

**Developing the bond market in China:
The next step forward in financial reform**

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Abstract

China is reaching a new stage in its development. The long haul across capital-intensive growth, fostered by high savings rates, will gradually come to an end. As a “silent revolution”, the financial reform that is taking place is laying the foundations for a modern market economy, in which the efficient allocation of savings should ensure a steady growth rate. This transformation entails new responsibilities for the State. It should provide for the redistribution of resources and their affectation to socially profitable expenses with greater effectiveness. Social security should also set up the mutual sharing of economic and social risks. This is a formidable challenge for the public finances.

But the saving of the population meets the challenge. The policy response lies in the pursuit of the modernisation of the financial system. The basic decisions that have been taken in the last few years in the direction of a three-pillar retirement system will lead to the growth of powerful institutional financial investors. The supply of public bonds and the institutional demand for diversified assets will grow in tandem, paving the way for a broad and liquid public bond market. It will be the basis for developing corporate bonds that will diversify the sources of external finance for the business sector and bring a credit culture in the banking system.

To play its paramount future role the bond markets need a strong legal and regulatory system that is being built step by step: legal protection, standards of corporate governance, international accounting standards. The new institutions will unify and simplify the requirements for issuance in the primary markets. The enactment of a new bankruptcy law will give confidence to financial investors. Market microstructures are strengthened to provide liquidity in secondary markets.

Well-functioning bond markets are prerequisites for relaxing capital controls and are channels of transmission for an interest rate-led monetary policy.

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Introduction

China has reached a new phase in its transition from a planned to a market economy. The balance sheets of the major State banks, as well as the management of these institutions, have improved significantly. Being in better shape, the banking sector will greatly benefit from the development of bond markets. The existence of a common benchmark for the profitability of capital employed, and the ability for banks to manage their liquidity, both require a well-defined *yield curve* grounded on a liquid government bond market. This market will also be used as a channel of monetary policy and as a riskless asset in the build-up of diversified portfolios by institutional investors. Corporate bond issuance and Stock market improvement are long-run objectives in this process.

However, until the Asian crisis, securities markets were underdeveloped in Asia as far as corporate borrowers were concerned. It was particularly the case for corporate bonds. In China that warded off the Asian crisis, the financial system is heavily biased towards banks. Not only uncompetitive state-owned enterprises (SOE), but also financially-constrained local governments resorted heavily to banks, which created a huge overhang of problems loans. Starting in 1998, the overhaul of the banking system was the primary concern of financial reform. The process gained momentum from 2003 onwards and achieved a remarkable improvement in 2005 and 2006, when three of the four biggest banks successfully raised capital publicly on the Hong Kong equity market.

In the years ahead both the public and the private sector will have enormous needs of external finance. As the market economy becomes more complex and sophisticated, an efficient allocation of capital cannot rely exclusively on, banks, all the more than their risk management systems are still weak. Besides, China enjoys an insuperable level of saving, which is trapped in bank deposits at very low yield and thus craves for better returns and risk diversification. It follows that there is a high potential for powerful institutional investors to thrive in China. Furthermore the central bank is eager to move from direct credit control to indirect control by means of interest rate management. Therefore she wants to build up a multiple layer of credit mechanisms to channel monetary policy more effectively.

All those reasons have combined to persuade the authorities that the time is ripe to give a big boost to the debt compartment of capital markets, namely short-term to long-term bonds for both public and private issuers. The process has already started since 2004.

This paper is dedicated to a detailed analysis of the state of the bond market in China and of the perspective of its future development. In the first section the reasons to promote bond markets are displayed both theoretically and empirically. The handicaps in the functioning of the Chinese bond markets will be measured and the benefits of a well-functioning bond market emphasized. Because the government segment is the linchpin of the whole bond market, the second and third sections will study the long run prospect for public bonds. The future supply of public bonds will be linked to the steady increase in public debt as an outcome of government priorities. The demand for public bonds will be derived from changes in the structure of saving and from the process of saving. A tentative determination of the future path of the real long-run interest rate will be presented using the INGENUE2 long-run growth model. Finally in the fourth section the legal, institutional and regulatory requirements of the financial reform in organizing a sound bon market will be reviewed.

I. Compelling reasons for developing the bond market

Bond markets have generally been underdeveloped in emerging East Asia. Nevertheless they have been growing fast in the last few years. Table 1 provides an overview of recent data and allows comparing the People's Republic of China (PRC) with more developed markets in the region.

Table 1. Size and growth of Emerging East Asian local currency bond markets

(Selected countries)

	Amount end-June 2006(\$b)	Amount (% of GDP)			Growth rate (% annual)		
		2004 year end	2005 year end	2006 end-June	2004	2005	2006 1 st half
PRC	1,100	34.78	40.71	45.66	40.0	35.3	21.0
HK	90	47.05	48.00	49.30	8.9	9.4	5.6
Korea	745	83.48	83.39	89.91	50.7	31.7	12.5
Malaysia	131	93.60	94.78	93.27	12.2	11.8	5.4
Singapore	91	73.80	71.21	73.84	18.1	4.7	9.1
Thailand	96	42.13	45.88	51.15	13.9	18.9	19.1
Emerging East Asia	2357	47.22	50.28	54.23	26.9	21.5	15.6

Source: Asia Bond Monitor 2006, Asia Development Bank, November 2006

The bond amount outstanding in the PRC already looks large in total amount outstanding. Nonetheless it is about 1/9 the size of Japan's. The measure in % of GDP is more significant. The bond outstanding is still much smaller than those of more mature markets in east Asia, like the ones in Korea, Malaysia and Singapore. What is striking however is that the Chinese bond market has been growing very fast since 2004, faster than any other market in the region, no matter how fast they are themselves growing.

In the whole emerging East Asia, it is indubitable that the growth of capital markets in the form of debts is in full swing. Several reasons account for it. To ponder them one must distinguish between government and central bank sterilization bonds on the one hand, corporate bonds, both non-financial and financial, on the other hand (table 2). The composition of bonds is heavily biased towards government bonds in the PRC. The main reason is the explosion of foreign exchange reserves in 2005 and early 2006 with the speculation of a Yuan appreciation until July 2005, then the widening current account surplus. Sterilization bonds were issued by the People's Bank of China (PBOC) in the aim of absorbing excess money growth and calming down the overexpansion of credit. Infrastructure spending supported robust growth in government bonds in Thailand in 2006. Health and defense spending were the main causes in Korea.

By contrast with Mainland China, the share of corporate bonds is high in both Korea and Malaysia amongst countries with already developed debt markets. After the Asian crisis, the private sector in Korea suffered a very severe contraction in bank credit. Furthermore the banks were not even able to provide guarantees for corporate bonds. The corporate sector was

forced to raise funds directly in the bond market without bank guarantees¹. In Malaysia the corporate bond market was boosted by a consolidation of regulatory responsibility under a single umbrella, the National Bond Market Committee. The centralization reduced drastically the time needed for the approval process in corporate issuance. Those regulatory innovations highlight the pervasive impediments in the Chinese legal and regulatory system that must be superseded.

