COST-BENEFIT ANALYSIS OF DEVELOPING DEBT MARKETS

In the aftermath of the Asian financial crisis, the role of the debt market received increased attention, as policymakers stressed the need to promote the development of both local and regional debt markets.

From a macroeconomic perspective, a deep, well functioning domestic debt market could mitigate adverse consequences to real economic activity brought about by credit disruptions associated with banking crises, by providing an effective alternative source of financing. From a microeconomic perspective, it could improve the functioning of financial markets and the economy, and reduce the maturity mismatch inherent in the banking sector.

However, these benefits do not come without risks. Bond investors are prone to exhibiting herding behaviour in a world of imperfect information. As a result, debt markets may act as a potential channel for spreading financial contagion.

In Hong Kong, the banking sector has been functioning well in providing financial intermediation. The stock market has provided an effective alternative source of funding to bank lending for long term, non-debt creating financing in local currency. In view of this, policy efforts should not be directed at supporting a particular financial structure—such as favouring bond markets over the banking sector. Instead, efforts should be made to make the financial market work better by reducing information asymmetries and establishing a robust market infrastructure.

I. Introduction

In the aftermath of the Asian financial crisis, the role of the debt market has received increased attention. A common view, shared and advocated by Asian policymakers, has been the need to promote the development of local as well as regional debt markets as part of the response to the crisis. This view is based on the belief that the crisis was caused in part by the over-reliance of Asian corporations on the banking system for short-term, often foreign-currency-denominated, funding.[1] Such capital flows were highly volatile, and led to currency and financial sector crises when large inflows suddenly reversed. Since Asian economies had the highest savings rates in the world, corporations would not have needed to resort to banks for such foreign capital flows for financing, if local debt markets had existed to channel more domestic savings into domestic investment.

1 One explanation for the over-reliance of Asian economies on short-term, foreign-currency-denominated funding is offered by the "original sin hypothesis" (Eichengreen and Hausmann, 1999). The incompleteness in financial markets, referred to as the "original sin", resulted in the inability to borrow abroad in domestic currency or to borrow long term domestically. This led to financial fragility because of the currency and maturity mismatches for domestic investment and was exacerbated by a weak banking system, which has shown its inability to intermediate savings to investment efficiently in many of the Asian economies. As a result, dollarisation and the development of a domestic debt market have been proposed as the solutions to the currency and maturity mismatches.

This paper attempts to shed some light on the rationale for developing the Hong Kong debt market from the perspectives of macroeconomic stability and microeconomic efficiency. Section II gives an overview of the financing channels in Hong Kong. Section III discusses how well the debt market could function as an alternative source of financing. Section IV discusses the potential improvement of the efficiency of financial intermediation from the development of the debt market. Section V concludes with a discussion of policy implications.

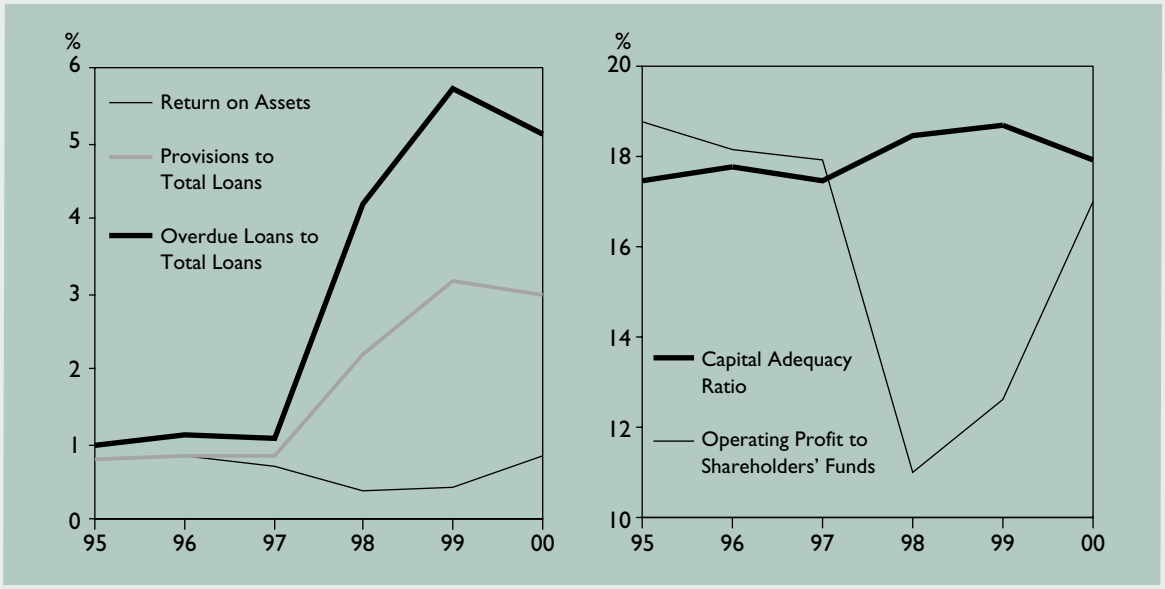
II. Overview of Financing Channels in Hong Kong

Bank lending, equity and bond issuance are the main vehicles for corporate fund-raising and channelling savings. Several features of these financing channels in Hong Kong are notable.

- Bank lending and equity financing in Hong Kong dominate corporate financing. Savings—which are high by international standards—are mostly channelled through the banking system and the equity market. This is similar to other Asian economies, but significantly different from the US and several Latin American countries, where direct financing from the capital markets (stock and bond markets) dominates indirect financing intermediated by commercial banks (Table 1).

- The banking system in Hong Kong is well supervised, and proved to be resilient to external shocks during the Asian financial crisis (Chart 1). Although the non-performing loan ratio jumped after the crisis from 1% of total loans during 1995-97 to over 5% in 1999, provisions increased and returns on assets declined, banks remained well capitalised at

Chart 1
Performance of Hong Kong's Banking Sector



Source: HKMA.

Notes: 1. Figures are for all authorized institutions in Hong Kong, except that operating profit to shareholders' funds and capital adequacy ratio refer to local banks only.

2. On or before 1998, overdue loans included loans overdue for more than 3 months and bills and rescheduled loans. Thereafter, overdue loans included loans overdue for more than 3 months and rescheduled loans, excluding those rescheduled loans that have also been reported under loans overdue for more than 3 months.

