

The Promotion of BAHTNET on Financial Market Development in Thailand

1. The Bank of Thailand (BOT) has developed BAHTNET (Bank of Thailand Automated High-value Transfer Network) system as a financial infrastructure for electronic funds transfer among financial institutions and other organizations in Thailand. The BAHTNET system has been in operation since 24 May 1995 by supporting high-value funds transfer on the online Real Time Gross Settlement (RTGS) basis. The transactions are completely settled on a transaction-by-transaction basis in order to reduce the settlement risk and more importantly, to enhance financial stability.

2. The BOT has realized the importance of strengthening the government's domestic securities market resulting in the development of the BAHTNET system by enhancing the facility for the settlement of Thai government securities, in which the BOT is a registrar, on a real time basis and in a Delivery Versus Payment manner called RTGS-DVP. Moreover, to promote the system efficiency, S.W.I.F.T. (Society for Worldwide Interbank Financial Telecommunication) Network has been used as the main interface for sending and receiving messages of funds transfer and securities transfer between BAHTNET members and the BOT.

3. The enhanced BAHTNET system has been in operation since 11 December 2001

1. The payment before the BAHTNET implementation

4. Prior to the BAHTNET implementation, the payment among financial institutions such as interbank borrowing and lending, foreign exchange transaction, securities trading, funds transfer for nonresident baht account, as well as, individual payment or payment between organizations, mainly has been executed by cheque. However, the payees cannot receive their funds within the same day because of cheque clearing procedure, which will be the next day finality.

BOX 1 Cheque Clearing Procedure

Cheque clearing procedure has been operated by Electronic Clearing House at the Bank of Thailand (BOT) through Electronic Cheque Clearing System (ECS). ECS calculates net clearing position and operates interbank settlement on multilateral net settlement basis. After calculating net clearing position of all transactions, the commercial banks' accounts at the BOT will be debited or credited according to their net clearing positions. However, credited banks will not be able to use the transferred funds until after the return round of settlement in the next day (next day finality).

5. Payment by cheque causes various risks such as;

- Settlement risk: the risk that debited banks fail to meet their obligations; for instance, temporary liquidity shortage (Liquidity risk) or being insolvency (Credit risk). These lead to the settlement failure.
- Systemic risk: the risk that the failure of one participant in an interbank funds transfer system or securities settlement system to meet his required obligations will cause other participants to be unable to meet their obligations as the chain reaction. This affects the economic condition in Thailand. The BOT, as the regulator and facilitator of payment systems in Thailand, greatly concerns how to control the systemic risk.
 - Operational risk: the risk that caused by the numerous process of cheque clearing which associates with manual procedure and then leading to the information inaccuracy.

6. Using cheque for payments does not cause only various risks but also creates higher costs. According to the study report of Payment Systems Pricing and Usage¹ Project in 2000, the cost of using cheque for payments within Bangkok and its vicinities is significantly ranked from 26.0 to 30.3 baht per each

¹ The project of payment system pricing and usage is studied and presented by the Bank of Thailand on 30 June 2000. Thailand Development Research Institute (TDRI) is the consultant of the project. Besides, Thai Bankers Association and Foreign Banks' Association are also involved.

2. BAHTNET and Risk Reduction in Payment System

7. The BOT, as a central bank, is responsible for maintaining the price stability and the financial stability simultaneously, and more importantly performing the roles in payment systems.