Table 2. Weight and growth of government and corporate bonds

	Government Bonds			Corporate Bonds		
	% share End-June 2006	Growth rate(% annual)		% share End-June 2006	Growth rate(% annual)	
		2005	2006 1 st Half		2005	2006 1 st Half
PRC	68.4	30.1	22.2	31.6	47.8	18.6
HK	18.4	3.6	1.9	81.6	10.9	8.5
Korea	34.1	31.7	12.5	65.9	8.3	14.0
Malaysia	41.6	9.0	5.4	58.4	13.9	5.5
Singapore	58.0	6.6	12.2	42.0	2.4	5.1
Thailand	46.6	5.0	18.1	53.4	34.7	19.9
Emerging East Asia	53.9	23.3	16.8	46.1	19.5	14.2

Source: Asia Bond Monitor 2006, Asia Development Bank, November 2006

I.1 Innovations and impediments in Chinese bond markets

In table 1 the size of domestic bonds outstanding was 46% of GDP in 2006. But if one excludes central bank sterilization bills it was only 27%. Moreover the share of corporate bonds in table 2 is almost exclusively financial and heavily concentrated in policy bank securities. Table 3 gives a more detailed and accurate picture of the composition by type of issuers.

Commercial banks and credit cooperatives hold 75% of outstanding bonds to maturity. Most of the remainder is owned by other financial institutions that do the same. All in all only 5% of the outstanding stock is traded on the secondary market. It is no surprise that the market lacks liquidity. Furthermore China's bond market is fragmented into three segments: the inter-bank market, the Exchange market and a completely insecure over-the-counter (OTC) market. The latter is completely opaque and rife with frauds and manipulations. The inter-bank market is the only one really working. It absorbs 95% of trading.

Table 3. China's Bond Market Capitalization

(Excluding central bank sterilization bills)

¹ Myong-Jong Lee and Soo-Ho-Kim, « Developing the corporate bond market : the Korean experience », Kunming Conference, November 2005, BIS Papers, N°26

End-September 2006	Amount Outstanding (\$b)	Outstanding (%GDP)	Share of total (%)
Government bonds	349	13.5	49.6
Policy bank bonds	264	10.0	37.5
Commercial Paper	33	1.3	4.7
Corporate bonds	30	1.2	4.3
Commercial bank bonds	26	1.0	3.7
ABS and miscellaneous	2	#0	0.2
Total	705	27.0	100.0

Source: ChinaBond

It follows from these observations that Chinese debt markets work in reverse of a developed financial system. Instead of being secondary reserves for banks, bonds in China are like bank credit carrying a higher interest rate, with a caveat however. “Inter-bank” is a misnomer. The participants in this OTC market include mutual funds, insurance companies and large corporations.. Commercial banks, which must meet the international capital standard by year-end 2007, are able to issue subordinated bonds. In the same vein other financial institutions can now issue bonds as a tool of asset liability management. These instruments will go a long way in solving their long-standing problem of term structure mismatch.

One may add that innovation is on the rise. The fastest growth segment is the new commercial paper market created by the PBOC in mid-2005. It will give creditworthy companies the opportunity to raise short-term finance directly by issuing bills on their own. It might also help foster a more responsive pricing of credit risk.

To acquire the right to issue short-term financing bills, a non-financial corporation must have legal status in China, must have been profitable over the past fiscal year, and must exhibit a solid credit history over the past three years. Any issue must be rated by at least two official rating agencies out of five that exist in China.²

Although the debt capital markets are on the move, they still suffer from five drawbacks that plague both the primary and the secondary markets: weak participation of financial investors, lack of liquidity, non-transparent prices, no reliable rating of issuers but for the best SME and too heavy taxes. The fragmentation of the market was the consequence of massive corporate bond defaults in the 1990’s. In turn fragmentation has made trading difficult on the secondary market. On the primary market, the government imposes strict conditions of issuance for non-financial corporations because of inadequate supervision and hazardous legal framework. The restrictions encompass issuers’ qualifications, requirements of state bank guarantees, issuance amounts and pricing. It follows that only very few corporations can tap the corporate bond market. The amounts issued are small, the costs high and the time for approval long.

I.2 Benefits of a well-functioning bond market

² Francesco Garzarelli, Sandra Lawson, Michael Vaknin and Teng Teng Xu, « Bonding the BRICs : the ascent of China’s debt capital market”, Goldman Sachs, Global Economics Paper, n° 149, November 2006, p.10

In developed financial systems, bond financing and bank credit are complementary. Asian financial systems are too heavily tilted towards banks. This feature was the consequence of their fast government-led growth and of their high household saving. Governments found it convenient to facilitate extensive branch networks by commercial banks. In so doing, the banks were able to tap savings from remote corners of the economies and extend loans at stable interest rates to both the public and the private sector in financially closed economies. High levels of investment, conducive to fast-sustaining growth³, could be financed at minimal costs.

Two structural changes undermined the consistency of those closed and regulated financial systems. The first was financial globalization that reached Asia in the 1990's. The second was the diversification and complexification of the growth regime, while the stage of middle-income countries had been reached. Both raise problems of capital allocation different from maximizing accumulation. With new sources of funds, competition brings about concern for risk-adjusted returns. With the widening of consumer opportunities, financial decisions get more decentralized. Multiple layers of access to credit, managing and disseminating risk become all-important.

Debt-issuing capital markets help smoothing investment cycles in eschewing credit crunches and creditors' runs while the banking sector has been loaded with problem loans. The corporate bond market provides a "safety valve" in permitting solvent economic agents to go on borrowing. Conversely commercial banks backed by central bank liquidity can forestall the flight to quality triggered by disrupted corporate bond markets, as it occurred after the Russian crisis and LTCM failure in late summer 1998.

Enriching capital markets has the subsequent advantage of enhancing institutional asset management in countries like China where the population is ageing and the government is establishing compulsory retirement plans. For long-run investors the riskless security in strategic asset allocation is not a short-term bill but a long-term bond. The reason is that long-term bond yields exhibit mean-reverting processes, while rollover short-term bills do not in an uncertain interest rate environment⁴.

Deep and liquid government bond markets will provide a yield curve that will provide a benchmark for dynamic portfolio rebalancing. In asset diversification the risk-free rate at each maturity sets a benchmark for pricing credit risk. The task is reduced to determining the spread over the risk-free borrowing rate at each maturity. The use of credit derivatives will further allow splitting the spread between elementary factors of risk: credit risk, liquidity risk, risks embedded in specific contracts (callability) and eventually tax differences.