Table 1

Size of Financial Sectors in Selected Economies, 2000

	GDP (US$bn)	Savings	Domestic credit provided by banking sector [1]	Stock market capitalisation	Outstanding domestic bonds [2]	Of which: domestic corporate bonds as a percentage of total domestic bonds	Domestic bonds as a percentage of total bonds
		in percentage of GDP					
Hong Kong	163.2	32.2	158.1	377.0	25.2	11.9	57.0
China	1,090.5	39.2	123.4	53.3	24.3	2.4	93.7
India	416.0	n.a.	28.7	35.5	31.9	19.4	96.7
Indonesia	134.5	25.7	20.9	37.6	n.a.	n.a.	n.a.
Korea	408.9	32.5	90.7	42.0	66.3	39.2	84.5
Malaysia	89.3	46.9	100.3	130.9	84.5	56.4	83.1
Philippines	66.5	17.0	39.6	77.6	n.a.	n.a.	n.a.
Singapore	91.9	49.6	100.0	247.4	24.4	8.9	69.3
Taiwan	292.8	24.8	137.1	84.6	23.5	31.0	90.8
Thailand	115.9	32.1	85.9	26.1	33.4	30.7	73.3
Weighted Average	**286.9**	**34.9**	**98.6**	**78.1**	**34.3**	**24.2**	**86.0**
Argentina	285.2	16.9	23.1	58.5	29.9	n.a.	61.3
Brazil	557.4	n.a.	31.4	27.5	52.5	0.7	89.2
Mexico	567.5	21.5	11.8	22.1	11.9	11.9	95.5
Turkey	189.2	16.4	22.4	36.8	28.9	0.0	60.4
Weighted Average	**399.8**	**18.3**	**22.2**	**36.2**	**31.2**	**2.4**	**69.9**
UK	1,394.3	15.8	128.1 [3]	184.8	64.3	20.5	61.3
USA	9,963.1	17.7	73.1	157.4	146.0	16.5	89.2
Japan	4,454.6	27.4	109.3	71.3	136.3	12.4	95.5
Australia	363.2	22.8	90.3	102.3	47.4	24.1	60.4
Weighted Average	**4,043.8**	**20.3**	**88.2**	**134.8**	**134.1**	**15.6**	**88.8**

Sources: IFS, BIS, CEIC, International Federation of Stock Exchanges, Central Bank of Taiwan, Thai Bond Dealing Center, and Bloomberg.

Notes: 1. The data are domestic credit extended to the private sector, as reported on line 32d in the IFS.

2. The figures, except that of Thailand and Taiwan, are reported by BIS.

3. The figure is at end-November 2000.

about 18% throughout the period. By 2000, indicators of banking sector performance started to improve again.

- The stock market has been functioning well in Hong Kong, channelling substantial amount of financing to the corporate sector. Although the Hang Seng index (HSI) has been quite volatile, it has outperformed the S&P500 over the last decade. Market capitalisation (in % of GDP) has more than doubled since 1990, reaching 377% of GDP by 2000. Total equity funds raised on the main board increased from HK$20 billion in 1990 to HK$450 billion

in 2000, while China-related entities raised a record HK$345 billion from the Hong Kong stock market in 2000. Even excluding the funds raised by China-related entities, the amount of funds raised for Hong Kong corporations increased by four-fold over the last decade (Chart 2). Despite the rapid growth in market capitalisation and impressive long-term returns to investors, price-earning ratios have been modest, fluctuating in the range of 10-20 for most of the last decade. The average P/E ratio of 15.7 was lower than the post World War II average value of 17 for the S&P500 stocks. The earnings growth of the listed companies averaged 18% per year over the last decade (Chart 3).

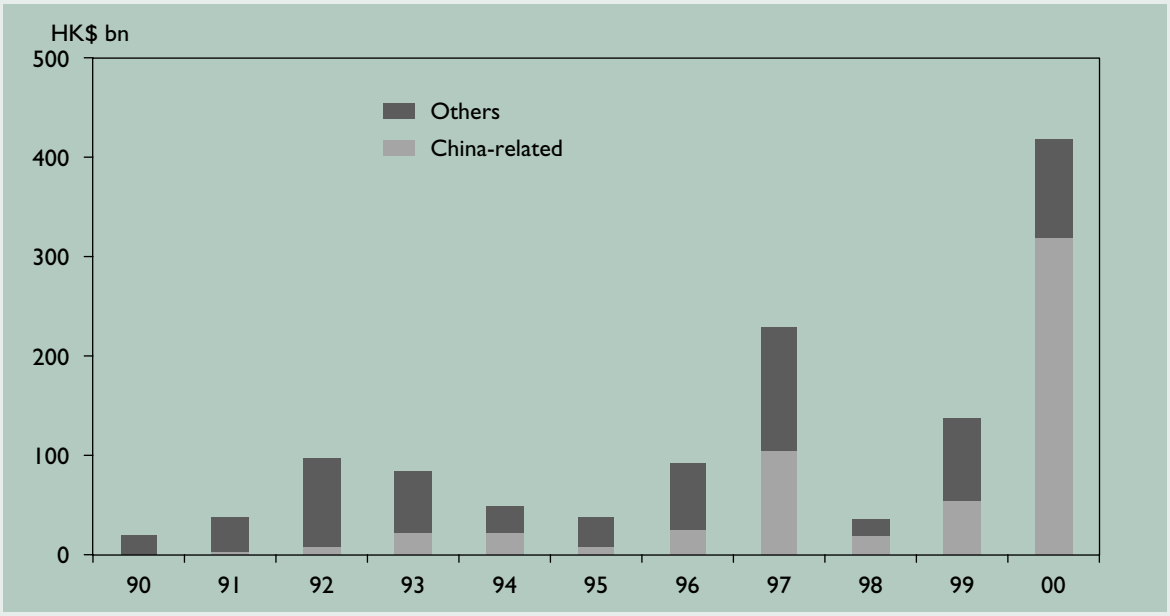
Overall, the banking sector in Hong Kong has been functioning well in providing financial intermediation, and the stock market has provided an effective alternative source of funding to bank lending for long-term, non-debt-creating financing in the local currency. The stock market also serves the function of improving corporate governance by protecting minority shareholders' rights in listed companies and ensuring that transparent accounting and auditing standards are followed (Cheung, 2000). The rest of the paper studies what major potential gains and costs may arise from the development of the local debt market in Hong Kong, drawing from the international experience.

