Building a Settlement Infrastructure for the Asian Bond
Markets: AsiaSettle

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1. Introduction

There has recently been a great deal of discussion on development of the Asian bond...
markets. This is seen as part of the larger effort to promote regional financial development and integration in East Asia. During the 9th APEC Financial Ministers meeting in September, 2002, it was agreed that a regional bond market would be developed through securitization and credit guarantee. ASEAN+3 has formed six working groups to study various aspects of regional bond markets including securitization, regional credit rating agencies, regional clearing and settlement systems, regional credit guarantee agencies, and so on. EMEAP (Executives' Meeting of East Asia and Pacific Central Banks) has also set up the Asian Bond Fund (ABF) with contributions from the foreign reserves of each member bank. This fund will be managed by the Bank for International Settlements under the mandate to invest in dollar-denominated bonds issued by qualified Asian issuers.

To many, the recent discussion on Asian bond markets seems like \textit{déjà vu} of the old Asian Bond Market idea in the early 1990's. The launching of the Dragon Bond initiatives in the early 1990's sparked discussion in Asia on the development of the Asian Bond Market, and it continued through the end of the decade. HKMA (Hong Kong Monetary Authority) has proposed the establishment of AsiaClear as a regional central securities depository to provide clearing and settlement service for the Asian Bond Market.

In retrospect, however, the Asian Bond Market initiatives of the 1990's were merely talk without action. The proponents of the Asian Bond Market failed to establish a consensus on its benefits. There was skepticism on the growth potential of the Asian Bond Market due to the reluctance of Asian countries to liberalize and open up their domestic capital markets for fear of creating market distortions and making themselves vulnerable to speculative attacks. The skeptics also did not believe that the Asian Bond Market would attract much attention because there were already well established, efficient international bond markets, such as the Eurobond markets. It should be pointed out, however, that the lack of action on creation of the Asian Bond Market was also due to the non-existence of institutions in Asia, such as the BIS and ECB in Europe, that can mediate the conflicts of national interest that would arise in the process of international financial market integration.

The situation changed greatly during the Asian financial crisis. We will finally see some meaningful action to establish Asian bond markets in the near future. There is now a strong realization that the underdevelopment of the bond markets of the region greatly exacerbated and, perhaps, caused the Asian financial crisis of 1997. Both the bank-dominated financial system and the banks themselves were at the heart of the crisis because firms that had been so long dependent upon them for funds could not find alternative sources of financing when the crisis erupted.

The idea of regional bond markets is also promoted as a means of overcoming the double
mismatch problem that most Asian borrowers face when they try to raise funds from abroad. The double mismatches refer to the currency mismatch and the maturity mismatch, and it is also considered one of the root causes of the 1997 Asian financial crisis.

Finally, development of regional bond markets is promoted as a way to facilitate mobilization of East Asian savings. The foreign exchange reserves of most Asian countries have increased significantly since the financial crisis, helped by Asian governments' actions to prevent recurrence of a financial crisis and the huge current account surpluses triggered by the economic recession and sharp currency depreciations that the financial crisis brought about. By 2002, Asian economies altogether held nearly half of the global foreign exchange reserves, though the bulk of these foreign reserves are invested in safe and liquid assets such as U.S. treasury securities and supranational bonds. Until Asian bond markets are established, East Asian borrowers have to turn to the international financial markets. East Asia as a whole can be considered an importer of safe assets and an exporter of risky assets. As has been pointed out by Oh et. al (2003), such a pattern of capital flows is not desirable in the sense that it deprives the regional financial markets and institutions of valuable opportunities to develop and could make the countries in the region vulnerable to future financial crises.

A consensus among Asian economies has emerged that regional bond markets should be promoted in order to facilitate recycling of regional savings and to prevent recurrence of financial crises. This has led to active discussion on how Asian bond markets should be developed, but these discussions have so far concentrated only on the rationale of the regional bond markets and the strategies and schemes to increase the supply and demand of Asian bonds. The ABF, for example, would be assigned the task of stimulating demand for Asian papers. The securitization and credit guarantee scheme proposed by the Korean government, Oh and Park (2003), and the Asian currency basket bond idea proposed by Ito (2003) and Olarn (2003) are designed to increase the supply of Asian bonds and resolve the double mismatch problem. Yet, there has been very little concrete discussion on building the various components of the institutional infrastructure for Asian bond markets, such as the clearing and settlement system and the trading platform.

Among the many components of the infrastructure needed to develop the Asian bond markets, this paper focuses on the cross-border clearing and settlement system. This paper specifically attempts to determine if it is possible to establish bond markets where bonds are denominated, issued, and settled in Asian currencies, most of which are not internationalized. It also seeks to determine if it is necessary to establish a new Asian settlement system even though there are already established cross-border settlement systems operated by ICSDs like Euroclear and Clearstream Banking. If so, what should
the operational mode and the governance structure of the new Asian ICSDs be?

This paper puts forward two major arguments. First, we expect that the Asian bond markets will have their genesis as offshore financial markets subject to less regulation and characterized by efficient trading and clearing & settlement systems. Second, we recommend the establishment of a regional ICSD dubbed AsiaSettle. It would be created by linking the central banks and NCSDs (National CSDs) of each country and would serve as the clearing & settlement system for the Asian bond markets. At the initial stage, AsiaSettle would perform as the clearing and settlement system for local currency-denominated government bonds of Asian countries issued in offshore markets. The focus in the early stages on government bonds is extremely important; i.e., because the supply of high-quality bonds in the private sector is low, high-quality government bonds would be an indispensable catalyst for the development of the Asian bond markets.

We also discuss the necessity for AsiaSettle to also function as the CCP (central counterparty) for the exchange of government bonds, and to possess ECN (Electronic Communication Networks) platform capabilities. Furthermore, we discuss the desirable governance structure of AsiaSettle and propose that AsiaSettle be established as an institution invested by each country's NCSD and central bank, or as a new multilateral agency for Asia.