The more public information is gathered in credit markets, the sooner the central bank will be able to shift from direct credit control to the price channel of monetary policy. By being able to communicate to the financial markets a forward view of the future path of the economy, the central bank will be able to smooth out fluctuations in real variables and make the growth path steadier. However, to abandon direct quantity and price control in monetary policy, the government must be sure that the use of market-oriented instruments would not attract more capital inflows from abroad without being offset by capital outflows from

³ Suresh Sundaresan, "Developing multiple layers of financial intermediation: the complementary roles of corporate bond markets and banks", BIS Papers, n° 26, op.cit.

⁴ Campbell C and Viceira L.M. (2005), « The term structure of the risk-return trade-off », *Financial Analysts Journal*, vol 61, n°1, pp.34-44.

Chinese institutional investors. It is why, since the decision to let the Yuan drift against the US dollar in July 2005, the Chinese government has significantly opened the capital accounts. Financial institution and the state pension scheme have been allowed to invest abroad

This is a step forward to link the domestic capital market to global markets. Indeed, an efficient domestic market is a precondition for safely phasing out capital controls. The short-run range of the yield curve is the domestic leg of the forward foreign exchange market. Commercial banks will be able to supply hedging instruments to foreign trade operators and to investors eager to diversify abroad. Conversely it will be possible to borrow abroad in domestic currency, reducing the dependency to the dollar. With a broader and more diversified capital account, it will become possible to move to a more flexible exchange rate regime.

The bond markets have the potential to expand dramatically in the years ahead. On the supply side, a new stage of reform is being launched by the XIth five-year plan starting in 2006. This stage will be driven by public expenditures to build up infrastructures, invest heavily in education and set up a public welfare system and a universal public pension system. The financing of the public debt that will increase markedly is going to enlarge hugely the supply of government bonds. On the demand side, the likely steady increase in household income, the large and expanding size of the working population and the huge pool of savings looking for diversification, all can nurture a demand for bonds. It will become a strong pillar in broad and deep capital markets that can serve growth well.

II. The supply of public bonds

In the communist regime all production units were state-owned. Enterprises were not only production centres for commodities. They were also the suppliers of social services for the population. There was no separate Treasury. Fiscal resources were intermingled with the profit of the enterprises, whose use depended entirely on political decisions of the different hierarchical levels of the communist party. With the reform, which made the enterprises autonomous profit centres, the State lost its control on fiscal resources. The share of government income in GDP crumbled in the early 1990's (table 4). Tax receipts began to recover after the 1994 fiscal reform. But their present level is still very weak, compared to the average level of 44.5% of GDP in OECD countries. Receipts in special accounts remain around 4% of GDP, testifying for the difficulty to consolidate the tax system. Local governments are still responsible of heavy capital expenditures, while budget transfers from the central government have not been working properly yet.

In the meantime there are pressing needs for a substantial increase in public expenditures. Spreading the social welfare system over hundred of millions of people is a high priority. It will extend social protection against unemployment, health and casualty risks. It will also establish a funded compulsory retirement system. Those expenditures will add to public investment in education and infrastructures. Therefore there will be a mismatch between government income and expenditures. It will give rise to a pervasive expansion of the public debt.

Ageing, unemployment and widening income inequalities make the redeployment of the process of reform inescapable. It will redesign government responsibilities from an

unsatisfactory situation whereby local governments deprived of tax receipts were unable to avoid a dramatic deterioration of social expenditures.

Table 4. Government receipts

(in % of GDP)

	General Budget	Special Accounts*	Social Security	Total Receipts
1990	19,2	<i>(adjusted)</i> 4,0	1,0	24,2
1991	17,2	<i>(adjusted)</i> 4,0	1,0	22,2
1992	15,2	<i>(adjusted)</i> 4,0	1,4	20,6
1993	13,8	4,2	1,5	19,5
1994	12,0	4,0	1,5	17,5
1995	11,2	4,1	1,7	17,0
1996	11,3	5,7	1,8	18,8
1997	12,0	3,8	1,9	17,7
1998	12,9	3,9	2,1	18,9
1999	14,2	4,1	2,7	21,0
2000	15,3	4,3	3,0	22,6
2001	16,9	4,4	3,1	24,4
2002	17,8	4,2	3,8	25,8
2003	18,0	3,8	4,0	25,8
2004	18,9	3,7	4,0	26,6

Source: Michel Aglietta and Pierre Maarek, "Le développement des marchés obligataires chinois", Doc de travail Cepii, n°?, 2007. Computed from OECD data, 2006

*The special accounts are legal taxes that escape central government control. They have collapsed between 1992 and 1993 from 14.9 to 4.2% of GDP. The reason is in the restriction of their definition from inclusion to exclusion of funds held by State-owned enterprises. To get comparable figures throughout the period under review in table 4, an adjustment has been made. It is justified by the inertia of those amounts around 4% of GDP.

II.1 Potential development in public expenditures

Table 5 summarizes several pieces of information on public expenditures. It depicts the amount and structure of the budget by functional items for fiscal year 2003, its past growth and an estimate for 2010. The estimate is based upon the objectives of the XIth Five-Year Plan. It is conservative for the functions not mentioned in the objective (general administration, infrastructures and defence). They have been assumed to stay put in % of GDP.

Following the careful hypothesis given by the Plan of 7.5% average annual growth for the 2006 to 2010 period and translating the objectives of the Plan into tentative figures, one gets a modest estimate for the size of the budget in 2010. *Public expenditures will rise from 27.4 of GDP in 2003 to 31.5% in 2010.* It is likely an underestimate because big investment in transportation will be necessary for the development of the Western part of the country. Moreover the modernization of the army will certainly go on as an untold priority. Table 5 shows that those expenditures and general administration increased faster than GDP in the five years prior to 2003.

Table 5. Public expenditures by functions: past and future

Expenditures by functions	Expenditures General accounts + special accounts In billions of RMB	Annual average growth rate (%) Between 1998 and 2003	Amounts in 2003 in % of GDP	Amounts estimated* in 2010 in % of GDP
Administration ¹	464 (+ 283)	28,4	6,4	6.4*
Capital expenditures ²	451 (+ 51)	19,9	4,3	4.3*
Defence	191	15,3	1,6	1.6*
Social Security and Pensions ³	266	73,0	2,3	2,6
<i>National Social Security Fund</i>	387	19,7	3,3	3,9
Education	366 (+ 19)	13,6	3,3	4,0

Health	112	13,6	1,0	1,7
Science	98	17,3	0,8	1,5
Sports and culture	38	<i>n.a.</i>	0,3	0.3*
Subsidies ⁴	175	<i>n.a.</i>	1,5	1,5
Interests on public debt	96	<i>n.a.</i>	0,8	1,8
Others	218	<i>n.a.</i>	1,9	1.9*
Total Expenditures	2862 (+ 353)	16,2	27,4	31,5

Source: Michel Aglietta and Pierre Maarek, "Le développement des marchés obligataires chinois", op.cit. Computed from OECD data, 2006 and China Statistical Yearbook, 2005

1. Including special accounts but not off-budget expenditures
2. Capital expenditures in infrastructure (342 mds) and in technological development of enterprises (109 mds)
3. Direct social expenditures of the government (50 mds), subsidies to social security (126 mds) and administrative unit pensions (90 mds)
4. Support to rural production (113 mds), political subsidies (62 mds) mainly price support.

