11 Singapore

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Executive Summary

As in other Asian countries, the domestic bond market in Singapore is a relatively new phenomenon, whose development has been made all the more pertinent in the wake of the regional crisis.

The island city-state is one of the strongest economies in Asia, posting many years of strong growth since independence, and having enjoyed huge fiscal surpluses and substantial reserves for many years.

Though not nearly as severely affected by the turmoil of 1997 as many other Asian developing countries (ADCs), the economy in Singapore did contract in the wake of the Asian crisis, with growth rate slowing sharply to just 0.3 percent in 1998. In response, the Government implemented packages to stabilize the economy, in June 1998 announcing a 2 billion Singapore dollars (S$) off-budget package aimed at cushioning the economic impact of the crisis and improving competitiveness. A second off-budget package of S$10.5 billion was introduced in November.

Overall, basic policy in Singapore is driven by liberalization in the financial sector and promotion of the state as the international financial center in Asia, and ultimately the debt hub in the region for arranging, underwriting, and trading bonds, both Singapore and non-Singapore dollar-denominated. It has many advantages in this area, such as its strategic location, high presence of foreign banks, and favorable tax treatment.

Due to large budget surpluses, the Singapore Government Securities (SGS) market is an “artificial” market, which does not actually reflect the Government’s budgetary conditions or needs. Supply of SGS to the market is mainly to create a benchmark yield curve for the interest rate market as well as to meet the investment needs of the Central Provident Fund (CPF) and banks’ mandatory reserve requirements.

Apart from government securities, the bond market currently consists of government agencies bonds, corporate bonds, and Asian dollar bonds.

Before 1999, the Monetary Authority of Singapore (MAS) introduced two major revamping programs in the Singapore bond market, first in 1987 and then in 1998. There was further revision in 1999. The 1987 program was targeted mainly at the SGS market, and did not have a significant impact on the market, except for increasing volume of new issues of SGS over the years. In 1998, as part of an overall effort to develop the Singapore capital market, MAS moved on to inject fresh factors to the market. The aim was to develop Singapore as an international debt center in Asia. Through a series of well-coordinated policies, MAS expects the bond market to grow further and deeper at a faster pace.

The expansion of market size over the past few years has been mainly due to the consistent efforts of MAS to issue more and longer-tenor SGS, and to ensure that the amount of issues have been substantially larger than the amounts maturing.

The increase of supply of SGS has brought about a rapid rise in liquidity, with efficiency and volume of trading on the secondary market having greatly improved.

Compared with developed markets, the size of the Singapore bond market remains small, however. Moreover, the majority of outstanding bonds are captured and locked away by institutional investors such as CPF, resulting in a relatively inactive secondary market and lowered ability to establish a responsive benchmark yield curve.

In addition, some problems still distort the market, particularly in the area of unfair tax incentives and compulsory subscriptions.

Some recommendations to help further develop a smoothly functioning bond market include (i) extending tax incentives to individual investors to improve liquidity in the SGS market; (ii) reducing mandatory holdings of SGS as a liquid asset, which currently affect liquidity and distort the yield curve; (iii) encouraging more foreign banks to register as primary dealers to generate liquidity and expand the investor base; (iv) making MAS play a more active role in the SGS repo market; (v) the launching of Singapore Government Bond Futures Contracts by the Singapore Exchange (SGX) to enable participants to hedge their cash positions and facilitate price discovery; (vi) disseminating real-time trade information to enhance price transparency and liquidity; and (vii) encouraging statutory board bonds to seek rating. To a certain extent, the development of the Singapore corporate bond market will depend upon the success of statutory board issues. It is therefore important for them to seek rating to set standard practice.

I. Fiscal Policy and Management

The main objective of Singapore's fiscal policy is to promote long-term economic growth by providing a stable and conducive environment in which the private sector can thrive and remain competitive, i.e., by reducing costs and taxes, enhancing capabilities, raising technology levels, and promoting manufacturing and services.

The Government's long-term target is to contain expenditure within operating revenue and run a modest budget surplus.

The island city-state is one of the strongest economies in Asia, posting many years of strong growth since independence, and losing steam only in two years (1985, when it suffered a recession, and 1998, when, along with the other economies in the region, it was mildly affected by the Asian bug—ironically due to its relatively strong currency, which eroded its competitiveness).

