquidity Optimiser of USD CHATS

1. The RTGS Liquidity Optimiser (RLO) was introduced to USD CHATS in 2006. The objective of introducing the RLO is to enhance the settlement efficiency of the system.

2. The RLO is a settlement mechanism which enables banks to settle their payment instructions queued in the USD CHATS on a gross basis through an offsetting process. The RLO is activated every 30 minutes during the peak operating hours. The queued payment transactions pending for settlement in USD CHATS are snapshot. The RLO will attempt to identify a pattern which can help offset and settle as many of the queued payment transactions as possible subject to the following criteria:

- Sequence of the queued items on a first-in-first-settle basis;
- No partial settlement of any payment transaction, and
- Settlement will only be done if the individual account balance after settlement is positive, i.e. only when sufficient funds are available for settlement

All identified queued payments are then settled simultaneously on a real-time gross basis (i.e. the individual obligations are not replaced by a net obligation).

3. The RLO is designed to reduce payment gridlock and enhance system efficiency. In case the RLO cannot identify qualified transactions for settlement, the normal operation of USD CHATS will not be affected. The pending transactions will still be processed in same way in USD CHATS as in the absence of the RLO.

4. The use of RLO can help ease banks' liquidity pressure, particularly during times of large fund flows and can help banks manage their liquidity position more efficiently. Less liquidity is needed to support a given amount of interbank turnover.

PvP and DvP links in USD CHATS

PvP links

1. Currently, USD CHATS has established PvP links with HKD CHATS, Euro CHATS, RMB CHATS in Hong Kong, and RENTAS in Malaysia to achieve real-time settlement of foreign exchange (FX) transactions involving USD/HKD, USD/Euro, USD/RMB and USD/MYR currency pairs respectively.

Settlement mechanism

2. The mechanism of each of this PvP link is similar. To enable the PvP link, each of the two RTGS systems of the respective FX currency pair is required to connect to a specially designed software, namely the cross-currency payment matching processor (CCPMP). For example, the USD CCPMP is connected to the USD CHATS and the MYR CCPMP is connected to the RENTAS for PvP settlement of USD/MYR transactions. The two CCPMPs communicate instantaneously with each other during the operating hours.

3. To ensure the funds in the two RTGS systems (i.e. USD CHATS and RENTAS) of the respective FX currency pair are settled simultaneously, the funds involved in the PvP transaction will be temporarily withheld by the respective RTGS systems (i.e. USD funds withheld by USD CHATS and Ringgit funds withheld by RENTAS) and cannot be used for other purposes. Only when sufficient funds are being withheld in both two RTGS systems, the two CCPMPs will re-confirm and notify the two RTGS systems. Funds will then be released simultaneously in the two RTGS systems to the relevant parties. In case funds are not available on either side (i.e. sufficient funds are not being withheld by the system), the PvP transaction will be kept pending. In case of prolonged pending of the transaction, the relevant settlement institution, which has access to real-time information on the progress of the PvP transactions in the system, may step in to discuss with the party concerned. If needed, the PvP transaction can be cancelled by either side before settlement.

Risk control

4. Given the PvP transaction will only be settled simultaneously, the PvP links will not induce additional settlement risk to the systems concerned nor to the relevant participants. In fact, the PvP link helps eliminate FX settlement risk and counterparty credit risks of relevant cross-currency transactions.

5. The CCPMPs are developed and maintained by the HKICL, the system operator of USD CHATS, which is also the system operator of other CHATS systems in Hong Kong. The HKICL has operated the CCPMPs for years. Proper contingency arrangements have been established with the relevant parties. Drills are conducted regularly to ensure the effectiveness of the contingency arrangements. Where appropriate, the HKMA will establish international co-operative oversight arrangements with the overseas authorities to oversee the relevant link.

6. In the unlikely event that the PVP is not working, the participants can always revert to the usual single leg payments in the respective RTGS systems to settle the FX transactions, although the participants may then be exposed to the usual FX settlement risk and the credit risk of their counterparties.

DvP links

7. Currently, USD CHATS has established DvP links with CMU, CCASS in Hong Kong and RENTAS in Malaysia to achieve real-time settlement of DvP transactions.

Settlement mechanism

8. The settlement mechanism is conceptually similar to that of the PVP links. The USD amount involved in the DvP transaction will be temporarily withheld by USD CHATS until the respective securities settlement system (i.e. CMU, CCASS or RENTAS) has withheld the required amount of securities for the DvP transaction. For example, the USD funds will be withheld by USD CHATS until the CMU has withheld the securities for the particular DvP transaction. When both systems have completed the 'withholding' action, the two systems will communicate and will confirm releasing the funds and securities simultaneously to the relevant parties respectively.

Risk control

9. Same as PVP transactions, given the DvP transactions will only be settled simultaneously, the DvP links will not induce additional settlement risk to the systems concerned nor to the relevant participants.

10. There are established procedures between the HKMA and the relevant parties to oversee the different DvP links. Drills are conducted regularly to ensure the effectiveness of the contingency arrangements. Where appropriate, the HKMA will establish international co-operative oversight arrangements with the overseas authorities to oversee the relevant link.

11. In the unlikely event that the DvP is not working, the participants can always revert to the usual single leg transactions in the respective payment or securities settlement systems to settle the transactions, although the participants may then be exposed to the usual settlement risk and credit risk of their counterparties.