*The expenditures that are not assigned a quantitative objective have conventionally been kept constant in proportion of GDP.

Health insurance has been given top priority to extend the coverage in rural areas from 23.5% of the rural population in 2005 to 80% in 2010. These expenditures will surge at 20% per year to reach 7% of GDP in 2010. Education has been a laggard since 1992, although the 4% target of GDP was announced in the Xth Plan and failed to be reached. An achievement in the XIth Plan will confirm that the government is determined to lead China to a new stage of reform.

To be thorough as far as future public expenditures are concerned, one should mention implicit liabilities that are not registered in the budget. These are the cost of managing non-performing loans and the transition cost of pension reform.

- *The fiscal cost of managing non-performing loans*

After 2009 the mandate of the Asset Management Corporations (AMC) will come to an end. The losses that have not been recovered will be transferred to the budget. In table 5

they will show off in the function “interests on debt”. The magnitude each fiscal year will depend on the amortization of past losses and on the eventuality of new bank losses being transferred. Let us call D the public debt. Its variation in time dt is the financial deficit. It can be broken down into three items: the primary deficit (G), the net interest paid on the debt (rD) and the amount of losses absorbed by the budget in that lapse of time (Λ). The accounting equilibrium is: $dD/dt = rD + G + \Lambda$

Let us divide by GDP (Y) and set $g = G/Y$ and $\lambda = \Lambda/Y$

Taking the log derivative of the debt and positing \hat{y} as the growth rate of GDP, one gets: $\frac{d}{dt} \log\left(\frac{D}{Y}\right) = r + (g + \lambda)\left(\frac{Y}{D}\right) - \hat{y}$

The equilibrium value of the ratio of public debt to GDP is: $\frac{D}{Y} = \frac{g + \lambda}{\hat{y} - r}$

Whether $\hat{y} \gg r$, the debt is sustainable despite a primary deficit ($g > 0$) and a flow of losses to be absorbed ($\lambda > 0$). Nonetheless a low level of λ is helpful to embark into an ambitious investment program, either is a large spread between the growth rate and the real rate of interest paid on the public debt. If the spread is 4% (8% growth and 4% interest rate) and the primary deficit 1% of GDP, the equilibrium ratio debt/GDP will be 50% for a flow of losses of 1% of GDP. But a much larger flow of 3% will entail an equilibrium ratio of indebtedness of 100%.

It ensues that the government was wise to forcefully restructure the banks and to subject them to a strict supervision before considering an ambitious budget expansion. The channelling of the huge savings of household in debt capital markets will make the cost of the public debt as low as possible. It is also of paramount importance.

- ***The transition cost of pension reform***

Under the advice of the World bank and the OECD, the government has opted for the establishment of a compulsory funded pension plan. The transition cost will weigh heavily on the public finances. But before 2010 the proportion of the population over 60 will stay low at 11% of total population, while the working-age population is still increasing in proportion of the total and will peak at 62% in 2010. Therefore the budget is not under the immediate requirement of supporting the transition cost of the changeover to the new system. The cost is the financing of the pensions of older workers who are under the old regime and for whom no contributions will be paid, because they will be transferred to the individual accounts of younger workers. From government decisions and actual practices two researchers have calibrated a model to study three scenarios.⁵ The first scenario is the most likely. It is the one embedded in table 5. It assigns a modest rise in public expenditures on behalf of the National Social Security Fund. The deficits are essentially in line with the present system of low coverage. The second scenario would keep the pay-as-you-go public system in surplus until 2015 thanks to the device of paying current pensions with contributions transferred from the individual accounts of the new funding system. This scenario would be socially irresponsible.

⁵ Wang Yan and Zhai Fan, *La réforme des retraites en Chine : Enjeux, Options et Conséquences*, Revue d'Economie Financière, *Le Devenir Financier de la Chine*, n°77, 2004

In the third scenario the cost of transition would be immediately reflected in the budget. In that case the expenditures for the financing of retirement would increase to 5% of GDP.

II.2 Rise of the public debt as a source of supply of bonds

In the first period of its existence between 1949 and 1958, the People’s Republic of China issued debts several times. In early 1950 the government issued 258 millions of bonds at an interest rate of 5% and 5 years to maturity. The goal was to finance the military expenditures to finish the civil war in order to unify the country. The debt was completely redeemed in 1956. Five more borrowing campaigns occurred in 1954 to 1958 for a total of 3569 millions yuans. The objective was long-run financing for the first five-year Plan. The maturity of those bonds was 8 to 10 years. They were completely redeemed in 1968.

In 1958 the dramatic divorce with the Soviet Union led to a precipitous reimbursement of the foreign debt and a pervasive mistrust for foreign borrowing, which is quite insignificant even to-day. Besides, the revolution took a new course with the “Great Leap Forward.” Public borrowing stopped. All deficits were financed by money creation. Borrowing resumed in the first stage of reform after 1980. The issued bonds were tradable. But inflationary finance was still dominant, with occasional spikes of inflation in the late 1980’s and early 1990’s.

Another drastic change occurred in 1993 when the monetization of the public debt became illegal. Instead of drawing on its account at the central bank, the Ministry of Finance had to issue bonds. The public debt grew rapidly after the Asian crisis, from 1998 to 2003. It financed the expansive fiscal policy undertaken to combat the deflationary forces triggered in Eastern Asia by the aftermath of the crisis.

Table 6 gathers different pieces of information on the importance of the flow of new borrowing as a proportion of GDP, as a source of budget finance and as a use of savings from 1998 to 2004. Most of the public bonds issued since 1998 have been medium-term bonds (3 to 5 years to maturity). They are mainly bought by households and held to maturity. Therefore the secondary market lacks liquidity. When they are traded, it is on the interbank market. Their rates of interest are still tightly linked to the rates of bank credit, being 1 to 2% above bank rates.

The size of the gross public debt has swiftly waxed with the expansionary fiscal policy pursued after the Asian crisis, albeit from a very low level. It was 8.8% of GDP on average in 1992-1997. Then it jumped to 20.3% in 1998-2002. It culminated at 23.7% in 2003 to retreat at 22.8% in 2004. Table 5 shows a slow increase in public expenditure since 2010. It is impossible to estimate the public debt at that horizon because the Plan gives no hint on the future path of government income. Nevertheless, even if it grows slower than expenditures, which is likely, the debt will still be well under 30% of GDP, assuming that real growth is not under 7.5%. Such a level of debt is very much under the OECD average of 80% in 2004 and more than twice lower than the largely overstepped Maastricht limit!