The Government has enjoyed huge fiscal surpluses and substantial reserves for many years, with revenue from 1986 generally at around 22 percent of GDP, except in 1998 and 1999, when this dropped to 19 percent and 17 percent. Nevertheless, budget surpluses of S$3.4 billion and S$3.2 billion, respectively, were still attained in these two years. Operating expenditures have been maintained at no more than 11 percent of GDP. As shown in Table 1, the surpluses have mainly been the result of buoyant revenues and prudent expenditure.

TABLE 1
Government Revenue and Expenditure[a]
(S$ million, percent of GDP)

Year	Operating Revenue[b]		Operating Expenditure[c]		Development Expenditure[d]		Surplus/Deficit	
	S$ million	% of Nominal GDP	S$ million	% of Nominal GDP	S$ million	% of Nominal GDP	S$ million	% of Nominal GDP
1990	13,340.4	21.0	7,435.0	11.7	3,356.4	5.3	2,549.0	4.0
1991	15,697.4	22.3	8,173.5	11.6	3,601.0	5.1	3,922.9	5.6
1992	17,772.4	21.9	8,512.3	10.5	3,649.1	4.5	5,611.0	6.9
1993	20,655.5	22.4	9,001.2	9.8	3,894.8	4.2	7,759.5	8.4
1994	23,713.2	21.9	10,071.9	9.3	3,971.2	3.7	9,670.1	8.9
1995	25,254.8	20.2	11,448.9	9.2	5,961.5	4.8	7,844.4	6.2
1996	28,929.7	21.8	14,158.7	10.7	9,127.7	6.0	5,643.3	4.2
1997	29,181.4	20.0	14,079.7	9.7	89,963.0	6.2	6,138.7	4.1
1998	28,212.5	19.1	14,236.4	9.7	10,557.1	7.2	3,419.0	2.3

[a] Nominal figures. Financial year: 1 April to 31 March; [b] Operating revenue includes tax revenue, fees and charges and others; [c] Operating expenditures includes expenditure on manpower, other operating expenditure, grants-in-aid and pensions; [d] Development expenditure includes government expenditure, capital grants and public housing.

Source: Singapore: the Budget for the Financial Year.

TABLE 2
Economic Statistics of Singapore
(S$ million)

Year	GDP[a]	GDP Growth Rate	Inflation Rate[b]	Official Reserves
1990	66413.9	9.0	3.4	48,521.3
1991	71139.1	7.1	3.4	55,802.8
1992	75810.8	6.6	2.3	65,788.4
1993	85478.3	12.8	2.3	77,866.8
1994	95208.8	11.4	3.1	85,165.5
1995	102.982.0	8.2	1.7	97,336.6
1996	110734.0	7.5	1.4	107,750.8
1997	120713.0	9.0	2.0	119,616.8
1998	121130.0	0.3	–0.3	124,584.4

[a] 1990 prices; [b] Consumer Price Index.
Source: Monetary Authority of Singapore *Annual Report* (various issues).

A. Government Revenue

Singapore's tax policy is fairly simple, with revenue generated mostly from corporate and individual income taxes, plus others on property, motor vehicles, and goods and services.

Despite successive reductions in income taxes, collection from direct and indirect taxes continues to rise, underpinned by the growth in the Singaporean economy. From 1990 to 1998, the average growth rate of the Singapore economy was around 8 percent, with a very moderate inflation rate.

The other sources of government revenue are non-tax items such as certificates of entitlement (COE)—a type of motor vehicle-related revenue unique to Singapore and foreign workers levy. These revenue sources contribute significantly to total government collection.

Analysis by MAS has shown that tax revenue in Singapore tends to be highly procyclical. This can be measured by tax elasticity. In Singapore, the sensitivity of total tax revenue with respect to nominal GDP is estimated to be about 0.28. This means that for a 1 percent increase in GDP, total tax receipts should increase by about 0.28 percent. Other measures of sensitivity are as follows:

TABLE 3
Tax Cyclical Response

Tax Category	Estimated Cyclical Response Parameter
Total Tax	0.28
Direct Taxes	0.30
Indirect Taxes	0.17
Goods and Services	0.18
Property	0.35
Motor-vehicle related	0.26
Nontax	
COEs	0.31

COEs = Certificates of entitlement.
Source: Monetary Authority of Singapore *Annual Report* (*1998/99*)

B. Government Expenditure

Government expenditure is broadly classified into operating expenditure and development expenditure. Over the years, the Government has been able to keep operating expenditures low, mainly due to the absence of welfare payments and unemployment-related grants.

