The Middle and Back-Office Services Supporting Rapid Growth in China's Mutual Fund Market

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I. Introduction

China's mutual fund market is growing rapidly[1]. China established rules regarding mutual funds targeting securities investments in 1997[2], the year that the establishment and sale of such funds really began. Rules for open-end mutual funds were set in 2000, and the first such fund was established in 2001. Since then, the rapid growth in China's market has been driven primarily by open-end mutual funds. China's mutual fund market at the end of 2007 totaled Rmb3.2831 trillion in net assets, of which Rmb236.5 billion was in closed-end funds and Rmb3.0466 billion in open-end funds (including Rmb108.4 billion in QDII funds[3]).Year-on-year growth in assets to end-2007 was 280%, versus only 80% to end-2006. Although a large reason for the growth in net assets was rising share prices, the SSE Composite Index only increased 97% that year, and thus much of the growth was from the inflow of funds. Another obvious factor is the growth in the number of mutual fund accounts, which went from 1.47 million accounts at end-2005 to 3.72 million at end-2006, and then increased by a factor of 7x to 26 million accounts during 2007. This is rapid growth, even when compared against the annual 50% increase in the number of stock trading accounts in 2007 (Figure 2)[4].

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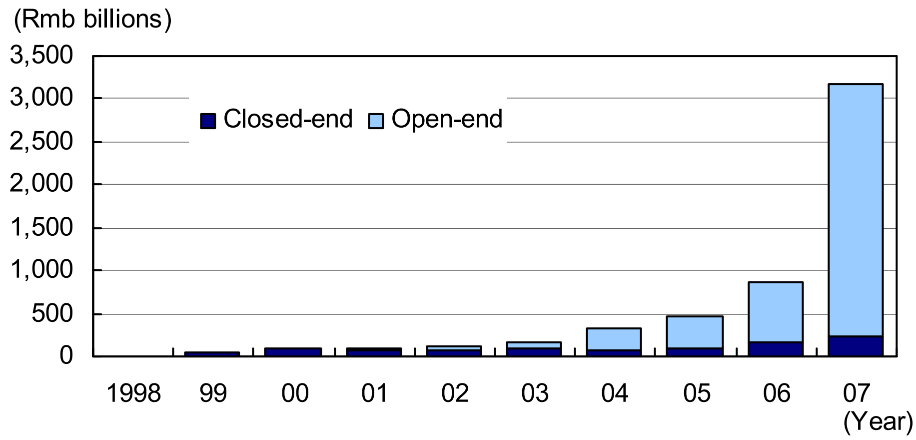
1 For more on China's asset management industry, see Takeshi Inoue and Eiichi Sekine, *Chugoku no Nenkin Seido to Shisan Un'you Gyoukai* (China's pension system and asset management industry), *Zaikai Kansoku*, Fall 2006 (in Japanese). For more on China's mutual fund industry, see Nomura Institute of Capital Markets Research, editors, *Chugoku Shouken Shijou Taizen* (All about the Chinese securities market), Nihon Keizai Shimbun Shuppansha, 2007 (in Japanese).

2 China established and distributed its first mutual fund in 1991.

3 QDII stands for Qualified Domestic Institutional Investors, and is normally pronounced "cue-dee."

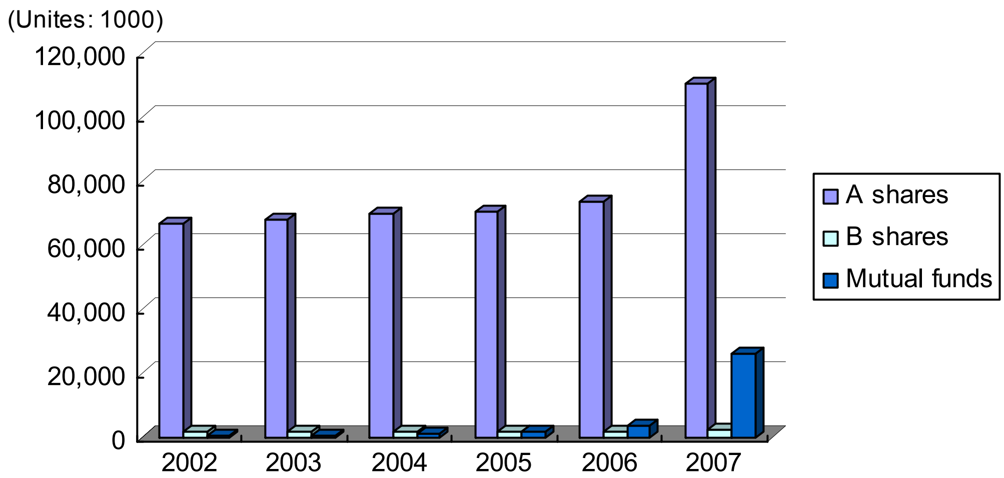
4 The results of an investor survey on mutual funds, taken by the Securities Association of China, provide evidence that mutual funds are becoming more common among people in their 30s and among low-income groups.