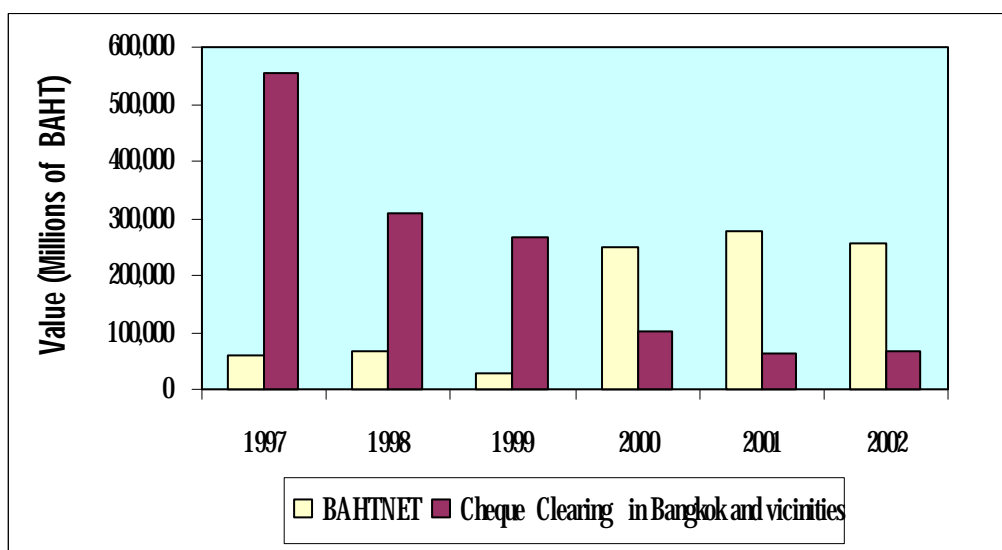
8. To minimize risks and enhance the efficiency of payment systems, the BOT has continuously developed the BAHTNET system as a financial infrastructure for an electronic high-value funds transfer including interbank funds transfer and third party funds transfer on RTGS basis, and for Thai government securities transfer on RTGS-DVP basis.

2.1 The scheme to encourage the BAHTNET system for payment instead of cheque usage for high-value payment

9. The BAHTNET system provides finality and irrevocable funds transfer across the accounts of members held at the BOT. The transaction via the BAHTNET system will be settled or finalized immediately if the transferor's account has sufficient funds and then the transferee's account will be credited instantaneously, which will be further processed to his customer's account. This minimizes the settlement risk and the systemic risk exceedingly compared to cheque payment.

10. However, the volume of transaction via the BAHTNET system was not much active after BAHTNET has gone live in the first period since a cheque usage still be popular for commercial banks to disburse their obligations; especially in high-value payments, which are interbank borrowing and lending, foreign exchange transaction, securities trading and funds transfer to nonresident baht account. In this regard, the proportion of total value of the four types of interbank transaction mentioned above is quite high, which is approximately 80 percent of total value of cheque clearing transactions in Bangkok and its vicinities. Thus, the BOT has enforced commercial banks to settle those four types of interbank transactions via BAHTNET since 10 March 2000 in order to reduce the amount of cheque usage for high-value payment, which effects majority risks in payment system. Due to the enforcement, the amount of cheque usage for high-value payment has been extremely reduced.

Figure 1: The value of funds transfer via BAHTNET compared to cheque clearing in Bangkok and its vicinities (daily average)



Source: Payment Systems Group, Bank of Thailand

Note: In 2002, average statistic data is between January and June

11. Figure 1 shows that cheque usage has a majority role in payment of the country during 1997 - 1999. After the BOT has enforced commercial banks to settle four types of interbank transactions via BAHTNET in 2000, daily average value of cheque payment rapidly decreases from B267,392 million in 1999 to B102,984 million in 2000 whereas daily average value of funds transfer via BAHTNET increases almost tenfold from B26,949 million in 1999 to B250,542 million in 2000. This demonstrates that the enforcement in 2000 is able to obviously reduce cheque usage and minimize risk in payment system. Besides, daily average value of funds transfer via BAHTNET in 2001 and during January - June in 2002 are at the same level as that of 2000, which are B278,180 million and B255,610 million, respectively.

12. In addition, total funds transfer within the country is decreased consecutively during an economic slowdown (since 1998). As a consequence, daily average value of total business transactions through both cheque usage and the BAHTNET system was driven towards the same direction, decreasing from B612,163 million in 1997 to B376,581 million and B294,342 million in 1998 and in 1999, respectively. Besides, daily average value of total transactions through both payment manners from 2000 to 2002 (January-June 2002) are at same level but slightly increase

from that of 1999, which are B353,525 million, B339,888 million, and B323,156 million, respectively.

2.2 The development of a real time Delivery Versus Payment (DVP) for the government securities market

13 Prior to the implementation of the BAHTNET system on RTGS-DVP basis, the settlement could be made by cheque, which has the finality one-day after completely delivering the securities to counterparty. This causes the principal risk to sellers.

14 The BOT then developed a real time delivery versus payment system or RTGS-DVP to serve as an infrastructure for the government securities market and more importantly to eliminate the principal risk. According to RTGS-DVP basis, the delivery of securities occurs if and only if the payment occurs.