On development expenditure, the government policy is that it will embark on projects based on economic merit rather than available surpluses. Over the last 10 years, 38 percent of total expenditure has been devoted to development purposes, and this figure is rising. Development projects include building, schools, hospitals, roads, and parks.

Budget surpluses have given the Government the flexibility to support growth in case the country's economic growth should slow down or turn negative. When this happens, the government thus has room to reduce taxes to promote investment and economic growth. In good years, surpluses have enabled the Government to redistribute wealth. Previously, this was done by subsidizing the Government's Housing Development Board (HDB) Upgrading Program, waiving of some HDB conservancy and service charges, and the share ownership top-up scheme.

C. Fiscal Management During the Asian Crisis

In 1998, in the wake of the Asian economic crisis, Singapore's economy contracted, with the economic growth rate slowing sharply to 0.3 percent. Since the start of the crisis in July 1997, the Government implemented two packages to stabilize the Singapore economy. In June 1998, it announced a S$2 billion off-budget package aimed at cushioning the economic impact of the crisis and improving Singapore's competitiveness. In November 1998, a second S$10.5 billion off-budget package was introduced.

Major targets of these two budget measures included cutting business costs through government subsidies, building economic infrastructure and capabilities, and stabilizing specific sectors of the economy. With the accumulated surpluses, the Government was able to speed up or bring forward public infrastructure projects, such as the building of schools and development of industrial land. Other sectors, such as property and finance, also received some support.

D. Impact of Fiscal Policy on the Government Securities Market

Currently, fiscal policy has no impact on the SGS market, as the Government has accumulated sizable reserves from its past budget surpluses. Therefore, it can be said that the SGS market is an “artificial” market, which does not reflect the government budget condition. Supply of SGS to the market is made mainly to create a benchmark yield curve for the interest rate market and to meet the investment needs of the CPF and banks’ mandatory reserve requirements.

II. Monetary Policy and Management

MAS formulates and implements monetary policy, the principal objective of which is to promote sustained and noninflationary economic growth.

In view of the significant influence of exchange rates on Singapore’s small and open economy, MAS policy since the early 1980s has focused on managing the exchange rate instead of focusing on money supply or using open market operations (OMO) to influence interest rates.

MAS also facilitates the issuance of SGS, supervises the regulation of the banking, insurance, securities, and futures industries and actively promotes Singapore as an international financial center.

A. Historical Overview

Over the years, Singapore’s monetary policy regime has been primarily shaped by responses to changing domestic and international factors. Prior to the early 1980s, MAS relied on a variety of intermediary targets for the conduct of its monetary policy. It monitored the monetary base, interest rates, credit growth, the trade-weighted exchange rate of the Singapore dollar, and a few important bilateral exchange rates. In terms of policy instruments, the 1970s saw MAS switch from direct controls on reserve requirements and credit growth to operations in the foreign exchange and domestic money markets.

The economy in the early half of 1970s was characterized by rising inflationary pressure caused by excess liquidity in the banking system. The main sources of the problem were turbulence in the international currency markets and oil price shocks. Against this background was the fixed exchange rate of the Singapore dollar against the British pound (sterling) and subsequently the US dollar until June 1973, which made the economy vulnerable to import inflation.

An influx of foreign funds was the result of the sterling crisis in 1972 and the revaluation of US dollar in 1973. To curb the excess supply of liquidity, the MAS implemented a series of restrictive policies, such as increasing bank reserve requirements, raising interest rates, imposing deposit requirements, and engaging in moral suasion on the banks to restrain credit growth. The inflow of funds finally slowed down in June 1973 after the upward flotation of Singapore dollar.

Later that year, Singapore was affected by the oil price shock and faced with potential stagflation—a combination of high inflation and low growth. A set of selectively restrictive measures was once again imposed on the banking system. Together with some credit guidelines, MAS imposed credit ceilings on financial institutions. As inflationary pressure eased in the second half of 1974, the reserve requirement was reduced and credit limit lifted. Thereafter, until the beginning of 1980, the economy grew healthily with the inflation rate being tightly controlled and monitored.