Figure 1: Mutual fund net assets



Note: Net assets also include qualified domestic institutional investors (QDII)
Source: Nomura Institute of Capital Markets Research, based on data from CSRC and Wind Information

Figure 2: Number of securities accounts in recent years



Source: Nomura Institute of Capital Markets Research, based on data from CSDCC

The infrastructure supporting this rapid growth in the mutual fund industry consists of middle and back-office services and systems related to mutual fund establishment, distribution, redemption, investing and reporting, the most important of which are fund accounting systems and their supporting transfer agent (TA) systems. Fund accounting consists of ensuring that the daily reconciliation with NAV[5], the creation of legally required ledgers, results processing, and the creation of documents for external reporting are all done accurately and error-free. These services result in an exchange of information among the fund management firm, distributors (securities

5 NAV indicates the market price of mutual fund shares, and stands for net asset value, which is net assets divided by the number of shares. NAV is the basis upon which mutual fund shares are bought and redeemed, and thus calculated and announced every business day.

houses and banks), stock exchanges, clearing and settlement institutions, and custodian. Although the accurate and consistent performance of these services may be taken for granted, if a mistake does occur, it could cause market participants to lose confidence in the market, and thus the importance of these services cannot be overemphasized.

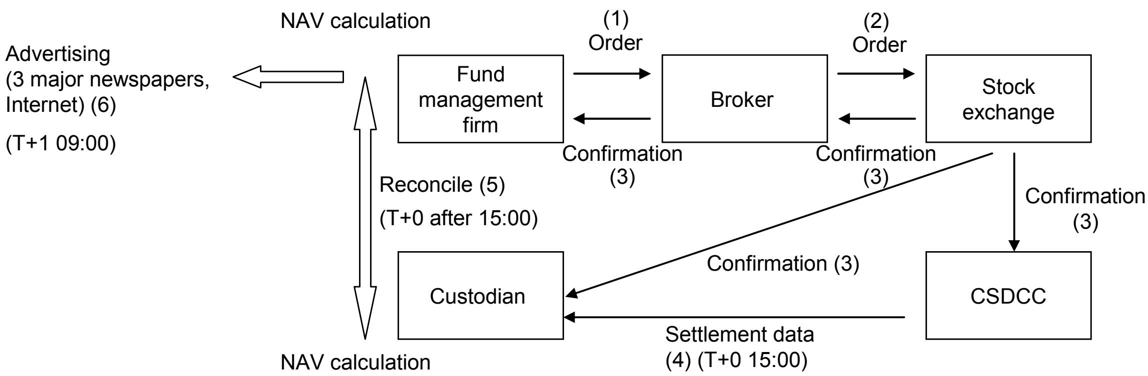
In this paper, we examine the overall framework and specifics of the middle and back-office services that support the rapid growth of China's mutual fund market[6].

II. Middle and back-office services in China's mutual fund industry

1. Workflow until NAV calculation and announcement

We start by looking at the workflow from the perspective of middle and back-office services at the fund management firm, specifically those fund accounting tasks related to NAV calculations. NAV calculation is performed at the end of every trading day, and requires regular communication, coordination, and reconciliation with certain internal divisions as well as with the custodian and other outside institutions. It also requires the delivery of news releases and other dispatches to the newspapers and other media. For mutual funds that invest in stocks and bonds listed on China's stock exchanges, the NAV calculations and reconciliations that form the basis of fund accounting are as follows (Figure 3)[7].