This paper is organized as follows. Section II makes the case for Asian countries establishing and utilizing offshore financial markets in the incipient stage of developing the Asian bonds markets. Section III describes the current cross-border clearing and settlement system in Asia and the role of the existing ICSDs. In section IV, we propose the establishment of AsiaSettle as a regional ICSD, a settlement and clearing infrastructure for the Asian bond markets. A detailed explanation of the modus operandi of AsiaSettle is offered, and we discuss the pros and cons of introducing CCP functions in AsiaSettle. Section V addresses the ownership structure of AsiaSettle, and Section VI concludes the paper.

II. Launching the Asian Bond Markets Offshore

There is no denying that the best way to begin developing the Asian bond markets is to develop each country's domestic bond market and open it up to foreign investors. In other words, the optimal method of developing cross-border trading in Asia is for Asian countries to open up their domestic bond markets to enable Asian issuers to issue bonds in any country of their choice and to enable investors to invest in bonds in the domestic market of
any country. However, the bond markets of East Asian countries are at greatly varying stages of development. Some are much more liberalized than others, and different kinds of capital controls are imposed. Most Asian countries do not even have the economies of scale to support all the components of the bond market infrastructure, such as a settlement and depository system, primary dealer system, credit rating agencies, bond pricing agencies, and credit guarantee agencies, which are needed to develop domestic bond markets. It is, therefore, very unrealistic to expect every Asian country to develop and open up its domestic bond markets in the near future.

Under these circumstances, the Asian bond markets will likely begin to develop as offshore bond markets, following in the footsteps of the Eurobond market some 40 years ago. The advantage of offshore markets is that they are subject to less onerous regulation than onshore markets. In order to protect domestic investors and maintain financial market stability, countries usually impose strict accounting standards, disclosure requirements, and foreign exchange transaction restrictions in the domestic markets. Since the majority of participants in offshore markets are non-residents, countries do not impose such strict regulations on offshore markets.

The Eurobond market was launched in 1957 with a 5 million U.S. dollar-denominated bond issue by a Belgium company, Petrofina.\(^1\) It has since become the biggest international bond market, mainly because it is not subject to as much regulation as domestic markets. By late 2002, the Eurobond market was 600 billion dollars in size. Eurobonds are issued in bearer form, so anonymity is guaranteed. The interest is paid in gross and is free from withholding taxes. <Table II-1> compares the regulations of the Eurobond market with those of domestic bond and foreign bond markets. It becomes clear even after only a cursory examination that there is less regulation on the Eurobond market than on other markets.

<Table II-1: Regulation of Bond Issues in the International Bond Markets>

\(^{1}\) Mendelson (1980)
The fact that Asian countries are interested in issuing local currency-denominated bonds will work as an advantage in the development of offshore markets for Asian bonds. In the early stage of development of the Eurobond market, countries were eager to issue U.S. dollar-denominated bonds, but were reluctant to allow bonds denominated in their own currencies to be issued in foreign countries for fear of losing control of their monetary policy and facilitating speculative attacks on their currencies. Germany and Japan once restricted issuance of Eurobonds denominated in their currencies. Switzerland still does not allow issuance of Swiss franc-denominated Eurobonds. Asian countries, on the other hand, prefer to issue bonds in their own currencies because the experience of the 1997 financial crisis made them understand the importance of avoiding currency mismatches when they raise funds abroad.

Offshore financial markets are not only useful in developing Asian bond markets, they will also be helpful in integrating the Asian financial markets by bringing uniformity in

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### Table: Comparison of Markets

<table>
<thead>
<tr>
<th>Regulatory Bodies</th>
<th>Issuing costs</th>
<th>Rating requirements</th>
<th>Disclosure requirements</th>
<th>Currency of denomination restrictions</th>
<th>Speed of Issuance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Securities and Exchange Commission</td>
<td>0.75-1.00%</td>
<td>Yes</td>
<td>More detailed (High initial expense, High ongoing expense, Onerous to non-US firms)</td>
<td>United States does not restrict the use of US$</td>
<td>Relatively slow until Rule 415 on &quot;shelf registration&quot;</td>
</tr>
<tr>
<td>Official agency approval</td>
<td>Variable to 4.0%</td>
<td>Usually no</td>
<td>Variable</td>
<td>Part of queuing (Many foreign countries (Germany, Switzerland) have in past or now restrict use of currency)</td>
<td>Variable</td>
</tr>
<tr>
<td>Minimum regulatory control</td>
<td>2.0-2.5%</td>
<td>No, but commonly done</td>
<td>Determined by market practices</td>
<td>No restrictions on use of US$ or C$</td>
<td>Usually fast; &quot;bought deal&quot; leads to fast issuance</td>
</tr>
</tbody>
</table>

source: Levich(1985)

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2 A country can restrict issuance of bonds denominated in its currency in offshore markets because the transactions of the bonds denominated in its currency have to be settled in the end through the Central Bank settlement system to ensure finality of the settlement.
financial market regulation throughout the region. Integrating financial markets requires more than merely opening up domestic financial markets to foreign financial institutions, issuers, and investors. Unless the regulations of each country are reconciled, the full benefits of market integration will not be realized. For example, an investment bank specializing in credit derivatives will not be able to perform successfully in a country where credit derivatives are completely prohibited, even if it is granted national treatment.

In order to reconcile the regulations of each country, the EMU is taking the "one passport" approach. Accordingly, each host country allows foreign financial institutions to operate under their home countries' regulations. The investment bank described above would, therefore, be able to deal in credit derivatives regardless of whether the host country allows credit derivatives or not, if it is allowed to handle them by its home country. In such a case, the host country will find that the domestic investment banks are at odds with foreign investment banks that can deal in credit derivatives. In order to level the playing field, the host country will allow domestic investment banks to handle credit derivatives. In time, every other country will follow suit, and the harmonization of regulatory regimes will occur.