III. Debt Market as an Alternative Source of Financing

Finance plays an increasingly important role for economic growth. In channelling savings to investment, the financial system contributes to economic performance through several channels—mobilising savings, allocating funds to their most productive uses, monitoring managers and transferring and sharing risks (World Bank, 2001). In modern economies, disruptions in the flow of credit are detrimental to economic activity, and lead to unemployment, cancelled investment plans and even recession. Capital account liberalisation and increasing globalisation add an international dimension for capital flows.

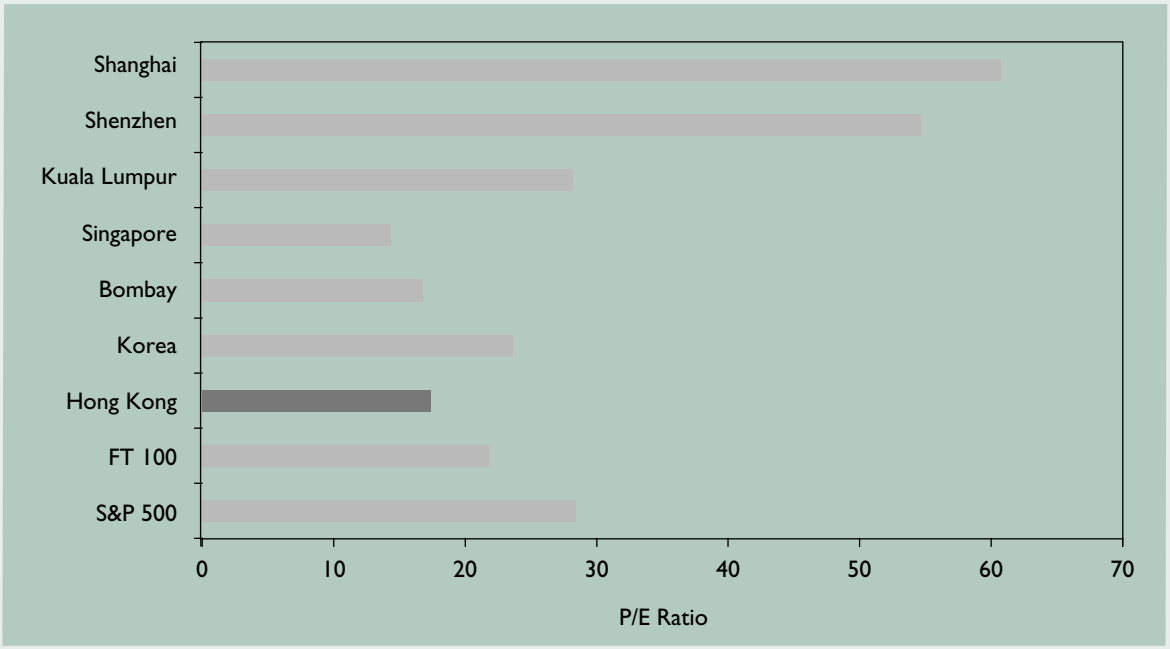
Chart 2

Total Equity Funds Raised in the Main Board, 1990 – 2000



Source: Hong Kong Exchanges and Clearing Limited.

Chart 3
P/E Ratios of Selected Stock Markets



Source: CEIC, and Bloomberg.

Note: P/E ratios are at end-May 2001, except that of Shanghai and S&P 500 which are at 30 April, and 20 June, respectively.

The development of debt markets might mitigate the adverse effect from financial crises or reduce the likelihood that a crisis will happen. The reasoning is that bond markets could provide an alternative source of financing if other financing channels, such as bank financing, dry up. Greenspan (2000) stressed the importance of having multiple avenues of financial intermediation, which served the US well during the credit crunch of the late 1980s when bond markets substituted for the loss of bank financial intermediation in a banking system crisis related to the real estate cycle. This view has gained popularity in recent years, especially in the aftermath of the Asian financial crisis. However, whether the bond market constitutes such an effective alternative source of financing depends crucially on the absence of co-movement between bank lending, bond and equity financing in a domestic setting, and the absence of contagion in the international capital markets, especially for countries with open capital accounts.

In the international setting, a large body of literature has examined the effect of contagion and the channels for transmission in emerging markets, both theoretically and empirically, since the 1997 Asian financial crisis (e.g., Pritsker, 2000 and Hernandez and Valdes, 2001).[2] Contagion has been defined broadly as the transmission of shocks in one economy (or one sector) to another, not explained by changes in economic fundamentals. Though it is difficult to control for fundamentals in empirical studies, contagion could occur through a number of channels, including the real sector, financial markets, financial institutions, and through the interaction of financial institutions and financial

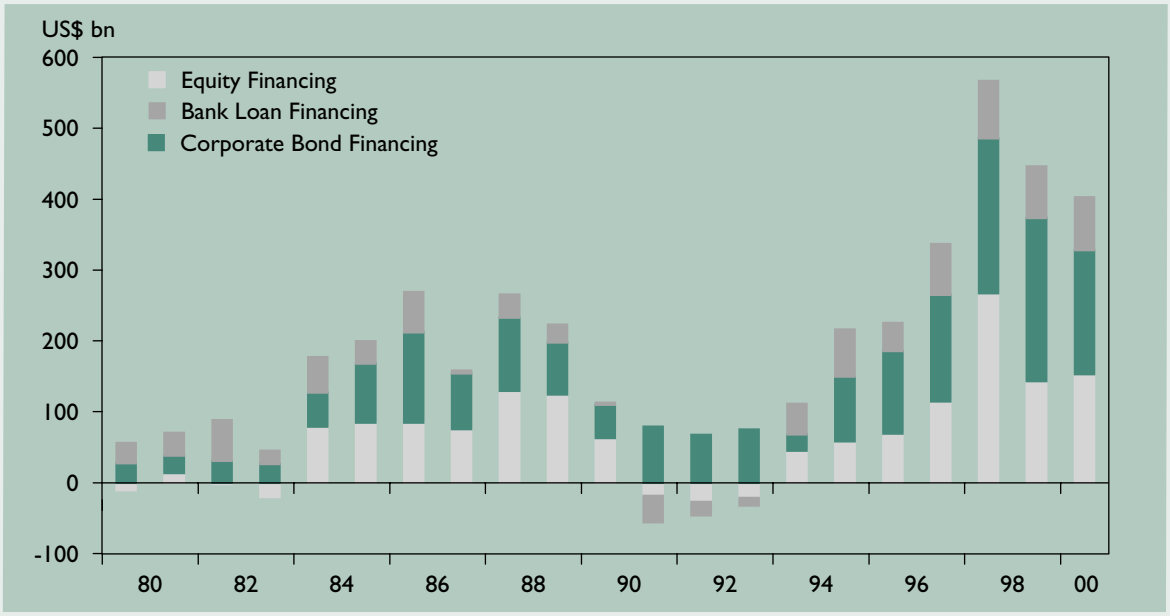
2 The earlier literature focused on the characteristics of the linkages of financial markets, especially after the October 1987 stock market crash in the United States. These studies found that there was an increase in the interdependence of national equity markets, and high levels of correlation between national equity markets during time of market stress. The spillover effects were found to be asymmetric—negative shocks in one market had larger effect on volatility in another market than positive shocks. Recent studies of the correlation between national bond markets in Germany, the United Kingdom and the United States found similar results—the linkages between these markets become stronger at times of market stress (Clare and Lekkos, 2000).