Figure 3: Work flow for NAV calculations by fund management firms



Source: Nomura Institute of Capital Markets Research, based on interviews in China

6 Based on interviews of fund management firms, custodians, and system providers taken in Shanghai in May 2007 by Masahiko Igata (Managing Director, Research), Takeshi Inoue (now Senior Analyst, London), and Eiichi Sekine.

7 The middle and back-office organizations are different for each fund management firm. One firm interviewed, which has established and distributed 11 mutual funds with net assets totaling Rmb40 billion, had assigned 45 (one third) of its 160 employees to middle and back-office services. This included six to seven employees assigned to calculating NAV, with each employee responsible for two to three funds. The nearly 40 other middle and back-office employees were responsible for fund registration (purchases and sales), auditing, risk management, IT, and human resources.

1) Day of trade (T+0)

On the day that the mutual fund shares are traded (T+0), the fund management firm submits a trading order to the broker (1).

The broker submits said order to the stock exchange (2), and the stock exchange sends a trade confirmation to the broker, custodian, and CSDCC[8] (3).

CSDCC sends settlement data to the custodian at 15:00, when the market closes (4).

After all trading has ended, the fund management firm and custodian each calculate NAV and then compare numbers (5)[9]. They also exchange and compare data on fund purchases and redemptions.

2) Trading day plus one (T+1)

All fund management firms report NAV by the start of trading at 09:00 (6) through China's big three securities dailies (China Securities Journal, Shanghai Securities News, and Securities Times) as well as on their own Websites.

3) Supplementary tasks to main work flow

One fund management firm we interviewed said that reconciliation tasks on the day of trade were completed on average around 19:00. Another fund management firm said in an interview that, assuming no problems in the systems (explained later) used by the fund management firm and custodian, both the fund management firm and custodian receive the same final data from the stock exchange, and assuming that data contains no errors, their NAV calculations should match up, as a rule. If there are differences or errors in the NAV between the fund management firm and the custodian, the only option is to review each trade, one by one, and fix the error on the day of trade.

Notices for T+1 can practically speaking be confirmed on the fund management firm's website as early as the day of trade. The newspapers also publish the information on their websites in addition to their print editions, and because even the print editions are delivered early in the morning, investors can confirm this information before trading begins on T+1.

8 China Securities Depository and Clearing Corporation Ltd., an integrated provider of registration, safekeeping, and settlement of securities transactions.

9 This reconciliation is usually done by phone or fax, rather than electronically, owing to incompatibilities at the system level.

2. No room to outsource the calculation and reporting tasks

1) Calculation and performance reporting

The calculation of NAV, notices to the major newspapers, and periodic reports to the China Securities Regulatory Commission (CSRC) are all tasks handled in-house by the fund management firm, because there is no room to outsource even a portion of these tasks, nor is there any leeway for pre-coordination with the custodian.

2) Compliance reporting

Both the fund management firm and custodian must submit periodic compliance reports to the CSRC. This is done without outsourcing; both compile their own reports and submit them independently to the CSRC.

The chief compliance officer named by the fund management firm must report to the CSRC the investment status of each of its funds as well such company-wide issues as changes in shareholder composition, changes in the management team, and whether investors are given any profit guarantees. Practically, this is handled by an auditing department that reports to the compliance officer and is independent from the rest of the company. The custodian, meanwhile, checks on whether each fund is being invested according to its prospectus, and must report this to the CRSC[10].

III. Systems for middle and back-office tasks

1. System for calculating NAV a near monopoly

1) Handling NAV calculations with a standardized system

The presence of outside vendors that can provide advanced systems, whether for NAV calculations or TA, is an important factor behind the rapid growth of China's mutual fund market. The systems used in China's mutual fund industry must be inspected by the CSRC ahead of time. This is true not only of systems developed in-house, but also of systems developed by outside vendors and sold to fund management firms. These prior CSRC inspections ensure that the specifications of said systems reflect the thinking and rules established by the authorities. Use of a standardized system makes it possible for a newly established fund management firm to enter the mutual fund business without having to develop its own system from scratch.

The middle and back-office systems handling NAV calculations are usually purchased from outside vendors, and are typically standardized systems that have already been inspected by the CSRC. Ysstech[11] is a designer and seller of NAV

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10 Based on on-site interviews, we learned that compliance reports from custodians have uncovered cases in which mutual fund distributors have offered discounted commissions to important customers.