15 Securities settlement on RTGS - DVP manner is a crucial infrastructure for the development of Thai government securities market because government securities can be used as major instruments for pursuing monetary policy and liquidity management as well as stabilizing the interest rate in money market. Due to the economic crisis in 1997, government securities have increasingly been issued. Total outstanding of government securities is then skyrocketed four times from B359,158 million at the end of 1997 to B1,407,837 million at end-June 2002.

16 The daily average securities transfer value via the BAHTNET system during January - June 2002 is approximately B4,100 million.

2.3 Risk management on equity settlement

17 According to the equity settlement prior to 8 September 2000, funds transfer must be settled by cheque whereas the equity's ownership transfer operated by Thailand Securities Depository Co., Ltd (TSD). This also causes the credit risk to sellers.

18 TSD and the BOT work closely to encourage the use of the BAHTNET system for the equity settlement. Basically, debited institutions will transfer their funds to TSD, which acts as a clearinghouse in order to transfer those funds consecutively to credited institutions. In case that both debited and credited institutions are not BAHTNET members, they must directly contact their respective commercial banks which are BAHTNET members to act as their settlement agents. The

ownership transfer and funds transfer will be settled simultaneously by the net position at the specified time (DVP Model 3: Net-Net²).

19. The risk management scheme as mentioned above together with rules and regulations defined precisely as well as the finality of funds transfer among members occurred at the BOT can eliminate the credit risk and the liquidity risk. Also, this conforms to the international standard of BIS Core Principles for Systemically Important Payment Systems.

3 BAHTNET and the Efficiency in Payment System

20. The BAHTNET system not only minimizes risks in payment system but also enhances the efficiency in payment system for various reasons as follows;

3.1 Economic Efficiency

21. The BAHTNET system can greatly reduce the transaction cost compared to the cheque usage. The use of cheque creates various kinds of cost such as the issuing cost, the collection cost, the timing cost, the unwind³ cost, and importantly the opportunity cost from holding funds in the system for the next day finality of cheque collection. On the contrary, the settlement through the BAHTNET system is real time finality of which funds need not be withheld in the system which beneficially supports the money circulation in the financial system. Furthermore, to assist BAHTNET members in managing their accounts more effectively, the system allows them to access information concerning their cash and securities account at the BOT anytime during the service hours via BAHTNET Web Service. This helps BAHTNET members to manage their liquidity effectively.

22. Using S.W.I.F.T. network as the main interface in the BAHTNET system allows the integration of future services such as the future cross-border linkages with other foreign payment systems. This enhances the efficiency of the Thai economy.

² DVP Model 3: Net-Net is the settlement model of funds transfer and instruments transfer simultaneously by the net position at the end of the day or at the end of the execution period. The transaction will be settled completely if there are sufficient funds and sufficient instruments in both accounts.

³ Unwind is the situation that some financial institutions in the cheque clearing system are facing with the liquidity shortage and unable to cover their net position resulting in the recalculation of net position of cheque clearing by excluding the doubt cheque of those financial institutions.

3.2 Operational Efficiency

23 To facilitate all financial institutions, the BAHTNET system has been modified by using S.W.I.F.T. network as the main interface to enable Straight Through Processing (STP) and to be consistent with international best practice. STP can support the operational efficiency by facilitating the information inputs and sustaining the large amount of business transactions. This creates an economy of scale. In addition, the executed information by STP can be used immediately for further process resulting in the reduction of the paper-based operation, operational error and timing, especially the securities transaction. Securities transaction prior to the BAHTNET implementation on RTGS-DVP basis, buyers and sellers must settle their obligations, both funds (cheque usage) and securities sides, over the counter at the BOT.