In 1980, Singapore again faced escalating inflation, caused by the second oil price shock and rising world commodity prices. Against this backdrop MAS finally shifted its monetary policy to exchange rate management.

B. Monetary Policy Today

The policy stance of MAS since the 1980s has been to maintain a strong Singapore dollar. This is seen as the most effective way to promote long-term noninflationary growth. Although a weak currency may promote higher export growth, it can potentially lead to an overheated economy characterized by increasing wage rates and high inflation. Eventually, competitiveness declines.

As a financial center, Singapore maintains an open capital market. As a result of the high degree of capital mobility, Singapore's interest rates and money supply are largely determined by the condition of international financial markets and domestic demands. Table 4 and Figure 1 show the close correlation between the Singapore and US interest rates. The implication is that, with an extremely open capital market, monetary policy targeting of the interest rate is difficult to implement.

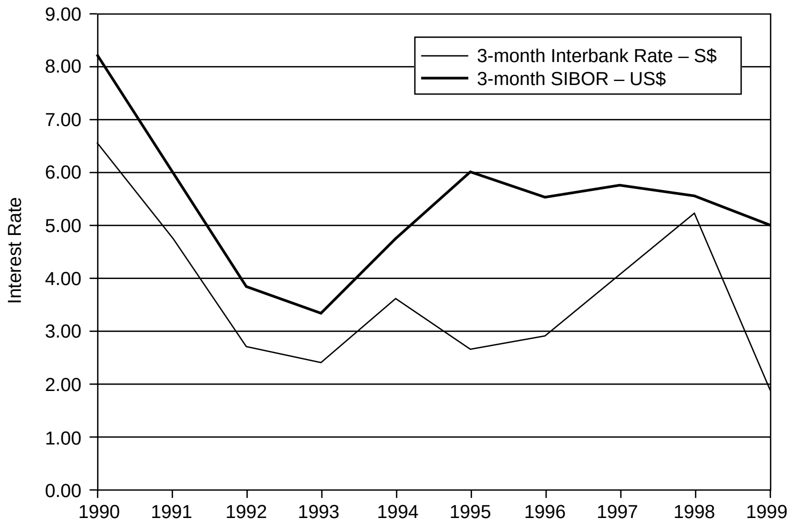
TABLE 4
Interest Rates[a]
(per annum)

Year	Prime Lending Rate[b]	Saving Deposit Rate	1-month Inter-bank	3-month Inter-bank	1-month SIBOR US$	3-month SIBOR US$	6-month SIBOR US$
1990	7.32	3.50	6.58	6.63	8.31	8.30	8.33
1991	7.61	3.69	4.60	4.76	5.99	6.01	6.09
1992	6.01	2.14	2.51	2.66	3.82	3.87	3.96
1993	5.39	1.62	2.19	2.40	3.23	3.32	3.43
1994	5.82	2.31	3.36	3.62	4.50	4.76	5.09
1995	6.37	2.81	2.33	2.60	5.96	6.01	6.12
1996	6.26	2.72	2.82	2.92	5.45	5.52	5.58
1997	6.30	2.75	4.12	4.06	5.64	5.74	5.83
1998	7.49	3.11	5.09	5.27	5.57	5.56	5.54
1999 Q1	5.81	1.39	1.56	1.85	4.96	5.00	5.04

[a] Except for prime lending rate, all rates are average of month ends; [b] average for 10 lending banks.

Source: Monetary Authority of Singapore *Annual Report* (various issues).

FIGURE 1
Singapore and US Interest Rates
(per annum)



C. Monetary Policy Tools

Exchange Rate Policy. Singapore is small in terms of population and short in natural resources but open in trade and capital flow. As a small economy, it has limited influences on price-setting. On the other hand, it takes prices from the imports of raw materials and machinery. Although maintaining a strong position in its balance of payments, the import content is higher than 50 percent of domestic expenditure. In short, the exchange rate has a powerful effect on domestic prices and manufacturing costs. Thus, proper management of the exchange rate helps to cushion the impact of foreign price levels resulting from exchange rates on inflation and aggregate demand.