Scott (2000) argues that harmonization of regulation can also be achieved through offshore financial markets. Since countries do not find it necessary to regulate offshore financial markets as strictly as their domestic markets, it will be easier to harmonize financial regulations on offshore markets of each country. The strategic approach of using offshore markets as a catalyst for developing Asian bond market will be suitable in achieving harmonization of regulation in East Asia where countries, at present, are not interested in integrating their domestic financial markets but are interested in developing their offshore financial markets as regional financial centers for Asian bond markets.

Asian countries already realize the strategic importance of offshore financial markets in fostering Asian bond markets. Japan has recently carried out a number of reforms to expand the function of the offshore bond market. Thailand plans to issue Baht-denominated bonds in the Japanese offshore market. We expect more countries to follow suit. Countries interested in becoming regional financial centers for Asian bond markets will establish offshore bond markets and allow foreign issuers to issue bonds in their own currencies instead of going through the time consuming process of lifting regulations on domestic bond markets. They will also compete to attract issuers and investors by ensuring that their infrastructures are efficient and offer the full functionality required including securities trading capability and clearing and settlement.

Most of the Asian bonds issued in offshore markets will be traded in the OTC markets if organized exchanges are not available. However, to increase liquidity and marketability,
the Asian bonds need to be listed on exchanges. Even though there is no listing requirement, most Eurobonds are listed on exchanges like the Luxemburg Exchange. Countries that aspire to be regional financial centers for Asian bond markets will build exchanges for offshore markets. The Labuan International Financial Exchange (LFX) of Malaysia is a good example. Some may open their own exchanges for offshore bond trading.

Each country may offer clearing and settlement service by expanding the service of its own national CSD (NCSD). However, for more efficient clearing and settlement of Asian bond transactions, Asia may require a regional clearing and settlement system. In the next section, we will take a more detailed look at the clearing and settlement systems now employed in Asia and determine whether or not they can be used for cross-border settlements of Asian bond transactions.

III. Cross border settlement in Asia

Securities traded in the Eurobond markets are usually settled and deposited through ICSDs such as Euroclear or Clearstream. In principle, the settlement of Asian bonds that are denominated in Asian currencies can also be settled through the existing ICSDs or other cross-border settlement methods. This section reviews the pros and cons of cross-border settlement systems currently available for the bonds denominated in Asian currencies.³

(1) Use of an ICSD (international central securities depository)

There is a widespread but mistaken belief that it is difficult to settle bonds denominated in Asian currencies through the existing ICSDs since most Asian currencies are not internationalized. In principle, internationalization of a currency is not a determinant of or ease of security settlement through ICSDs. The settlement of non-internationalized currencies can be performed using corresbanks that are located in the corresponding country. <Figure III-1> shows an example of settlement for a Eurobond denominated in Bhat that is traded on the Korean offshore market.

Let’s assume that investor A sells the Thai government bond denominated in Baht to investor B in the offshore market in Korea. Assume that the payment should be settled in Baht, but settlement in Baht in the Korean offshore market is impossible since the Baht is not internationalized. Moreover, settlement in Baht should pass through the central bank of Thailand to guarantee the finality of the settlement. In fact, the settlement can be finalized through the investors’ corresbanks located in Thailand. Buyer B in Korea remits the corresponding dollar amounts to his/her bank in Thailand. B’s bank converts the dollar remittance into Baht and transfers the proceeds to seller A’s account through the settlement system of the central bank of Thailand. In turn, investor A’s bank in Thailand converts the Bhat deposit into dollars and sends the funds to seller A’s account in Korea. Therefore, even though the Baht is not an internationalized currency, bonds denominated in Baht can be settled as long as there is convertibility between the dollar and Baht. Of course, in the example above, if the convertibility of the Baht is somehow restricted, settlement is not possible. This case shows that it is the convertibility and not the internationalization of currencies that determines whether or not cross-border settlement is possible.

The same issue is faced in settlement through the ICSDs. Currently, Euroclear offers investors a choice of currencies of settlement, but as shown in Table III-1, the range of choices is very limited. Only 32 currencies of 42 countries are available, and of these, only nine are Asian currencies. The currencies of Korea, China, India, Taiwan are currently excluded, but this is not because they are not internationalized. The Malaysian ringgit and Singaporean dollar are settlement currencies in Euroclear even though they are also not internationalized.

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4 Euroclear(2002a) lists settlement currencies and cash correspondents.
The reason most Asian currencies are not Euroclear settlement currencies is that there are some limitations on their convertibility and substantial legal uncertainties regarding the applicable regulations on foreign currency transactions. In Korea, for example, omnibus accounts are not permitted. This is a major reason that the Korean won is excluded from the list. Non-resident investors in Korea are required to report their individual identities when they open Korean won-denominated accounts. This regulation prohibits ICSDs from opening omnibus accounts (an account for large groups of investors) with the NCSD in Korea. If an ICSD has an omnibus account in its own name and manages all the internal transactions among its members, the government fears that it will not be able to monitor individual transactions. This regulation, however, subjects foreign investors to onerous procedural requirements and does not permit protection of the investors’ anonymity. It is no wonder that Euroclear does not designate the Korean won as a currency of settlement.

See KFIRI(2003) about reasons that ICSDs exclude Korea Won from settlement currencies.

The Indonesian rupiah is a currency of settlement in Euroclear, but its use became somewhat restricted after the financial crisis in 1997. The restriction is not due to exchange rate or credit risk to Euroclear. As the settlement of Euroclear is done via the RTGS and DVP systems, Euroclear is not subject to any exchange rate or credit risk. The restriction was introduced due to increasing uncertainty with regard to regulation on capital transactions in Indonesia.