markets. Empirical studies have found increasing evidence indicating the importance of financial factors in spreading the shocks, in addition to real sector linkages such as similar macroeconomic fundamentals and trade flows. One implication of the important role financial contagion plays in crises is that financial markets, including the debt market, could provide a mechanism through which financial crises spread. This challenges the view that debt markets is likely to mitigate the negative effects of crises by providing an alternative source of financing at times of stress.

In this section, we look at a number of country experiences during financial crises, which suggest that debt markets could provide either an alternative source of financing (Box 1) or a channel through which contagion spreads (Box 2). A simple panel regression is estimated to study the potential for the domestic debt market to function as an alternative source of financing.

The experience of US bond markets during two banking crises—one resulting from the Latin American debt crisis in the 1980s and the other from the real estate crisis of 1990—showed how bond markets can provide an alternative source of financing in a domestic setting (Box 1). During these periods, the US banking sector suffered large losses that reduced its capital base drastically and severely curtailed its ability to lend. The ensuing liquidity crunch reduced substantially bank credits to US corporations. The US domestic bond markets, to varying degrees, functioned as alternative sources of financing for corporations when the banking sector was under stress.

Chart 4
Funds Raised by US Corporates



Source: Federal Reserve Bulletin (Flow of Funds).

Notes: 1. US non-farm and non-financial corporations.

2. Net funds raised by US corporate are measured in terms of flow of funds statistic that are calculated as the difference in outstanding amounts of different time periods.

Box 1

The US Bond Market during Two Banking Crises

Latin American Debt Crisis in the 1980s

The LDC (Less Developed Countries) debt crisis broke out in August 1982, when Mexico was unable to service its outstanding debt to US commercial banks. The situation continued to worsen and, by 1983, twenty-seven countries owing US$239 billion could not meet their debt obligations. Sixteen of the nations were in Latin America and the four largest—Mexico, Brazil, Venezuela, and Argentina—owed about 75% (about US$176 billion) of the total LDC debt outstanding. This crisis was largely attributable to the over-exposure of major US commercial banks to LDCs, which were eager to expand their overseas markets amid strong local competition. LDCs, especially rapidly growing Latin American countries with low domestic savings rates, needed external funding to finance investment activities.

The oil price increases in 1979, rising interest rates in the US and a strengthening dollar in early 1980s severely affected the LDCs' capacity to service their debt, triggering the crisis. The US banking system was at risk, as major US commercial banks' exposure significantly exceeded their total bank capital. At end-1982, the LDC loans to capital ratio stood at about 250% for major commercial banks. Massive loan losses on LDC debt suffered by US commercial banks led to a sharp reduction in bank lending—bank loans to US non-farm and non-financial corporations tumbled to US$19 billion in 1983, down 66% from 1982 (Chart 4).

Commercial Real Estate Crisis of the late 1980s—early 1990s

The banking crisis in the late 1980s and early 1990s was a result of aggressive lending to the commercial real estate industry. Against the backdrop of the unanticipated and sharp rise in inflation in the late 1970s, there was strong speculative demand for commercial real estate, especially in the office sector. Many commercial banks were active in real estate lending, partly owing to the large up-front fees. Between 1980 to 1990, commercial real estate loans increased from $64 billion to $238 billion.

Starting in the late 1980s and continuing into the early 1990s, the credit quality of real estate loans deteriorated rapidly, as the 1990-91 recession reduced the demand for commercial space, resulting in sharp falls in rents and prices. The downturn in the real estate sector was compounded by loose underwriting standards of commercial banks focusing on collateral values, and the closing of insolvent savings and loan institutions. As a result, many banks failed or suffered heavy losses. The ensuing contraction of loan financing for corporations became inevitable. Funds raised by US corporations in bank loans dropped from US$32 billion in 1988 to a net repayment of US$38 billion in 1991.

Multiple Avenues of Financial Intermediation

One feature of the US financial system is the availability of multiple avenues of financial intermediation. During the above two banking crises, the existence of different sources of financial intermediation served the US well. The liquidity crunch in the wake of banking crises, either caused by external (the LDC debt crisis) or domestic (commercial real estate crisis) shocks, threatened to disrupt normal credit flows in the economy, which could have severe adverse effect on the real economy. In the event, cutbacks in bank loans after 1982 and the early 1990s were substituted by increases in bond financing (Chart 4). The fact that no particular increases in the yields of investment-grade corporate bonds were observed when the bond market took over from the banking sector as a source for corporate financing demonstrates the smooth functioning of the bond market. Had a functional debt market not existed, corporations could be more vulnerable to the banking crises.

In contrast, the experience of several emerging economies that went through financial crises did not show strong evidence that debt markets functioned as an alternative source of financing (Box 2). The bond markets in Russia, Argentina, Brazil and Turkey did not help to reduce the volatility during crises—on the contrary, the bond markets usually were the first markets to collapse under pressure and seemed to be a channel for spreading financial contagion. One possible explanation is that banks have more information about individual borrowers than bondholders do. As a result, bondholders tend to act quickly on the same information—they are more likely to exhibit herding behaviour than the banks. Such herding behaviour could be rational given imperfect information (Bikhchandani and Sharma, 2000).

Box 2

Bond Markets in Emerging Economies during Recent Financial Crises

Co-movements of Emerging Bond Markets

Emerging debt markets have shown high correlations of bond returns in individual countries and periodic closures of all emerging debt markets to new issues. This is indicative of the high degree of market co-movement.