11 For an overview of the company, see its website (http://www.ysstech.com).

calculation systems with over a 90% share of both the fund management firm and custodian markets.

2) NAV calculation systems from Ysstech

Ysstech is a China-based vendor established in Shenzhen in 1998 and comprised primarily of systems engineers with experience writing financial accounting software. When we interviewed the company at its offices in May 2007, it had 100 employees, approximately 80 of which were systems engineers involved in development.

The Golden Finger financial asset management system developed and sold by Ysstech comprises two modules: (1) a financial accounting module (for accounting reports and data consolidation) and (2) an asset calculation module (NAV calculation). The financial accounting module handles voucher management, accounting registers, classification registers, accounting reports (financial reporting), and balance sheets.[12] The asset calculation module handles the setup of specific names bought by the mutual fund, as well as data import, automated entries, and manual input[13].

The two modules are developed specifically for each fund, including closed-end funds, open-end funds (stocks, bonds, and indices), hybrid funds, and money market funds. The system is also developed to work with trust investments through the basic pension system and corporate pensions[14].

The fee schedule differs depending on the model and the product. Implementing a system for a non-ETF, regular mutual fund (with 3 to 4 names) costs roughly several million yen, and the system can be in operation within a week. Ysstech also provides training for financial institutions that implement its systems.

2. Compatible TA systems

1) Hundsun Technologies' TA System

The transfer agent (TA) system that fund management firms use to manage accounts is either (1) purchased from an outside vendor, (2) developed by outside vendors under contract, or (3) developed in-house.

The TA system most commonly purchased from an outside vendor is that from Hundsun Technologies[15]. Of the fund management firms with open-end mutual funds, over 70% (42 firms) use Hundsun's TA system. Established as a domestic vendor in

12 The underlying ledgers for accounting reports can now be prepared to enable electronic reporting, pursuant to the Ministry of Finance's *Measures Governing Financial Accounting at Securities Investment Trust Funds*. The ledgers can also be freely customized and subject to data searches, and because they are based on Excel spreadsheets, can include functions.

13 Data from the stock exchanges can now be received automatically. Some bond transactions on the interbank bond market must be entered manually.

14 Private placements are not included among the products being developed. Version 4 of its QDII asset management software was released in October 2007.

15 For an overview of the company, see its website (http://www.hundsun.com).

1995, Hundsun began developing software for fund management firms in October 1998, the same year it listed its shares on the Shanghai Securities Exchange. Of its 1000 employees, 135 are systems engineers working on the development of software for fund management firms[16]. Hundsun began R&D on TA systems in 2001, established offices in both China and the US, and has been gaining market share since 2004. It has also lent its employees to work with foreign-capitalized fund management firms starting operations in China, gaining expertise in the process.

Although Hundsun also sells NAV calculation systems, Ysstech entered that segment earlier and captured the bulk of the market. Consequently, in the market for middle and back-office services offered to fund management firms, Hundsun is the dominant player for TA systems used until trading ends at 15:00, while Ysstech's systems dominate the market for the NAV calculation that commences at 15:00. The cost for installing Hundsun's TA system is approximately ¥20 million, and implementation has been completed in as short a time as one month.

2) CSDCC's TA system currently offers few advantages

Some fund management firms that choose to purchase from an outside vendor have opted for CSDCC's TA system. CSDCC, a 50/50 joint venture between the Shanghai and Shenzhen stock exchanges, was established in March 2001 to increase the efficiency of clearance and settlement. It has built an integrated securities settlement system that provides for the registration of China's listed stocks and the clearance and settlement of trades. The advantages of using CSDCC's TA system are its standardized specifications, the ability of mutual fund distributors (banks and securities firms) to work directly with data without going through the fund management firm, and a decreased work load on the fund management firm. The Shanghai Stock Exchange implemented a sales platform using CSDCC's TA system in 2006, and has been encouraging others to use that system.