### Currencies of Settlement in Euroclear

<table>
<thead>
<tr>
<th>Region</th>
<th>Country</th>
<th>Currencies of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>Australia (ARS), New Zealand (NZD), Hongkong (HKD), Indonesia (IDR), Japan (JPY), Malaysia (MYR), Philippines (PHP), Singapore (SGD), Thailand (THB)</td>
<td>9 countries</td>
</tr>
<tr>
<td>Europe</td>
<td>EURO (Austria, Belgium, Deutschland, Finland, Greece, Ireland, Italy, Portugal, Spain, Luxembourg, the Netherlands), Norway (NOK), Sweden (SEK), Denmark (DKK), Switzerland (CHF), the United Kingdom (GBP), [Republic of Croatia (HRK), Czech (CZK), Republic of Iceland (ISK), Slovakia (SKK), Estonia (EEK), Hungary (HUF), Lithuania (LTL), Latvia (LVL), Poland (PLN)]*</td>
<td>15 countries</td>
</tr>
<tr>
<td>North/South America</td>
<td>USA (USD), Argentina (ARS), Canada (CAD), Mexico (MXN)</td>
<td>4 currencies</td>
</tr>
<tr>
<td>The Middle South Africa</td>
<td>South Africa (ZAR), [Kuwait (KWD), Israel (ILS)]*</td>
<td>3 currencies</td>
</tr>
</tbody>
</table>

5 See KFIRI(2003) about reasons that ICSDs exclude Korea Won from settlement currencies.
6 The Indonesian rupiah is a currency of settlement in Euroclear, but its use became somewhat restricted after the financial crisis in 1997. The restriction is not due to exchange rate or credit risk to Euroclear.
East & Africa

<table>
<thead>
<tr>
<th>Region</th>
<th>Countries</th>
<th>3 countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>Gold (XAU)**</td>
<td>1 currency</td>
</tr>
<tr>
<td>Total</td>
<td>32 currencies of 42 countries</td>
<td></td>
</tr>
</tbody>
</table>

* Countries in [ ] are not clearing members of Euroclear, but their currencies are designated as currencies of settlement. Russia is a clearing member of Euroclear, but the Russian rouble is not a currency of settlement (Payment is settled in USD). Gold is converted into one of the currencies of settlement and then settled according to its value in the currency in question.

Source: KSD

Even in the case that Asian bonds are deposited into an NCSD of the country of issuance, not in an ICSD, the security and settlement can still be executed through an ICSD. In that case, the ICSD should be linked to NCSDs of individual countries or to custodian banks that are members of NCSDs. Countries that have these linkages with ICSDs are called clearing members. <Table III-2> shows the 31 clearing members of Euroclear as of 2002. Of these, there were seven Asian, 16 European, and four North and South American countries. The two remaining countries were South Africa and Russia.7

In Asia, Australia and New Zealand were excluded, and only seven countries are directly or indirectly connected to Euroclear: Hong Kong, Japan, Singapore, Thailand, the Philippines, Malaysia, and Indonesia, with some restriction on Malaysia and Indonesia. Other Asian countries such as Korea, China, Taiwan, India, Pakistan, are also excluded. The low coverage of Euroclear in the Asian region indicates that there is potential demand for a regional ICSD, and we will take this issue up in the next section.

<Table III-2> Countries with Settlement Linkages to Euroclear

<table>
<thead>
<tr>
<th>Region</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>Australia, New Zealand, Hong Kong, Indonesia, Japan, Malaysia, the9 Philippines, Singapore, Thailand countries</td>
</tr>
<tr>
<td>Europe</td>
<td>Belgium, Finland, France, Germany, Greece, Ireland, Luxembourg, the16 Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Greatcountries</td>
</tr>
</tbody>
</table>

7 This figure includes all the countries linked with Euroclear through specialized depositories, common depositories, or clearing depositories.
### Table III-1: Clearing Members and Currencies of Settlement

<table>
<thead>
<tr>
<th>Country Group</th>
<th>Countries</th>
<th>Number of Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britain</td>
<td>Austria, Italy</td>
<td>4</td>
</tr>
<tr>
<td>America</td>
<td>United States of America, Argentina, Canada, Mexico</td>
<td>4</td>
</tr>
<tr>
<td>Others</td>
<td>Russia, South Africa</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>31 countries (specialized depositary, common depositary, clearing depository included)</td>
<td></td>
</tr>
</tbody>
</table>

Source: KSD

The selection criteria for clearing members are not identical to those for currencies of settlement. All four cases are possible if we compare <Table III-1> and <Table III-2>. First, countries such as Japan and Thailand are clearing members of Euroclear, and their currencies are designated currencies of settlement. Second, Russia is a clearing member of Euroclear, but its currency is not a settlement currency. Third, like Korea, there are countries that are not clearing members and whose currencies are not designated as currencies of settlement. Fourth, countries such as Croatia, Czech, Israel, and Iceland are not clearing members, but their currencies are used for settlement.

### (2) Bilateral Linkages between NCSDs for Cross-Border Settlements

If bilateral linkages can be established among NCSDs, cross-border settlement is possible without ICSDs. In fact, ECSDA (European Central Securities Depositories Association) once proposed bilateral linkage models for cross-border settlement in Europe.\(^8\) <Figure III-2> shows two pan-European bilateral linkage models that ECSDA has studied. One is a Eurolinks Real-time Network model (Spaghetti model), and the other is a European Financial Superhighway (Canneloni model). The former connects all NCSDs with each other, while the latter uses major NCSDs as pivots to connect other small NCSDs. Both models emphasize the need to strengthen mutual linkages among NCSDs.

<Figure III-2> Bilateral Linkage Models of ECSDA

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\(^8\) .wp (2002) discusses two bilateral linkage models for cross-border settlement proposed by ECSDA.
Within Asia, Hong Kong has shown the greatest interest in bilateral linkage models. HKMA (Hong Kong Monetary Authority) has proposed the establishment of AsiaClear, a regional settlement institution, by linking the clearing and settlement systems of member countries in Asia with the same manner as the Internet. That is, HKMA defines AsiaClear not as a single hub institution, but as a common network among individual NCSDs in Asia. Thanks to the advancement in IT technology, HKMA believes that linking NCSDs is now feasible in virtual space. For this reason, the conflict of interests as to where to locate AsiaClear is no longer an issue. In fact, HKMA has been actively pursuing linkages with other Asian countries; now it has the linkages with Australia, New Zealand, and Korea, and soon it will have a linkage with China.