IMF (2001) calculated the unweighted average cross-correlation of daily bond returns among 9 major emerging market countries—Argentina, Brazil, Ecuador, Mexico, Panama, Peru, Venezuela, Poland and Russia from 1994. It also examined the closures of the emerging debt markets from 1993—defined as the periods when the issuance level was less than 20% of the period's trend issuance level (Table 2). The main results indicated that there were strong co-movements in both the primary and the secondary bond markets, especially at times of pressure.

- Over 1994-2000, the average cross-correlation was 0.51, indicating substantial co-movement of individual country returns.

- The average cross correlation rose sharply during the crises and fell afterwards. The increases were particularly large during the Asian and Russian crises, reaching levels in the range of 0.8-0.9.

- The average cross correlation has declined substantially since the Russian crisis in August 1998. Recent peaks observed during the Brazilian and Argentina/Turkey crises were in the range of 0.5-0.6, from the levels in the range of 0.2-0.4 during normal times.

- The inability of the emerging markets to issue new debt was characterised by rapid widening in spreads, rather than the absolute level of spreads. Such closures were closely related to the sharp increases in the average cross-correlation of individual country returns.

Country Experiences in Emerging Bond Markets during Financial Crises

The underlying causes of financial crises were the deterioration in the external environment—such as the US economic slowdown, a tightening of liquidity conditions in industrial countries, or adverse commodity price movements, and individual country weakness in policies (such as incompatible fiscal, monetary and exchange rate policies and fragile financial sectors). However, developments in the international and domestic bond markets played an important role in the recent financial crises experienced in Russia, Brazil, Argentina, and Turkey.

Box 2 (Con't)

The Russian Crisis—August 1998

The Russian crisis occurred in mid-August 1998 when the Russian government announced the devaluation of the ruble and the unilateral restructuring of domestic government debt. It led to a widespread flight to quality and liquidity, and quickly spread to both emerging and mature markets, triggering the near collapse of LTCM (a highly leveraged hedge fund in the United States) and the forced floating of the real in Brazil.

The Russian crisis had its root in the large and chronic fiscal deficit. This led to a rapid build-up of government debt, held by domestic as well as foreign investors. By late 1997, ruble-denominated GKOs (discount instruments) and OFZs (coupon bonds) were the main instruments issued by the Ministry of Finance to finance the deficit, with non-resident investors holding about one-third of the outstanding domestic treasury securities. Domestic political events and weak oil prices in the first half of 1998 made the issuance of ruble-denominated debt difficult and the government increased US dollar-denominated eurobond issuance, sending the stock of eurobond from US$4.6 billion to US$15.9 billion during March-July 1998. As GKO/OFZ redemption and coupon payments reached over US$1 billion a week in the second half of 1998, eurobond yield spread rose to 900 bps in late July and 1800 bps in mid-August, and oil prices reached 10-year lows in August, the government was unable to rollover its debt in the domestic as well as foreign bond markets. Massive sell-offs followed in the debt, equity and foreign exchange markets. Liquidity in the interbank market dried up as fears of bank failures led to runs on bank deposits. In sum, the rapid build-up of domestic debt and eurobonds, and the subsequent inability of the government to roll over these debt obligations when domestic political situation and external environment deteriorated triggered the crisis.

The Brazilian Crisis—January 1999

Brazil was severely affected by the Russian crisis. In late August, pressures started to build up in domestic bond and foreign exchange markets, which eventually led to the floating of real in January 1999.

The root of the crisis was the failure of the Brazilian government to control the fiscal deficit, with the public sector borrowing requirement reaching 6.3% of GDP in 1997 and approaching 8% in 1998. Large financing needs made Brazil vulnerable to investor sentiments and capital outflows.

In the wake of the Russian crisis, non-resident and domestic holdings of Brazilian debt and equity instruments were significantly reduced. The need to roll over large amounts of domestic debt in September-November 1998 added to the pressure in the domestic debt market. The sell-off in domestic debt and foreign exchange markets led to massive capital outflows, with international reserves falling to US$41.6 billion at end-October from US$70.9 billion in July. The treasury and the central bank had to cancel domestic debt auctions in September 1998 and reduced the amount for tender in subsequent auctions as the spreads soared.

Box 2 (Con't)

The Argentina and Turkey Bond Markets Sell-off—November-December 2000

During the 4th quarter of 2000, Argentina suffered a massive sell-off of its bonds in the international market. The deterioration of the external environment, mainly the rapidly widening US high-yield spreads, led to sharp across-the-board widening of emerging market spreads. Chronic fiscal weakness which made Argentina the largest emerging market borrower in the international debt markets attracted investors' attention. Heightened political tensions triggered the sell-off, and spreads on sovereign's debt increased from around 650 bps in early October to about 1000 bps in early November.

Turkey suffered a full-blown liquidity crisis in late November—early December 2000, following the sell-off in Argentina. The crisis reflected deteriorating external liquidity conditions, and weak domestic banking and exchange rate systems. The crisis was triggered by the withdrawal of external credit lines and syndicated loans to Turkish banks. The ensuing credit crunch in the banking system forced banks investing heavily in government securities market to sell their T-bill holdings. This pushed the yields above stop-loss levels of foreign investors and other local banks, triggering a massive sell-off in the domestic bond markets. In turn, this forced the primary dealers to suspend trading in government paper. Foreign investors, who had substantial positions in local markets rushed for the exit, as concerns about the foreign exchange exposures of the domestic banking system and the quality of their forward covers mounted. During the crisis, Turkey lost about US$7 billion in foreign exchange reserves. Overnight interest rates rose sharply (to over 2000% at one time). External debt spread widened by 174 bps. Trading in T-bills suspended with yields jumping from mid-30% to 90% , and equity market lost over 35%.

Table 2

Co-movement of Emerging Debt Markets during Financial Crises

Period	Average Cross Correlations	Durations of Market Closures
Mexican crisis - January 1995	0.80	5 weeks
Thai Baht Attacked - early May 1997	0.72	-
Asian financial crisis - October 1997	0.92	8 weeks
Russian default - August 1998	0.82	13 weeks
Floating of Brazil real - January 1999	0.60	-
Argentina and Turkey Sell-offs - Nov/Dec 1999	0.53	5 weeks
Average over 1994-2000	0.51	-

Source: IMF Emerging Market Financing - Quarterly Report on Developments and Prospects, February 2001.

Empirical Analysis

Most of the available empirical studies have focused on financial contagion across countries and have provided evidence on the role played by debt markets as alternative sources of financing in an international setting. However, the degree of co-movement of domestic bank financing, bond and equity issuance remains an important question, particularly in judging the effectiveness of the local

debt market as an alternative source of financing in a domestic setting.