Table 6. Characters of public borrowing

Years	Issued Bonds /GDP (%)	Issued Bonds /Household Saving (%)	Issued Bonds / Public Expenditures (%)
1998	3.83	6.05	29.90
1999	4.14	6.23	24.48

2000	4.19	6.46	26.17
2001	4.09	6.08	23.72
2002	4.72	6.53	25.75
2003	4.44	5.82	24.47
2004	4.21	5.63	23.64

Sources: China Statistical Yearbook, National Debt Association of China, Chinese Academy of Social Sciences

Pondering the available information, one can safely say that the public debt will contribute to developing the bond market but will not exert a strong influence upward on interest rates. One may add that the above analysis considered the gross public debts and its determinants. But one must not forget that the state owns a huge amount of assets. Indeed, valuing those assets and making them tradable is one of the main problems in organizing liquid secondary markets. Nevertheless future privatizations of SOE are likely. The proceeds of those privatizations will represent useful sources of financing in the years ahead.

III. The demand for bonds

The national saving rate in China is 46% of GDP, more than twice the OECD average. The household saving rate is 24% of disposable income, more than three times the OECD average. In some respect this is an extraordinary achievement. But the structure of financial intermediation does not match it by far. Most of savings are trapped in bank deposits at less than 2.52% yield. The size of bank deposits reached 141% of GDP at year-end 2005, because there are no reliable investment vehicles yet to diversify.

The analysis will distinguish two questions. The first question is the formation of an institutional investor pool that will be the engineer of a dramatic change in the structure of household saving in the medium run. The second question is the transformation of consumer behaviour from a regime constrained by an extraordinary high level of precautionary saving to a life cycle regime in the long run. In the former regime, pension and health insurance schemes being accessible to only a small minority of household, access to credit against wealth accumulation is embryonary. In the latter regime, asset allocation through the life cycle allows consumption-smoothing within a dynamic utility-optimization program. What will be the evolution of the saving rate and of the interest rate in the long run under a consumption-led growth regime?

III.1 Change in the structure of saving and rise of institutional investors

The diversification of household saving is entirely linked to the ascent of powerful institutional investors. The mutualisation of economic and social risks is their business. To match their liabilities they will hold a host of financial instruments. The instruments are the underlying assets (bonds and equities) and the derivatives that together make strong capital markets.

Table 7 depicts the structure of assets held by institutional investors in China end-year 2005. Three categories of institutional investors are distinguished: state pension funds, insurance funds, mutual funds.

Table 7. Asset structure of institutional investors

(end-year 2005)

Items (% of total)	State Funds	Pension	Insurance Funds	Mutual Funds
Bank Deposits	49		36	5
Mandated Investment	34			
Bonds (Total)	6		47	41
(Government)			(25)	(25)*
(Financial)			(13)	(16)
(Corporate)			(9)	
Equity	6		1	40
Others	5		16	14

Sources: National Social Security Fund annual report 2005; China Economic Information Network 2005; China Fund 2005

*of which central bank bills 17%

Tight restrictions have been imposed on the investment of pension funds because of resounding scandals in the 1990's. It is why state pension and insurance funds are still heavily biased to holding bank deposits. However diversification into bonds has begun since 2004. As mentioned in the first part of this paper, mainly government and, to a lesser extent, financial bonds are held. Non-financial corporate bonds are still in the doldrums.

To promote the institutional financial sector the government has adopted a three-pillar system of pensions:

- *First pillar: state pensions*

This is a compulsory funded pension system. Its reserve fund is the National Social Security Fund (SSF) established in 2000. It is still small with 255b RMB (US\$32b) of assets under management in Q3-2006. But it has an enormous scope to expand over time. Its growth is driven by government funding and compounds two streams of resources. The first is a direct fiscal allocation. The second is an entitlement of up to 10% of the proceeds of sales of government shares in state-owned assets. On the investment side the SSF has considerable leeway to diversify risks and boost returns. It can take strategic stakes in domestic firms. It can hold equities and investment-grade corporate bonds and it can invest overseas. But it must invest half of its funds in bank deposits and Treasury bonds.

- *Second Pillar: occupational pensions*

Occupational retirement schemes started in early 1990's. Voluntary private pensions (enterprise annuities) are co-funded by employers and employees. In mid-2006 total asset under management amounted to RMB 79b (US\$10b). The number of participants is estimated

at 10 millions. It is obvious that this component of retirement funding has an extremely high potential for growth.

- *Third Pillar: private saving*

Four types of institutional investors compete for new saving and for attracting the funds that households will diversify out of bank deposits. They are insurance companies, mutual funds, qualified foreign investors (QFII) and qualified domestic investors (QDII). According to the Chinese insurance Regulatory Commission (CIRC), the insurance sector has benefited from a very fast growth of 30% per annum since 2000. Assets under management amounted to RMB 1600b (US\$200b) in Q3-2006. There is a substantial growth potential ahead. Casualty insurance is still confined to the automotive sector. Life insurance contracts are grossly underdeveloped. The insurance sector will gain importance with the diversification of the asset side. It has already begun. Table 7 shows that nearly half of insurance assets are invested in bonds, but almost none in equity. Mutual funds compound investment funds and securities firms. They are mainly offered by commercial banks. Assets under management were RMB 470b (US\$60b) in Q3-2006. They are expected to grow further with middle-class income. Their investment is equally shared between bonds and equities. QFII are foreign financial firms that have been granted the right to attract domestic saving and invest in domestic capital markets up to certain limits. The rules were relaxed in August 2006. They have access to Treasury securities, convertible and corporate bonds, listed shares and non-tradable shares. They mostly invest in equities. Finally QDII are new institutional investors. They result from decisions to relax capital controls. They can pool domestic funds and invest them overseas, chiefly in China-related equities and fixed-income assets traded on Hong Kong capital markets.

III.2 Long-run decline in overall saving and interest rate

The risks borne by households are long-term non-financial risks. They arise in their life cycle. To manage those risks correctly it is necessary to expect long-run returns and to understand the factors that drive them. The main asset of households is human capital. In a country like China, where the growth process is unequal and unsteady, individual incomes undergo sharp fluctuations without any likelihood of mean-reverting processes to equilibrium values.

Because human capital is not tradable on capital markets, the intergenerational mutualisation of risks is radically incomplete. To overcome the externalities related to the incompleteness, there is a definite need of long-run public investors. They must make allowance for the risks that arise in the life cycle of individuals. Long-run investors should have the ability to make strategic allocations in order to provide collective protections. They should adjust to the age structure of household saving and determine portfolios compatible with retirement income objectives.