However, there are a number of problems in applying bilateral linkage models to Asia. First, it is an inefficient method compared with settlement through ICSDs. Transaction costs in bilateral linkage models would likely be high as each NCSD has to open accounts in the NCSDs of all counter-parties. Second, these models could only handle securities registered in both NCSDs being used for a transaction. Third, the initial set-up costs of establishing bilateral linkages can be high if countries don't share standardized settlement platforms. However, the most important bottleneck in applying bilateral linkage models

9 HKMA researched on the capacity of financial markets and IT in Hong Kong that enable Hong Kong to function as a financial hub in Asia. See HKMA(1997)

10 See HKMA(1997b-2002) to survey the situation of linkages between HKMA and other NCSDs in Asia

11 Yeong-Suk Park & Jeong-Hoon Hong (2001) discusses the advantage and disadvantage of bilateral linkage models.
is that bond markets in Asian countries are at such greatly varying stages of development
that they cannot be linked to each other. Among Asian NCSDs, only seven countries
(Australia, Hong Kong, Japan, Korea, Malaysia, New Zealand, and Singapore) are using
RTGS (real-time gross settlement) and DVP (delivery versus payment) systems. The only
countries in Asia that are linked to Euroclear are Australia, Hong Kong, Japan, New
Zealand, the Philippines, Thailand, and Singapore. <Table III-3> shows the wide difference
among Asian NCSDs with regard to compliance with the recommendations of G30/ISSA,
which renders the building of bilateral linkages among them difficult. Different legal
systems are another factor. Unlike Europe, where the legal systems of each country are
relatively similar, Asian countries have a much more varied historical background, culture,
and legal systems, which makes it difficult to standardize linkages among Asian NCSDs.

<Table III-3> NCSDs of Asian Countries: Compliance with G30/ISSA
Recommendations

<table>
<thead>
<tr>
<th>Country</th>
<th>Bangladesh</th>
<th>China</th>
<th>Hong Kong</th>
<th>India</th>
<th>Indonesia</th>
<th>Japan</th>
<th>Korea</th>
<th>Malaysia</th>
<th>Pakistan</th>
<th>Philippines</th>
<th>Singapore</th>
<th>Thailand</th>
<th>Taiwan</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTGS</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
<td>No</td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>DVP</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Sheriff</td>
<td>No</td>
<td></td>
<td>No</td>
<td></td>
<td>No</td>
<td></td>
<td></td>
<td>No</td>
<td>No</td>
<td>No</td>
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</tr>
<tr>
<td>CSDs</td>
<td>Yes</td>
<td></td>
<td>No</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
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<td>Payment</td>
<td>Yes</td>
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<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>SWIFT</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* The yellow boxes indicate cases where the recommendations of G30/ISSA are
satisfied.

Source: KSD

Currently, there are few bilateral linkages among Asian NCSDs. Some of these are
between Australia and New Zealand, Hong Kong and New Zealand, Korea and Hong Kong,

12 For more details, see ISSA(2002)
and Japan and Hong Kong. Except for the linkage between Australia and New Zealand, trading volumes are quite minimal, thus indicating that bilateral linkage models are infeasible for the Asian bond markets.

(3) Alternative channels for cross-border settlement

Another way to conduct cross-border settlements is to use a local agent (a custodian) who is a member of the NCSD in the country of issue or a global custodian that employs a local agent as a sub-custodian. Historically, local agents have been used most frequently in cross border settlement, especially when security settlements must be made with countries that have no linkage between NCSDs or between an NCSD and ICSD. However, using a local custodian has one important disadvantage in that investors should designate a separate local custodian for each country where investment will be directed, and sometimes the fees charged by local custodians can be significant. Due to this cost disadvantage, institutional investors have increasingly used global custodians that provide settlement and custody services in multiple markets through a single gateway by integrating services performed by a network of sub-custodians, including its own local branches. Global custodians can have cost advantages through economies of scale and scope. Another important advantage of using global custodians is the availability of integrated multi-currency banking and cash management services as most global custodians are large international commercial banks. Most settlements of Asian securities are made through global custodians, not ICSDs, using international currencies such as the U.S. dollar.

As a matter of fact, the business base of GCs lies in the inefficiency of the international financial market due to differences in the trading, clearing, and settlement systems of each country. GCs provide investors with the convenience of a single interface for their international security transactions. The convenience of a single gateway, however, must be costly since GCs also have to hire local agents themselves. In addition, the quality of their services differs widely by region depending upon the quality of service provided by the local agents.

In the short run, global custodians may be the only viable alternative until the Asian bond markets reach a certain level of development. However, settlement of cross-border security transactions in Asia can be made more efficient if the trading, clearing, and settlement systems of each country can be harmonized. In that sense, establishing an ICSD is a better way of providing settlement for Asian bond markets in the long run than

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IV. Building a regional ICSD: AsiaSettle

This section proposes the construction of a regional ICSD, AsiaSettle, for the development of the Asian bond markets. As seen in section III, it is true that the coverage of the settlement services by existing ICSDs such as Euroclear is very limited in Asia. Nevertheless, it is still important to provide a raison d'être for a new regional ICSD; i.e., it should be readily apparent that the new ICSD can perform better than the existing ICSDs.

[1] Need for a regional ICSD

As most Asian currencies are not internationalized, the payment settlement of Asian bonds denominated in local currencies must be finalized in a local market, even though securities settlement can be done through ICSDs located in Europe. However, due to the time difference between Europe and Asia, real-time settlement of Asian bonds is impossible, and there have calls to establish a regional ICSD within Asia, the third time zone, in order to cover the non-business hours of the two other time zones; Europe and the Americas.