We use the database on financial development and structure, constructed by World Bank staff (Beck, Demirguc-Kunt and Levine, 1999) to study such a relationship. In the first model, the dependent variable is the growth rate of the ratio of long-term private debt issues to GDP. The independent variables include bank lending (measured by the growth rate of the ratio of domestic credit to the private sector to GDP), the growth rate of the ratio of equity issues to GDP, a lagged dependent variable, and the growth rate of real GDP. The last variable is included to account for the fact that if the economy is in a recession, total demand for financing is likely to be reduced irrespective of funding availability. In the second model, the dependent variable is the growth rate of the bank lending. The independent variables include growth rates of bond and equity issuance, bank profitability, the output gap, the risk spread over US Treasuries, and a lagged dependent variable. In the second model, we look at the relationship between bank lending and bond issuance activities, after controlling for some of the common factors affecting bank lending. A group of 32 economies[3] are covered for the period of 1981-1995 for the first model. Only 13 OECD countries are covered for the second model, owing to limited data availability.

The panel regression results from the fixed effects and random effects specifications are presented in Table 3, indicating evidence for the co-movements of bank lending and bond issuance. In particular, under most model specifications, increases in bond issuance are associated with increases in bank lending, while the coefficients on equity issuance are also positive but not significant. Under the first model, the relationship is even stronger for OECD countries than for non-OECD countries, though the quality and the availability of data on the latter country group may contribute to this result. Higher real GDP growth has the expected positive effect on bond issuance. Under the second model, we also find that bond issuance is positively related to bank lending, after the effects of bank profitability, output gap and risk spreads are taken into account.

The positive correlation between bond issuance and bank lending, even after controlling for demand and supply factors, implies that bond markets may not function as an effective alternative source of financing. The development of the bond market may not help to prevent, or to mitigate the effect of, financial crises. Loss of confidence among a large investor base—resulting from a deteriorating macroeconomic situation or a banking sector problem, or even "sunspots" (self-fulfilling prophecies)—could turn into a credit squeeze in the bond market, which could in turn spread to other financing channels, aggravating the situation. In fact, as we observed in a number of recent financial crises, no matter where the initial tension was (either over-extensions in banking lending or government/corporate over-borrowing in bond markets, or over-valued exchange rates, or equity market bubbles), it could quickly spill over to other credit channels (Box 2).

Whether the debt market can function as an alternative source of financing during times of stress is debatable—it seems to depend on the underlying causes of the crises. The US experience indicated that bond markets could function well, as long as the cause of the banking system crisis is limited in scope. In other emerging market cases, rapid contagion effects across financing channels and countries appear to render the bond market a source of instability.

3 The economies included are Argentina, Austria, Brazil, Canada, Switzerland, Chile, China, Colombia, Germany, Spain, France, United Kingdom, Greece, Hong Kong SAR, Indonesia, India, Italy, Jordan, Japan, Korea, Luxembourg, Mexico, Malaysia, Netherlands, Peru, Philippines, Portugal, Thailand, Tunisia, Turkey, United States, and Venezuela.

Table 3

Results from a Simple Panel Regression

Variables	Fixed effects	Random effects	Fixed effects	Fixed effects
	Dependent Variable: Bond Issuance (growth rate)			
	All Economies			
Bank Lending (growth rate)	1.03	0.84	1.27	1.02
	(2.14)*	(1.99)*	(3.37)*	(3.11)*
Equity Issuance (growth rate)	0.03	0.02	0.01	–
	(1.47)	(0.95)	(0.59)	–
Real GDP (growth rate)	0.06	0.05	0.03	0.04
	(3.37)*	(3.34)*	(2.09)*	(2.64)*
Lagged Bond Issuance (growth rate)	-0.34	-0.28	–	–
	(6.48)*	(5.41)*	–	–
Lagged Bond Issuance (level)	–	–	-0.51	-0.49
	–	–	(11.27)*	(11.77)*
R2	0.26	0.19	0.38	0.37
DW Statistics	2.17	2.08	2.03	2.09
Sample period	1982-1995	1982-1995	1981-1995	1981-1995
Number of Economies	32	32	32	32
Total panel observations	298	298	328	347
	OECD Economies[1]			
Bank Lending (growth rate)	1.03	–	1.48	1.12
	(2.43)*	–	(3.42)*	(3.60)*
Equity Issuance (growth rate)	0.04	–	0.03	–
	(1.11)	–	(0.97)	–
Real GDP (growth rate)	0.02	–	0.01	0.01
	(1.11)	–	(0.96)	(0.61)
Lagged Bond Issuance (growth rate)	-0.44	–	–	–
	(7.18)*	–	–	–
Lagged Bond Issuance (level)	–	–	-0.38	-0.34
	–	–	(7.52)*	(7.69)*
R2	0.29	–	0.28	0.28
DW Statistics	2.25	–	2.27	2.44
Sample period	1982-1995	–	1981-1995	1981-1995
Number of Economies	17	–	17	17
Total panel observations	202	–	217	229

Table 3 (Con't)

Results from a Simple Panel Regression

Variables	Fixed effects	Random effects	Fixed effects	Fixed effects
	Non-OECD Economies[2]			
Bank Lending (growth rate)	0.64	0.48	1.15	0.90
	(0.59)	(0.54)	(1.62)	(1.33)
Equity Issuance (growth rate)	0.02	0.01	0.005	–
	(0.64)	(0.24)	(0.15)	–
Real GDP (growth rate)	0.11	0.08	0.05	0.07
	(2.68)*	(2.40)*	(1.46)	(2.14)*
Lagged Bond Issuance (growth rate)	-0.31	-0.25	–	–
	(3.22)*	(2.70)*	–	–
Lagged Bond Issuance (level)	–	–	-0.57	-0.59
	–	–	(6.85)*	(7.45)*
R2	0.27	0.19	0.42	0.42
DW Statistics	2.27	2.17	2.06	2.05
Sample period	1982-1995	1982-1995	1981-1995	1981-1995
Number of Economies	15	15	15	15
Total panel observations	96	96	111	118
	Dependent Variable: Bank Lending (growth rate)			
	OECD Economies[3]			
Bond Issuance (growth rate)	0.02	0.02	0.02	0.02
	(1.99)*	(1.95)*	(1.81)	(1.69)
Equity Issuance (growth rate)	-0.003	-0.01	-0.01	–
	(0.34)	(0.87)	(1.32)	–
Bank Profitability[4]	0.06	0.04	0.04	0.03
	(3.94)*	(2.79)*	(2.67)*	(2.30)*
Output Gap[5]	0.002	0.01	0.005	0.01
	(0.80)	(2.48)*	(1.85)	(2.12)*
Risk Spread[6]	-0.004	-0.01	0.0002	–
	(0.90)	(2.10)*	(0.05)	–
Lagged Bank Lending (growth rate)	0.33	–	–	–
	(3.79)*	–	–	–
Lagged Bank Lending (level)	–	-0.08	-0.18	-0.19
	–	(3.17)*	(4.61)*	(5.08)*
R2	0.41	0.38	0.44	0.40
DW Statistics	2.11	1.54	1.57	1.81
Sample period	1982-1995	1982-1995	1981-1995	1981-1995
Number of Economies	13	13	13	13
Total panel observations	126	126	126	130