The change in labour income during the working life is the primary determinant. If labour income is reasonably certain, the financial portfolio should weigh risky assets more heavily. If labour income is uncertain and if it is highly correlated with risky financial assets, the financial portfolio should be biased towards riskless assets to offset the weight of risky human capital in total income.

The degree of variability of labour income aside, age is also a crucial determinant of the strategic asset allocation of long-run institutional investors. Human wealth is the present value of future labour income. It follows that the ratio of human to financial wealth increases amongst young adults. Then it diminishes for high saver age working people who accumulate financial wealth in view of their future retirement. However the introduction of a compulsory public pension system influences strongly saving behaviour. While guaranteed by the state, this system is tantamount to a riskless asset whose yield is not lower than the real return on government bonds. The impact of this system is ambiguous. On the one hand, it reduces the propensity to save voluntarily. On the other hand, it increases the desire to invest in risky assets.

The three pillar pension system will transform saving behaviour in all age strata. Young household will be able to reduce their precautionary saving in their bank accounts, to go further into debt and to invest in equities via their shares in mutual funds. In the high savers group (age 40 to 60) the behaviour will depend on the expectations of income. For low income people the shift from bank deposits will go into fixed income assets. For higher income households there will be a joint increase of the value of bonds and equities relative to current income. The structure of the financial portfolio will move more towards fixed income assets as far as the time of retirement approaches. After retirement the wealth accumulated in the first and second pillar of the pension system yields a flow of income that substitutes for labour income. Depending on the replacement ratio and of the life expectancy in retirement, the third pillar of voluntary saving might keep and eventually increase equity holding. The behaviour of accumulating wealth in retirement might keep the saving rate high despite ageing. Such an occurrence depends on the discount rate and thus on the macroeconomic equilibrium.

The most delicate question in the aggregate is therefore the evolution of total household saving in the long run. The factors that will push the saving rate lower are the more active resort to credit by younger households, the general decline in precautionary saving and the expectation of rising future income. The factors that keep the saving rate high are the larger proportion of high savers in the total population until 2035 and the institution of an universal compulsory pension plan.

An overlapping generation model of long-run growth is the tool to simulate the global impact of pension reform in the demographic and macroeconomic conditions of China. The INGENUE2 model is such a tool⁶. In INGENUE2 China is not insulated. The Far Eastern region (Japan excluded) is called “Chinese World”. China (Hong Kong included) made 65% of the “Chinese World” in 2005 and the proportion is increasing because China’s growth is much faster than the growth of the other countries in the region like Korea, Taiwan, Thailand and Singapore. Besides, the region is integrating around China and the demographic structures and saving behaviour are quite similar throughout the region.

⁶ The INGENUE2 model has been developed by three French Institutes (Cepii, Cepremap, Ofce). It is a worldwide overlapping computable general equilibrium model whose goal is to simulate growth and international capital flows. Growth is driven in the 10 regions of the world by demographic trends and technological catching up. Households in each age group are rational expectation agents optimizing their long-run consumption path along their life cycle. CEPII Working Paper, *INGENUE, A long term intertemporal world model for the 21st century*, 2007 (forthcoming)

The pension reform enacted in China is a shift from a pay-as-you-go to a funded pension system. It is represented as a variant compared to a baseline scenario simulating what would have been the path of the economy until 2050, whether the pay-as-you-go system had been extended progressively to the whole population. Instead of having a rate of contribution on household income increasing in time to pay a constant replacement ratio to a growing population of retirees, the reform puts a ceiling on the contribution rate of the pay-as-you-go system, inducing a mechanical diminution of pension benefits. The loss of benefits is compensated by the income drawn from the accumulated wealth in the funded pension system and in the financial wealth from voluntary saving. In comparing the path until 2050 of relevant variables in both the baseline scenario and the scenario embodying the pension reform, one can measure the evolution of the variables through time due to general economic conditions and the effect of the reform. Figure 1 illustrates the impact on the contribution rate due to the development of the funded system of pensions. In 2050 it is about a fourth of what it would have been if the old system had continued unabated.

Figure 1. Evolution of the rate of contribution in “China”