To illustrate the third time zone problem, consider the settlement process of an Asian bond that is denominated in Hong Kong dollars. Hong Kong is seven hours ahead of Brussels, where Euroclear is located. Assume that the settlement date of the bond is October 2\textsuperscript{nd} in Brussels. In order to finalize the settlement by that date, Euroclear currently mandates that a buyer and a seller deposit money and security in a common depository of Euroclear in Hong Kong, HSBC bank, by October 1\textsuperscript{st}, which is a day before the settlement date. After getting notification from HSBC overnight, Euroclear Bank in Brussels completes the security settlement by 9 a.m. on October 2\textsuperscript{nd} (4 p.m. in Hong Kong). Then, a seller in Hong Kong can withdraw Hong Kong dollars, and the settlement can be finished by October 2\textsuperscript{nd}.

Instead of depositing money and securities a day before the settlement date, if a buyer and a seller want to settle securities by using the RTGS system on October 2\textsuperscript{nd} in Belgium time, the seller may not be able to withdraw money by October 2\textsuperscript{nd}. For example, by the time the RTGS settlement is completed by 3 p.m. on October 2\textsuperscript{nd}, it is already 10 p.m. in Hong Kong, and the bond seller has to wait until the next day to withdraw his/her money. This is one reason why Euroclear mandates that traders deposit money and securities a day

\[14\text{ For the detailed settlement procedure, refer to Euroclear(2003)}\]
in advance of settling bonds that are denominated in Asian currencies. Otherwise, it cannot secure a settlement date. If bonds are denominated in European currencies or the U.S. dollar, security and payment settlement can be completed on the same day through the RTGS system as there is no time difference, and the time difference between Europe and the Americas works in favor between security settlement and payment settlement. The time zone problem implies that investors have to bear the extra cost of losing liquidity for a day when trading Asian currency-denominated bonds. If there is a regional ICSD within Asia, investors will not face this extra cost. The benefit of solving the third time zone problem can be significant considering that major investors for Asian currency-denominated bonds are institutional investors located in Asia.

In addition to the time difference problem, there is another reason for establishing a regional ICSD, AsiaSettle. As previously discussed, the low coverage of ICSDs in Asia is partly due to the existence of complex regulations and legal uncertainties in local markets in Asia in cross-border trading. Setting up AsiaSettle through the cooperation of Asian governments offers a great opportunity to open domestic markets and harmonize regulations across Asia. Existing ICSDs are private entities, and Asian governments have had no incentive to ease regulations to increase business flows for them unless doing is very much in their national interests. However, building a regional ICSD is currently being discussed under the consent of Asian governments as a way of promoting Asian bond markets. AsiaSettle can be an effective catalyst in easing regulations and opening up local markets in Asia, and consequently in developing the Asian bond markets.


In building an ICSD, the relation between the ICSDs and NCSDs is a key issue. There are two models available. One is a hub and spoke model where an ICSD plays the role of hub and the NCSDs are spokes that are linked to the hub as sub-depositories. The advantage of the hub and spoke model is the low set-up costs since the existing settlement infrastructure can be fully utilized. However, the model cannot be readily implemented since every NCSD naturally wants to be a hub and no one wants to be a spoke. The second model is a merger between ICSDs and NCSDs, as in the case of the merger between Euroclear and Sicovam in France. Sicovam was an NCSD of France, but it became a subsidiary of the Euroclear group after the merger with Euroclear and changed its name to "Euroclear France." But the merger of Euroclear and Sicovam was on an equal footing.
Euroclear France is entitled to handle cross-border as well as domestic settlements.\footnote{\textsuperscript{15} \textsuperscript{2002} and Euroclear\textsuperscript{1999} discusses two models of Euroclear.}

Judging from the experience of existing ICS\textsuperscript{D}s, the horizontal relationship model between AsiaSettle and NCSDs seems to have the advantage of inducing political and business support from NCSDs. However, unlike Euroclear, which is for the most part indirectly linked to Asian NCSDs, AsiaSettle must build direct linkages to reduce transaction costs. The public characteristics of AsiaSettle can be a positive factor in building the direct linkages to NCSDs, considering Asian governments’ interest in promoting the Asian bond markets.\footnote{\textsuperscript{16} Direct linkage means the case when an ICSD has its own omnibus account in a local NCSD. Indirect linkage means the case when an ICSD is linked to a local NCSD through the third party such as specialized or common depository. It is more common for Euroclear to have indirect linkages with NCSDs.} There can be two different models for direct linkages. In both models, local NCSDs are sub-depositories of AsiaSettle for securities settlements and deposits. However, the two models are different in the way that payments are settled. One has linkages with custodian banks, and the other has linkages with central banks.

(1) Model I: Direct Linkages with NCSDs and Custodian Banks

\textless \textsuperscript{Figure IV-1} \textgreater \ Model 1: Direct Linkages with NCSDs and Custodian Banks

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\cite{2002,1999} discusses two models of Euroclear.
(2) Model II: Direct Linkages with NCSDs and Central banks

<Figure IV-2> shows the second model, and this is the one we prefer. As in Model I, local NCSDs are linked with AsiaSettle for securities settlements and deposits, but central banks are directly linked with AsiaSettle for payment settlements. In other words, a local NCSD becomes a member of the payment system of its central bank, and the NCSD processes the payment settlements with AsiaSettle through its central bank, not custodian banks. Needless to say, investors' custodian banks should have accounts at the NCSD. Compared with Model I, the use of central banks has many advantages. When a payment is settled through custodian bank, settlement risk depends partly on the bank's credit rating. And the settlement cannot be guaranteed until payment goes through the central bank's system. When payment is settled through a central bank, on the other hand, the payment settlement is guaranteed and the period of settlement can be reduced. In fact, the use of central banks’ DVP systems in securities settlement has been increasing. In the U.K., CrestCo has started to use the DVP systems of central banks since November 2001, and the payment settlements for OTC trading in Korea have been handled through the DVP system of the Bank of Korea since 1999.\(^\text{17}\)

<Figure IV-2> Model II: Direct Linkages with NCSDs and Central Banks

In order to implement Model II, each central bank should have an account at each of the other central banks. The problem is that non-residents are not usually allowed to have memberships in central banks’ payment systems, though many central banks are now becoming members of the CLS (continuous linked settlement) Bank to reduce the risk in

\(^{17}\) For a detailed explanation about the securities settlement in OTC trading in Korea, see KSDA(2003)
foreign exchange settlement.\textsuperscript{18} Currently, seven countries' currencies - USD, JPY, Euro, GBP, CHF, ARS, CAD - are designated as settlement currencies of the CLS bank. By the end of 2004, Korea, Hong Kong, New Zealand, and Singapore are expected to have CLS Bank memberships. When becoming a member of the CLS Bank, each central bank has to open its system to foreign central banks. This process will definitely facilitate the implementation of Model II in Asia.