*Numbers in parenthesis are t-statistics, * indicates the coefficient is significant at 5% level.*

Notes:

1. *These refer to Austria, Canada, Switzerland, Germany, Spain, France, United Kingdom, Greece, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, Portugal, Turkey, and United States.*
2. *These refer to Argentina, Brazil, Chile, China, Colombia, Hong Kong SAR., Indonesia, India, Jordan, Malaysia, Peru, Philippines, Thailand, Tunisia, and Venezuela.*
3. *These refer to Canada, Switzerland, Germany, Spain, France, United Kingdom, Italy, Japan, Korea, Luxembourg, Netherlands, Portugal, and United States.*
4. *This refers to profit before tax as a per cent of gross income.*
5. *This refers to actual GDP less potential GDP as a per cent of potential GDP.*
6. *This refers to government bond yield less United States government bond yield.*

Source: HKMA staff estimates.

Table 4

Financing Activities of Local Corporations

(in billions of Hong Kong dollars)

Year	New Hong Kong Dollar Debt Issuance by Local Corporates	Funds Raised in Hong Kong Equity Market*	Increase in Domestic Loans	Total
96	4.0	100.0	250.4	354.4
97	12.8	247.6	408.0	668.4
98	6.2	38.3	-120.6	-76.1
99	24.1	149.7	-176.1	-2.3
00	16.1	463.2	32.8	512.1

** Include H-shares and Red Chips, and cover IPOs, rights issues, private placement, and funds raised from the GEM.*

Source: HKMA.

The experience of Hong Kong seems to be closer to that of the US. Financing activities of the local corporations in Hong Kong during the past few years demonstrated that the local debt market did substitute for bank financing to some extent in the aftermath of Asian financial crisis. However, its effect has been limited owing to its small size (Table 4). The collapse of property prices and the recession led to deteriorating asset quality and the adoption of a conservative lending stance by the banking sector. Compounded by the withdrawal of Japanese banks owing to domestic financial sector problems, total bank lending dropped substantially in 1998-99. Meanwhile, corporate bond issuance, traditionally dominated by bank and equity financing, increased significantly and partially filled the gap. This contrasts with the experience during the early eighties when the property market collapsed and a few banks failed. The sharp contraction in bank lending resulted in major financing difficulties for local corporations, as the debt market was virtually non-existent at that time.

IV. Debt Market and Efficiency Gains

In the microeconomic context, arguments based on the theory of information asymmetries suggest that bond markets may improve efficiency in an economy and reduce vulnerability to financial crises (Herring and Chatusripitak, 2000).[4]

Bank loans and corporate bonds deal differently with information asymmetries. Banks take on the credit risks from the creditors (depositors) and manage their risks by monitoring borrowers. Bond financing involves public investors taking on credit risks themselves. As a result, bond financing spreads the risks over a large group of diverse bondholders, much wider than bank financing could achieve. In addition, bond financing does not involve maturity transformation, as investors are fully aware of the yields and time horizons of their investment. Bank financing, on the other hand, inevitably involves maturity transformation, as liabilities of banks are typically short-term in nature, while assets have longer-term maturity. The existence of a domestic bond market may also reduce the need to borrow abroad and so reduce potential currency mismatch. An economy with a well-developed corporate bond market has stronger market discipline than the one dominated by bank lending, as investors would require disclosure of information and transparency in corporate operations to protect their interest and reward strong performers with lower funding costs (Hakansson, 1999).

4 In perfect capital markets, Modigliani and Miller (1958) showed that no matter how you divide up the capital structure of a firm among debt, equity, or other claims, the investment value would be the same, since total investment value of a corporation depends only on its underlying profitability and risk.

A well-developed debt market can also increase economic welfare as it complements other financial instruments to provide a full spectrum of investment vehicles whose payoffs across contingencies or states of nature cannot be easily replicated by other securities in the market. For example, certain classes of investors (such as pension funds, insurance companies) prefer to hold low risk debt instruments, with a stable income stream, which could not be provided by the equity market.

A well-developed bond market also provides important benefits to the economy:

- It provides a market-determined term structures of interest rates—the yield curve. The key use of the yield curve is to serve as a benchmark for pricing credit risk, bank loans, and stock prices. For macroeconomic policy makers, the shape of the yield curve provides useful information about market expectations of future interest rates and inflation rates. The bond market is the base for developing efficient derivatives markets (forward, futures, swaps and options) for managing financial risks at low costs.

- It could lower funding costs for best quality borrowers, as intermediation costs are lower for bond than for bank financing. Borrowers on the borderline between investment and non-investment grade creditworthiness require more customised analysis, underwriting and structuring by banks, which are better equipped to assess such borrowers.

- It introduces competition to the banking sector, perhaps reducing the dominance of banks in providing corporate financing. If banks themselves issue bonds, they will be subject to increased market discipline, with their performance being reflected in bond prices. This discipline may serve as a useful adjunct to official banking supervision.

- It allows the transfer of risks through securitisation. The bond market provides an important venue for banks to repackage loans and sell them as bonds (such as the mortgage-backed or other asset-backed securities). This reduces banks' exposure to liquidity risk and mitigates their maturity mismatch.

Though bond financing could mitigate the maturity mismatch, empirical studies have yielded mixed results on the effect of the bond market on extending the maturity structure of corporate debt. A cross-country study covering Argentina, Brazil, Mexico, Indonesia, Malaysia, South Korea and Thailand examined the financing choices of the corporate sector based on firm-level balance sheet data (Schmukler and Vesperoni, 2000). It found that firms with access to international bond markets increased long-term debt and extended their debt maturity structure (with a lower proportion of short-term debt over total debt), relative to firms with no access to international bond markets. This is consistent with the hypothesis that the maturity of bonds is in general longer than that of the bank loans. However, the same study found no significant differences in the maturity structure of debt in bank-based and market-based economies. The experience of Chile indicates that the development of the domestic bond market did not lengthen the maturity structure of firms' debt (Gallego and Loayza, 2000).