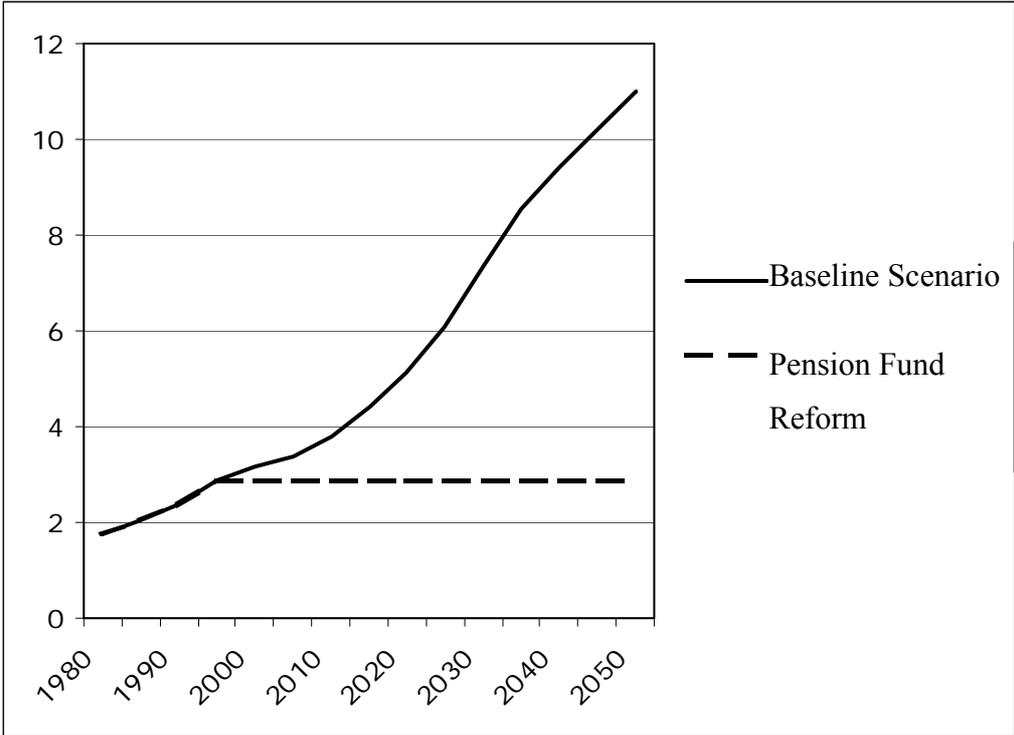


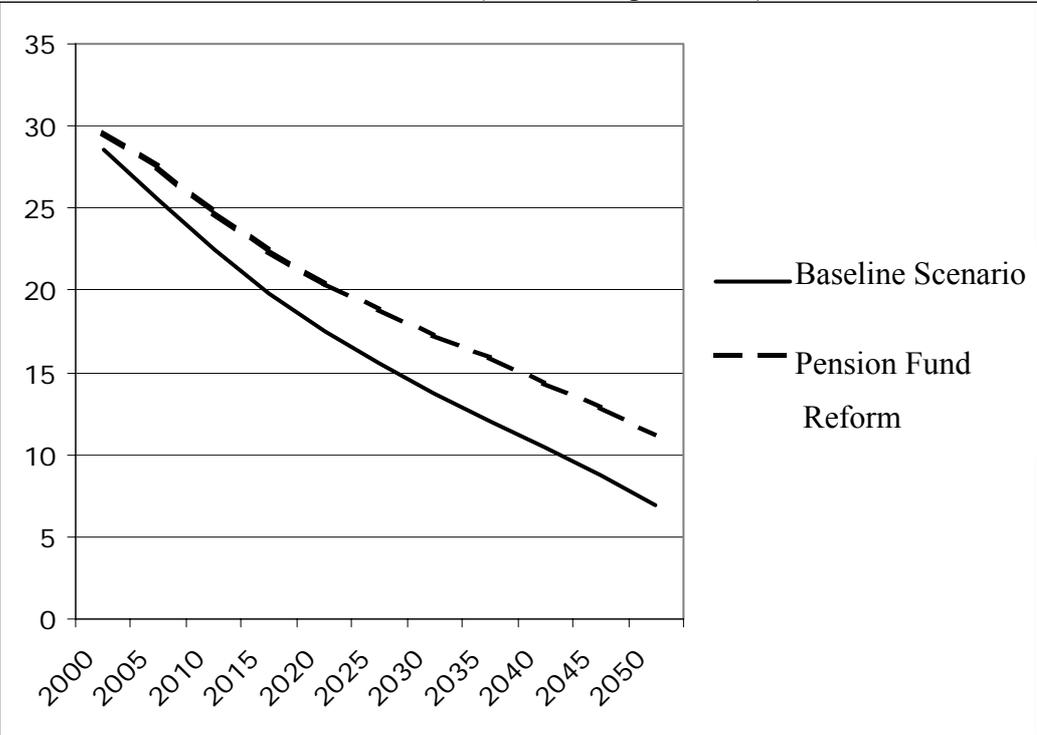
Figure 2 depicts the consequence of the reform on the saving rate. Because they expect the diminution of their future pensions from the pay-as-you-go system, working age-

households increase their saving rate as soon as the reform is announced. But the demographic and economic determinants of saving, which have been detailed above are stronger. They point out to a definite and steady decline of the overall saving rate until 2050.

What will be the impact on the real long-run interest rate? The development of domestic capital markets entails a gradual opening of the capital accounts. This development is embodied in INGENUE2, all the more than the “Chinese World” encompassed in the model include countries that are ahead of China in liberalizing their capital markets.

Figure 2. Evolution of the rate of saving in “China”

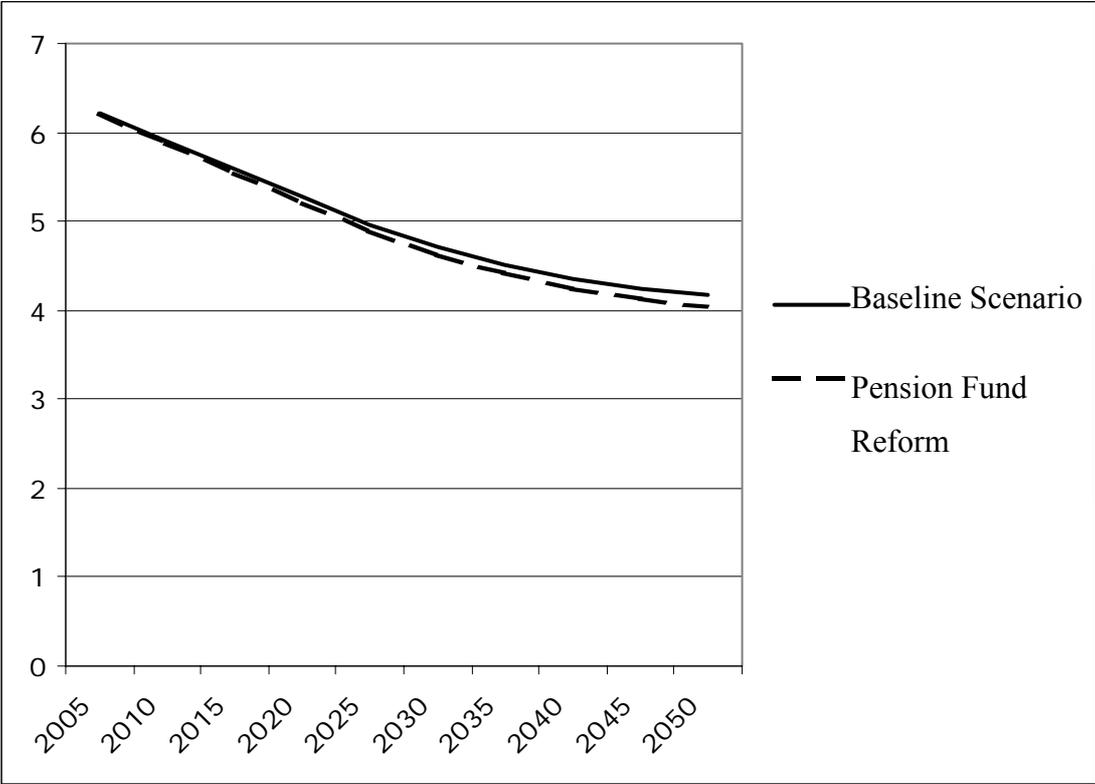
(% of the region GDP)



The slow decline in the real interest rate will be a worldwide phenomenon. In “China” it will be the consequence of both the larger proportion of high savers in the total population and a reduction in the investment rate with the deceleration of growth. The investment rate will decline faster than the saving rate worldwide and excess saving will flow from the

developed to the emerging countries, inverting the unhealthy present pattern of international capital flows. As a result figure 3 shows an unambiguous decline in the interest rate in “China”.

Figure 3. Evolution of the real rate of interest in “China”



IV. Organising the bond market

The reasons and the ability to develop the bond market at the present stage of the financial reform have now been made clear. The combination of faster growth in per capita income and of ageing entails the expansion and the diversification of the debt market. More flexibility in foreign exchange rate policy and the removal of ceilings on lending rates involve an interest rate channel of monetary policy. The efficiency of such a channel is enhanced by a well-functioning bond market. Moreover banks themselves will be more able to discriminate between borrowers if there is a mechanism to price risk publicly.