(3) Strategic Development Plan using Government Bonds

Given the small size of the Asian bond markets, some minimum level of flows for AsiaSettle must be generated, particularly in the incipient stage. Cross-border settlement for government bonds seems to be the ideal business model for AsiaSettle. In other words, Asian countries can designate AsiaSettle as a settlement and depository institution for government bonds issued on offshore markets to ensure adequate business flows to AsiaSettle. This proposal is based on the realistic expectation that the corporate bond market in Asia will not grow fast enough to make AsiaSettle profitable, considering the low corporate credit ratings. Governments will inevitably have to assume a leading role in developing the Asian bond markets during their early stage. In addition to generating adequate flows, AsiaSettle may reduce government financing costs by expanding the investor base for Asian government bonds. Issuance of local currency-denominated government bonds reduces the currency mismatch problem and, therefore, the possibility of the recurrence of a financial crisis.\textsuperscript{19}

If cross-border settlement of Asian government bonds becomes a main business of AsiaSettle, then it makes more sense to directly link the central banks to AsiaSettle as proposed in <Figure IV-II>. <Table IV-1> summarizes the current settlement system of government bonds in Asia.\textsuperscript{20} In many cases, NCSDs are providing clearing, security settlement, and depository services for government bonds, but it is mainly the central banks that are responsible for payment settlement for them. Because the central banks have

\textsuperscript{18} The CLS Bank fulfills a CCP (central counterparty) role for clearing for FX settlements. For more information, refer to Loader (2002).

\textsuperscript{19} There are many cases in which government bonds are deposited and settled through ICSDs. Island is outsourcing government bond issuance to Euroclear. Because the NCSDs of Belgium, France, the Netherlands, and the U.K. are merged with Euroclear group, Euroclear is a depository of the government bonds of these countries.

already been providing settlement services for government bonds, it would be a natural choice to link them to AsiaSettle.

V. AsiaSettle as a CCP

As financial markets have grown and become more international, the supporting components of the infrastructures - clearing, settlement, and depository - have increasingly been integrated. To take advantage of the benefits of a latecomer, it seems best to set up a subsidiary of AsiaSettle, AsiaCCP, to provide CCP (central counterparties) services for the clearing of government bonds.

A CCP is a special financial institution which stands between the seller and buyer in each trade. It replaces the original contractual obligations to deliver and to pay with
equivalent obligations with the CPP. As a result, the CCP replaces several counterparty exposures with a single one and reduces settlement risks. A CCP can benefit the capital markets by offering standardized processing that translates into lower operating costs, and anonymity among participants. Moreover, a CCP minimizes the value and volume of settlements through multilateral netting. For example, the gross amount of security settlement at the DTCC in the U.S. in 2000 was about 722 billion U.S. dollars, but after multilateral netting, the net amount of settlement shrank to only 22 billion U.S. dollars. The netting of offsetting transactions can significantly reduce counterparty risks in securities trading.

By providing CCP services for government bond settlement, AsiaSettle can enhance the efficiency of the Asian bond markets and differentiate itself from the other ICSDs. In particular, the multilateral netting function of AsiaSettle is expected to reduce FX transaction costs in settling Asian bonds denominated in Asian currencies. As most Asian currencies are not internationalized and are highly volatile, it is more likely that the payment settlements for Asian bonds will be mediated by international currencies such as the U.S. dollar, as shown in Figure III-1. However, if CCP services are provided, the volume of FX transactions can be reduced significantly through multilateral netting, and settlement costs can be significantly lowered.

Of course, there is also a downside in introducing a CCP function. AsiaSettle has to bear settlement risks, so the establishment of an efficient risk management system is important. As far as possible, AsiaSettle should be structured so that participants retain incentive to control risk. The house rules for allocating losses should be transparent. It should have adequate working capital to maintain high credit ratings, etc. These are the reasons we propose that AsiaSettle should provide CCP services only for government bond trading in the beginning. This strategic approach can contain the business risks of AsiaSettle within a manageable bound in the early stage of development. Also, government bonds are relatively easy to standardize and an ETS (electronic trading system) can be easily introduced. We propose that AsiaSettle establish an ECN (electronic communication network) for Asian government bond trading and provide CCP services for it.

There is also a reason AsiaCCP should be set up as a subsidiary of AsiaSettle, not as an independent institution. In the CCP industry, economies of scale are important. The higher the volume of transactions, the greater the gains from multilateral netting.