Disadvantages of the CSDCC's TA system include (1) an increase in costs as the number of funds increases, because fees combine a fixed fee with a variable fee based on the number of funds and (2) the development and adaptation of the system to new funds is slow. After weighing these positives and negatives, fund management firms are apparently concluding that it is better, from the perspectives of both cost and flexibility, to use TA systems offered by an outside vendor. Foreign-capitalized fund management firms initially followed the government's recommendation and implemented the CSDCC's TA system, but it appears that they have begun to use other TA systems, owing to the inflexibility of the CSDCC system once the number of funds reaches three to four.

[16] As of April 2007. Hundsun Technologies develops systems not only for fund management firms but also for banks, insurance companies, and securities houses. It also appears that Hundsun has partnered with Nomura Research Institute and signed deals to develop systems for Japanese securities firms.

The CSDCC apparently has set a goal of integrating TA systems over the next five to ten years[17]. Nevertheless, for CSDCC's TA system to become the de facto standard in the mutual fund market, it will have to compete against Hundsun and other private-sector vendors, and must also address the issues identified by the fund management firms, including adapting more quickly to new funds.

IV. Future challenges

1. A shortage of skilled personnel in middle and back-office services

China's mutual fund industry has standardized the work flow of middle and back-office services and implemented systems to support those services. We expect this to facilitate rapid market growth over the near term and the entry of foreign capitalized firms into the market. Although the systems continue to progress, it appears that the supply of people capable of performing these middle and back-office services has not been keeping up with growth in the market.

As noted earlier, China's first mutual fund was formally introduced in 1997, and most of the funds launched during this initial period were closed-end funds, for which the NAV was nothing more than a reference value, and thus calculated only once a week. Because of this, the need for middle and back-office capabilities was not that great.

In 2000, the CSRC established rules governing open-end mutual funds, and the middle and back-office service environment changed once the establishment and sale of those funds started to take off in 2001. Specifically, errors in NAV calculations could no longer be tolerated, and if there were any errors, it created liability for damages, while also harming the brand of the company responsible. This explains why middle and back-office service capabilities are now required to be much higher than they used to be. In addition, China's capital markets have undergone unprecedented changes recently, including the reform of nontradable shares[18] and mergers & acquisitions, both purely domestic as well as between domestic and foreign firms. This has further raised the bar for mutual fund middle and back-office services.

Middle and back-office services do not consist simply of automated calculations of NAV. They require experienced, senior employees with a strong understanding of, and interest in, accounting standards, as well as a sharp eye for details, who can quietly get the job done. We confirmed in our interviews, however, that finding such

[17] CSDCC's TA system must be used for ETFs and LOFs listed on stock exchanges.
[18] This is aimed at reforming the bifurcation of China's stock market into tradable and nontradable shares. Apparently there sometimes exist differences in opinion between fund management firms and custodians in regards to NAV calculations that include the shares of companies that have reformed their nontradable shares.

individuals was very difficult, and that headhunting from other firms was quite common[19].

2. Accommodating the opening of China's capital markets

Currently, the work flow is fairly simple because China's mutual funds only invest in the domestic market, but as they increasingly invest overseas as a result of the Qualified Domestic Institutional Investors (QDII) program and other factors, we expect back office services to become more complex. This growth in overseas investments will also necessitate greater interaction with overseas brokers, stock exchanges, and settlement institutions, and we expect this to put further stress on systems in terms of compatibility. Because of differences in the settlement cycle [20] between China and overseas markets, and owing also to the difficulty of directly linking systems, overseas investments may require manual input for settlement.

People with experience in overseas markets will become important to China's mutual fund industry, but because of the many years that overseas capital markets have been closed to China's investors, finding such people will probably be a challenge.[21]

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19 A common theme that has come up in our interviews in China is that the cost of middle and back-office services has increased substantially as a result of the need to keep up with the rapid growth, and relentless introduction of new products, in China's still-young mutual fund industry. One fund management firm that we interviewed also noted that it was constantly reassigning its personnel that although the total number of employees was declining it was working to increase the number of front-office employees, and that although it was difficult to rank its positions in terms of priority, if it were pressed to do so the priority would first be on fund managers, researchers, and sales personnel, after which would come personnel for middle and back-office services.

20 The settlement cycle in China is T+1 for A shares, mutual funds, government bonds, and corporate bonds, which is faster than in the leading economies.

21 For more on QDII, see Eiichi Sekine, China's Offshore Investment Boom -- QDII for fund management firms, *Capital Market Review*, Spring 2008.