BOX 2 BAHTNET members total 64 institutions as of 30 June 2002

Thai Commercial Banks	12	Institutions
Foreign Commercial Banks	19	Institutions
Specialized Financial Institutions	6	Institutions
Finance Co., Securities Co., and Finance & Securities Co.	17	Institutions
BOT Internal Departments	7	Institutions
Government Agency	1	Institutions
Others (Thai Securities Depository Co. Ltd. and Thai Assets Management Corporation)	2	Institutions

4 Liquidity Management

24 In order to accommodate intraday liquidity needs arising from the RTGS mechanism, which results in an instantaneous transfer from the sending institution's account to the receiving institution's account, the BOT thus provides mechanism and facility to minimize liquidity needs in the system as following:

4.1 Queuing Mechanism

25 Queuing Mechanism is the mechanism that keeps instructions received from members, either for execution or to wait for settlement depends on whether there are sufficient funds or sufficient securities in the account. In addition, the sending institution can rank their own queues

for settlement, both funds and securities queues, through their workstations which is beneficial to liquidity management.

4.2 Gridlock Resolution

26. Gridlock Resolution is the mechanism that solves the problem when a batch of transfer instructions cannot execute due to insufficient funds in the current account. When several instructions from various institutions stand in the queue, the system will search for the group of instructions and calculate the net position of each institution. If the net balance of each related institution is positive, the system will then process all the related instructions simultaneously. This would reduce the liquidity needs in the system

4.3 Intraday Liquidity Facility:

27. ILF is a collateralized liquidity facilities provided to financial institutions. This facility must be backed up by government securities as the collateral. The BOT allows its members for the unlimited amount of liquidity depending on the collateralized government securities, especially without any charges during the day. However, ILF usage is subjected to the restriction that all used funds must be returned at the end of the day. If funds are not returned on time, the outstanding amount will be treated as an overnight loan and charged at a penalty rate which is policy rate (repurchase 14 days) plus 1.5 percent per year

28. In order to ensure enough liquidity of financial institutions for high-value payment via the BAHTNET system, the BOT has set up the conditions regarding the allocation of ILF such that BAHTNET members who have daily average value of funds transfer over B500 million must have an allocated ILF credit line not less than 10 percent of the average value of funds transfer in the BAHTNET system of the same fortnight of last month. If any BAHTNET members cannot meet the conditions, they will be charged 3 times of normal rate of transaction fee.

29. ILF is the facility to support the liquidity management and to avoid congested traffic of instructions in the settlement process of the BAHTNET system. Request for ILF may be normally inactive when liquidity is high in the economy. Conversely, when there is liquidity shortage in the economy, ILF usage will be very essential. This may cause the overnight ILF or used funds to be overdue. In fact, the behaviour of the BAHTNET members on the needs of ILF can be defined as

a key indicator of the liquidity shortage of financial institutions; and as the protection measurement of the impacts on economic performance of the country.

30. However, BAHTNET members who have an allocated ILF not less than 10 percent of the average funds transfer value as regulated can request the use of cheque clearing credit balance for returning funds in ILF and for BAHTNET transactions.

4.4 The motivation of early sending of transfer transactions

31. For the purpose of the motivation of early sending of transfer transactions into the system, the BOT has regulated all BAHTNET members who have a daily average funds transfer value over B500 million to send funds transfer instructions at least 30 percent of the average funds transfer value in the BAHTNET system of the same fortnight of last month prior to 12.00 p.m. and at least 70 percent prior to 3.00 p.m.

32. Besides, the BOT has set the attractive price for the transaction fee in order to motivate an early sending of transfer transactions into the system. The early time-zone starts at 8.30 a.m. - 12.00 p.m. with the transaction fee of 5 and 8 baht per transaction for instructions sent through S.W.I.F.T. Network and BAHTNET Web Services, respectively. During 12.00 p.m. - 4.00 p.m., which is the second time-zone, payment instruction will be charged at 10 and 16 baht per transaction while securities instruction will be charged at 10 and 13 baht per transaction for S.W.I.F.T. Network and BAHTNET Web Services, respectively. The third time-zone starts after 4.00 p.m. with flat fee of 200 baht per transaction regardless of type of instruction or channel of sending.

5. Conclusion

33. The Bank of Thailand developed the BAHTNET system to be the financial infrastructure supporting Thailand's financial market, including minimize risks in payment system. Those will be factors in maintaining financial stability and strengthening Thailand's payment system. Moreover, the high-value payment on RTGS basis and RTGS-DVP manner can minimize both financial risk and non-financial risk, which is consistent with the BIS Core Principles. Besides, the mechanisms in the BAHTNET system significantly enhance the efficiency, the expedience, and importantly the assured security in money market and capital market and hence strengthen the effectiveness of pursuing monetary policy of the BOT.