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21 This is known as "novation." DTCC(2000) has an overview of the current development of the CCP industry.
22 The DVP system can also reduce the risks of settlement, but it cannot effectively cover replacement risk. A CCP can cover principal as well as replacement risk.
23 Clearing institutions of major European countries such as LCH, Clearnet, Eurex Clearing provide CCP services on government bond trading.
However, the expansion of a CCP’s multilateral netting inevitably reduces the total volume of securities settlement and, therefore, the business opportunities of ICSDs. This conflict of interest discourages ICSDs from supporting independent CCPs or having linkages with them. Recently, however, ICSDs have tended to invest in CCPs to internalize the conflict of interest. For example, Euroclear possess 20% of Clearnet, a CCP of EuroNEXT, and DTCC in the U.S. owns several CCPs such as FICC, NSCC, and EMCC as subsidiaries.24

VI. Governance Structure of AsiaSettle

The ownership and governance structure of an ICSD has a significant effect on its modes of operation and business flows. The existing ICSDs such as Euroclear, Clearstream Banking, and SegaInterSettle have different governance structures with different advantages and disadvantages. In this section, we review the governance structure of the existing ICSDs and DTCCs and seek to determine the best possible governance structure for AsiaSettle.25

Euroclear, the Europe’s largest ICSD, has a unique governance structure. It is owned and governed by the financial institutions that are the users of its depository and settlement services. The users determine such important business matters as the levels of fees to be charged and the types of securities to be handled. The market governance and ownership structure of Euroclear has the major advantage of providing the owners incentive to use the services of Euroclear, thereby generating business flows. However, the user governance of Euroclear makes it difficult to manage conflicts of interest and establish linkages with the NCSD or the central bank of each country. Also, since Euroclear is a private institution, its credit rating is partly determined by the country’s credit rating where it resides, though Euroclear has been able to maintain a high credit rating due to the payment guarantee from Morgan Bank.

Clearstream Banking was created by the merger between Cedel of Luxemburg and DBC, an NCSD of Germany, in January, 2000. Cedel became Clearstream Banking Luxemburg (CBL), and DBC became Clearstream Banking Frankfurt (CBF). Both are 100% owned by Clearstream International Holdings, a holding company. Like Euroclear, the major shareholders of Clearstream Banking are the financial institutions that are the users of the

24 FICC, NSCC, and EMCC stand for Fixed Income Clearing Corporation, Government Securities Clearing Corporation, and Emerging Markets Clearing Corporation, respectively.
25 Refer to Euroclear(2002b) for the governance structure of ICSDs.
ICSD services. However, Clearstream Banking is different from Euroclear in that most of its owners are European custodian banks.

SegaInterSettle (SIS), the third biggest ICSD after Euroclear and Clearstream, was established by Swiss custodian banks to provide global settlement and custody services at lower cost. It functions as both the domestic CSD for Switzerland and an ICSD. Swiss Financial Service Group, the holding company of SIS, has 160 shareholders, most of whom are Swiss custodian banks. UBS and Credit Suisse currently hold 55% of the outstanding shares of SIS. The fact that the shareholders of SIS are custodian banks of a single country distinguishes SIS from other ICSDs with multinational shareholders. The limited shareholder base may limit the business opportunities of SIS.

Lastly, DTCC of United States is not an ICSD, but it has a unique governance structure. DTCC, a holding company, has both securities depository and clearing houses as subsidiaries. It is a good example of vertical integration of securities depositories and clearing houses. In contrast, horizontal integration of exchanges, securities depositories, and clearing houses is increasingly common in Europe. The major shareholders of DTCC are banks, securities companies, exchanges (NYSE, AMEX), and NASD.

Vertical integration of CSDs and CCPs is useful because there are conflicts of interests between these two functions. There are economies of scale in the provision of CCP services because the benefit from multilateral netting increases as the range of transactions covered by a CCP increases. However, the increased coverage of CCPs reduces the volume of settlements, thereby reducing the business volume of CSDs. For the CCP to increase its coverage of transactions without objection from the CSDs, the ownership structure should be such that the benefit from increased coverage of CCPs can be shared by CSDs. The vertical integration of CSDs and CCPs provides a way to share profit.

After considering the pros and cons of the governance structures of existing ICSDs, it seems best for AsiaSettle to be a public institution rather than a private one. In order for AsiaSettle to become a clearance institution and carry on CCP functions, rather than only ICSD functions, it needs to have a high credit rating. However, if AsiaSettle is established as a private firm, its credit rating will depend partly on the credit rating of the country in which it is located, and the selection of the countries will be the subject of much political and diplomatic dispute. With this in mind, two alternatives may be considered for the governance structure of AsiaSettle.

(1) Governance Structure 1: Co-investment of NCSDs and Central Banks

The first alternative, shown in <Figure VI-1>, is to establish AsiaSettle with central
banks and NCSDs as shareholders and to establish AsiaCCP as its subsidiary. The advantage of this structure is that the linkage with the central banks and the NCSDs will be easier. Also, if the clearance of government bonds is the main business of AsiaSettle, the existing government bond settlement infrastructure through central banks can be used effectively. Also, if NCSDs and central banks become the shareholders of AsiaSettle, the credit rating of AsiaSettle should improve.

The disadvantage of this alternative is that it will be hard for AsiaSettle to become a multilateral agency since most NCSDs are not necessarily public institutions. In addition, the shareholders are not the actual users of the system, so it cannot expect the benefits of user ownership and governance. There might, therefore, be limitations on attempts to improve the system, and its efficiency might not be as high as that of private institutions. In other words, investment by the public sector is positive with regard to the public interest, but has a negative effect with respect to the business. In addition, the credit rating of AsiaSettle could not be higher than that of its host country, unless there is a payment guarantee by the central banks.

(Figure VI-1) Governance Structure 1: Co-investment of NCSDs and Central Banks

(2) Governance Structure 2: Multilateral Agency

The second alternative, shown in <Figure VI-2>, is to establish AsiaSettle as an international financial institution financed by the central banks or the governments of Asian countries. If it is established as an international institution, AsiaSettle will not be affected by one particular country’s credit ratings, so its credit rating may be higher, and there is greater possibility of credit guarantee by the governments. Moreover, the linkages between AsiaSettle and NCSDs will be easier to make. However, as explained before, the exclusion
of private capital may mean lower efficiency than otherwise, and user convenience will be affected by the international institutionalization.

No matter which alternative is chosen, the governance structure must be that which maximizes the cooperation of each Asian country. AsiaSettle should be created either by co-investment by each government, NCSD, or central bank, or by an international institution, and it should possess its own funds in order to maintain a high credit rating.
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