In China, where banks had been used as a tool for policy, the changing structure of the financial system will have wide-ranging consequences. It is no less than a sweeping change in the governance process. Banks and other financial firms will be made to adopt a risk culture fostered by risk management techniques. The shift in incentives and in principles of bank management will arise only if a clear distinction is drawn between fiscal policy and banking. It is why the rise of the public bond market is so important. Policy-driven borrowing motivated by social objectives will be crucial for the development of a consumer-led growth regime. But it is not the task of the banks to lend in conditions that can lead to underperforming loans and ultimately bear on the budget. Public welfare concerns should be transparently assigned to fiscal obligations of the central government.

The public bond market will provide a diversified base for non-bank institutional investors. Fiscal incentives, as they were liberally granted in Europe in the 1980's and the 1990's, will encourage a shift of household funds from bank deposits into mutual funds, insurance contracts and pension schemes. The competition of non-banks for saving collection will induce banks to tap the capital markets to finance their lending. It will also allow corporations to issue bonds directly, inducing banks to diversify their sources of profit to non-interest income.

Very conscious of the stake, the government is determined to set up strong rules in order to provide efficiency and safety in market mechanisms, before unifying the markets and introducing new financial instruments. The reform applies to both the primary and the secondary markets.

IV.1. Primary markets

In order to protect bondholders from frauds and manipulations that occurred in the early 1990's, bond issuance has been hindered by cumbersome administrative procedures that keep most corporations off the market and that make approval a lengthy process for the few issuers.

The situation has improved lately in China. Commercial banks can issue subordinated bonds⁷ to help them meet capital adequacy standards that will be compulsory in the end of 2007. Other financial institutions can issue bonds for liability management purpose to resolve their long-standing problem of term-structure mismatch. Non-financial corporations can issue commercial paper (short-term financing bills in the interbank market). An asset-securitisation pilot scheme has been introduced in view of initiating vehicles of risk transfers in the housing market (mortgage-backed securities).

The issuance of corporate bonds depends critically on risk assessment by independent rating agencies, on the accessibility of the creditors to the collateral of the bonds and on a legal mechanism to deal with bankruptcies. They are prerequisites for the market to price risk effectively. Rating announcements and reviews are opinions that agglomerate all available market information and disseminate it to creditors. Five rating agencies with links to the big international rating agencies have been created. A new bankruptcy law was passed in August 2006 to unify the procedures for state-owned and private enterprises, to streamline litigation and enhance creditor standing. Implementing the new law will be a learning process because the judicial system, which is lacking of specialised courts, is not yet well-equipped to deal with a large number of bankruptcy cases.

IV.2 Secondary markets

Liquidity is the primary issue in secondary markets. It summarises the quality of the regulatory systems and market microstructures that contribute to the pricing of financial assets publicly.

⁷ Mu Huaipeng, « The development of China's bond market », Kunming conference, November 2005.

Liquidity is a multidimensional concept that encompasses market depth, tightness and resiliency. *Market depth* is the volume of trade that can be processed without impacting significantly prevailing market prices. It can be measured by turnover ratios. *Market tightness* points to how far transaction prices diverge from the mid-market price. It traces the transaction cost irrespective of the level of the market price and can be measured by the bid-ask spread or by the volatility of bond yields. *Market resiliency* is the speed of convergence from one equilibrium price to the next.

Empirical analysis has identified five potential determinants for the three components of liquidity, using cross-country regressions covering 30 countries⁸. Market size is the first candidate. Large-size bond markets tend to raise liquidity in increasing the availability of potentially tradable instruments. The second factor is the quality of legal and regulatory systems (rule of law). It promotes bond market liquidity in enhancing investor confidence and strengthening market microstructures. The rule of law is itself a compendium of trust in the judicial system, legal protection and standards of governance. The third factor is the availability of derivatives and other hedging instruments traded on active Futures Exchanges. It improves bond market liquidity in facilitating active and efficient portfolio management. The fourth factor is the degree of financial openness. Capital controls negatively impact bond market liquidity in limiting foreign investor participation and narrowing investor diversity. The fifth factor is foreign exchange rate volatility. It impairs liquidity in adding exchange rate risk to market risk borne by foreign investors.

The test of those hypotheses by researchers in the Asian Development Bank can be summarised on table 8. The factors that are significant on all three components of market liquidity are the rule of law, the existence of Futures Exchange markets and exchange rate volatility. The former two affect liquidity positively, the latter negatively. Capital controls are never significant. Since the removal of capital controls always entail greater exchange rate volatility, it follows that an emerging market country should never open its capital accounts before having strengthened its legal and regulatory system and having developed a full array of domestic financial instruments. It is what China did wisely and what other Asian countries did not at their expense in 1997.

Table 8. Factors affecting market liquidity

Market liquidity	Bond Outstanding	Rule of Law	Futures Markets	Capital controls	Exchange rate volatility
Turnover ratio	+ (ns)	+	+	- (ns)	-
Bid-Ask spread	-	-	-	+ (ns)	+

⁸ Asian Bond Monitor, ADB, November 2006, pp.35-46.

Bond yield volatility	#0 (ns)	-	+	+(ns)	+
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+ (positive) or – (negative) influence significant at 5%
ns: non significant

The policy options for the present stage of financial reform follow from this analysis. Bond market size will rise with the supply of government bonds. A liquid government bond market will offer a basis for broadening and deepening the corporate bond market. Legal and regulatory systems are being established step by step: legal protection, standards of corporate governance, international accounting standards. Market microstructures are strengthened by the set up of a delivery versus payment (DVP settlement system in the interbank market. The system has been operational for two years.

The next step is dedicated to developing derivatives markets. They are the necessary structures to relax capital controls and attract foreign investors more safely. In order to monitor the resulting capital flows from hedging activity, the central bank can intervene in active repurchase markets in using high-grade securities as collateral for lending operations.

Conclusion

The financial reform is closely intertwined with the economic and social reform. The state has been withdrawing its direct support to the enterprises that it still owns. The state is also separating its fiscal obligations from bank credit. Because the institutional change has deteriorated the social condition of a large part of labour and chiefly of the rural population, a modern social welfare system must be instituted. Compounded with the need of public investment in education and research, in infrastructures and environmental protection, the effort of the state to redeploy growth inwardly raises a formidable challenge for the public finances. But the saving of the population meets the challenge. The policy response lies in the pursuit of the modernisation of the financial system.

The basic decisions that have been taken in the last few years in the direction of a three-pillar retirement system will lead to the growth of powerful institutional financial investors. The rise and diversification of the bond markets will both the benchmark for and the natural outcome of their strategies.

Denying all the dire predictions made by Western Cassandra, the financial reform in China has been successful since its beginning after the Asian crisis. All the omens are that it will go on this way.

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