V. Conclusions

There are substantial macroeconomic and microeconomic benefits in a well-developed bond market. Microeconomic efficiency gains, through diversification and mitigation of credit and liquidity risks, improved corporate governance and better pricing of risks, are likely to have the macroeconomic effect of reducing the probability of the occurrence of financial crises and limiting the negative effect of a financial crisis, should it occur.

However, it should be noted that there are also risks arising from the development of debt markets, which may act as a potential channel for spreading financial contagion. In addition, the debate on the relative merits of a bank-based versus a market-based financial system is far from conclusive, despite the potential efficiency gains discussed above. A recent study examined the relationship between financial structure and economic growth based on a broad, cross-country database. The results found no cross-country

empirical evidence on the relative merits of market-based or bank-based financial systems. Neither system is particularly effective at promoting growth—"countries with well-developed banks but poorly developed markets do not perform notably differently from those with very well developed markets but poorly developed banks, or than those with more balanced financial systems after controlling for overall financial development." (Levine, 2000) However, the study did find that the legal system is a crucial factor in financial development and that better-developed financial systems enhance growth.

As a result, policy efforts should not be directed at favouring a particular financial structure—such as bond markets over the banking sector. Instead, efforts should be directed at improving the functioning of the financial sector, whether it is bank-based or market-based. This highlights the importance of efforts to build efficient market infrastructure and to reduce information asymmetries. Such efforts also help realise the full potential of efficiency gains from the debt market and to limit the downside risks of herding behaviour often observed in emerging bond markets. In particular, improvement in market transparency such as accounting and disclosure standards, and the establishment of a legal and regulatory framework consistent with international best practice, and with strong enforcement, will help investors to better differentiate emerging markets at times of pressure and reduce the contagion effects. The recent decline in the cross-correlation of the emerging debt markets could be partly attributed to international efforts in this area.

The HKMA, together with other government regulatory and supervisory agencies, has focused its efforts over the past decade to develop a supportive environment in which a well-functioning debt market in Hong Kong can grow. The Exchange Fund Bills and Notes programmes introduced in 1990 has established a benchmark yield curve extending to 10 years. A market-making system has been set up, and efficient clearing and settlement systems, for both Hong Kong dollar and US dollar payments and instruments, are in operation. In addition to the establishment of an efficient market infrastructure, the accounting and disclosure standards are high by international standards, and constantly been improved to match international best practice, and a transparent legal and regulatory framework ensures that market discipline functions effectively.

Prepared by Guorong Jiang, Nancy Tang and Eve Law
of the Research Department

REFERENCES

Beck, Thorsten, Asli Demirguc-Kunt, and Ross Levine, *A New Database on Financial Development and Structure,* The World Bank, Washington, DC, June 1999.

Bikhchandani, Sushil, and Sunil Sharma, *Herd Behaviour in Financial Markets: A Review,* IMF Working Paper WP/00/48, Washington DC, March 2000.

Cerisola, Martin, and Gustavo Ramirez, *US Equity Prices and the Technology Boom, United States: Selected Issues,* IMF Staff Country Report No. 11/112, International Monetary Fund, Washington DC, August 2000.

Cheung, Stephen Y. L., *Corporate Governance in Hong Kong, China—rising to the Challenge of Globalisation,* 2000.

Clare, Andrew and Ilias Lekkos, *An Analysis of the Relationship Between International Bond Markets,* Bank of England Working Paper Series No. 123, December 2000.

Detragiache, Enrica and Antonio Spilimbergo, *Crises and Liquidity: Evidence and Interpretation,* IMF Working Paper WP/01/2, Washington DC, January 2001.

Eichengreen, Barry and Richardo Hausmann, *Exchange Rates and Financial Fragility,* NBER Working Paper 7418, Cambridge, MA, November 1999.

Gallego, Francisco and Norman Loayza, *Financial Structure in Chile: Macroeconomic Developments and Microeconomic Effects*, World Bank mimeo, Washington, DC, February 2000.

Greenspan, Alan, *Global Challenges, Remarks at the Financial Crisis Conference, Council on Foreign Relations, New York,* New York, July 12, 2000.

Hakansson, Nils H., "The Role of A Corporate Bond Market in an Economy—and in Avoiding Crises", *China Accounting and Finance Review*, Volume 1, number 1, March 1999.

Hernandez, Leonardo F. and Rodrigo O. Valdes, *What Drives Contagion: Trade, Neighbourhood, or Financial Links?* IMF Working Paper WP/01/29, International Monetary Fund, Washington, DC, March 2001.

Herring, Richard J., and Nathporn Chatusripitak, *The Case of the Missing Market: the Bond Market and Why It Matters for Financial Development,* Paper prepared for the Asian Development Bank Institute/Wharton Seminar on Financial Structure for Sustainable Development in Post-Crisis Asia, Tokyo, May 26, 2000.

International Monetary Fund, *Emerging Market Financing, Quarterly Report on Developments and Prospects,* Washington, DC, February 2001.

Levine, Ross, *Bank-Based or Market-Based Financial Systems: Which is Better?* World Bank mimeo, Washington DC, January 2000.

Modigliani, Franco and Merton Miller, "The Cost of Capital, Corporation Finance, and the Theory of Investment", *American Economic Review*, June 1958.

Pritsker, Matt, *The Channels for Financial Contagion*, Board of Governors of the Federal Reserve System, Washington, DC, January 2000.

Schmukler, Sergio and Esteban Vesperoni, *Does Integration with Global Markets Affect Firms' Financing Choices? Evidence from Emerging Economies*, World Bank mimeo, Washington DC, February 2000.

Staff, Board of Governors of the Federal Reserve System, *Condition of the Banking Industry, Appendix to Testimony of Chairman Alan Greenspan*, June 20, 2001.

World Bank, *The Finance for Growth: Policy Choices in a Volatile World*, World Bank Policy Research Report, Oxford University Press, May 2001.

Yoshitomi, Masaru and Sayuri Shirai, *Designing A Financial Market Structure in Post-Crisis Asia—How to Develop Corporate Bond Markets*, ADB Institute Working Paper 15, March 2001.