The MAS exchange rate policy is centered on (i) noninternationalization of the Singapore dollar, and (ii) maintaining the country's competitiveness and confidence in the Singapore dollar. It effects this policy by selling and buying the Singapore dollar against other currencies in the market. It monitors a trade-weighted basket of currencies, which it manages within a tight band. Frequent reviews of the exchange rate target are carried out to ensure the Singapore dollar trades at a level consistent with economic fundamentals in the medium term. Table 5 shows the Singapore dollar has remained relatively strong against the major currencies and some Asian currencies. MAS only started to ease this strength to maintain its export competitiveness against other countries in the region during the Asian crisis, against a background of low inflation.

TABLE 5
Exchange Rate[a]
(S$ per foreign currency)

Year	US Dollar	100 Japanese Yen	Pound Sterling	100 Korean Won	100 New Taiwan Dollar	Hong Kong Dollar	Malaysian Ringgit	Thai Baht
1990	1.8125	1.2548	3.2262	0.2563	6.7432	0.2327	0.6702	0.0708
1991	1.7276	1.2843	3.0559	0.2357	6.4415	0.2223	0.6283	0.0677
1992	1.6290	1.2869	2.8762	0.2087	6.4724	0.2104	0.6398	0.0641
1993	1.6158	1.4568	2.4271	0.2014	6.1279	0.2089	0.6277	0.0638
1994	1.5274	1.4951	2.3377	0.1900	5.7724	0.1976	0.5823	0.0607
1995	1.4174	1.5154	2.2369	0.1838	5.3382	0.1832	0.5651	0.0569
1996	1.4101	1.2971	2.2017	0.1754	5.1354	0.1823	0.5605	0.0556
1997	1.4848	1.2277	2.4334	0.1587	5.1752	0.1918	0.5353	0.0488
1998	1.6736	1.2823	2.7722	0.1204	5.0004	0.2160	0.4271	0.0409
1999 Q1	1.7026	1.4631	2.7810	0.1422	5.2198	0.2197	0.4479	0.0460

[a] period average.

Source: Monetary Authority of Singapore *Annual Report* (various years).

Bank Reserve Requirements. Although MAS has moved away from direct control of bank reserve requirements as a policy instrument to effect its monetary policy, reserve requirements for banks in Singapore remain stringent. The prime purpose of such a tight policy is to ensure a sound banking system. Under the Banking Act, banks must maintain a minimum cash balance (MCB) with MAS, which earns an interest by the end of each day, of at least 3 percent of their liabilities base. Before 2 July 1998, the MCB was 6 percent. In addition, banks are also required to maintain minimum liquid assets (MLA) with MAS of at least 18 percent of their liabilities base. Of these assets, at least 10 percent must be in the form of SGS, up to 5 percent under overnight repurchase (repo) agreements, and no more than 4 percent in bills of exchange. In total, banks have to maintain a liquidity ratio of 21 percent of the liabilities base. Table 6 shows the statistics for reserve requirements of Singapore banks.

TABLE 6
Liquidity Position of Singapore Commercial Banks
(S$ million)

Year	Liabilities Base[a]	Liquidity Assets[b]			Liquidity Ratio[e]
		Minimum Requirement[c]	Total Actual Liquid Asset	Free Liquid Assets[d]	
1990	5,170.1	13,240.8	13,596.4	355.6	24.6
1991	64,846.8	15,563.2	16,099.9	536.7	27.8
1992	73,389.7	17,613.5	18,394.9	781.3	25.1
1993	80,743.0	19,378.3	20,232.9	854.6	25.1
1994	87,580.0	21,019.2	21,932.2	913.0	25.0
1995	100,138.5	24,033.1	25,039.1	1,006.0	25.0
1996	114,828.5	27,558.9	28,632.1	1,073.3	24.9
1997	122,777.4	29,466.6	30,556.7	1,090.2	24.9
1998	134,282.3	30,125.4	31,968.1	1,842.7	23.8
1999 Q1	158,277.6	33,238.3	36,559.2	3,320.9	23.1

[a] Average for the year; [b] Represents 6 percent from MCB and 18 percent from MLA. Since July 1998, MCB has been reduced to percent; [c] 24 percent of liabilities base; [d] Total actual liquid assets minus minimum requirement; [e] Total actual liquid assets divided by the liabilities base.

Source: Monetary Authority of Singapore *Annual Report* (various years).

Other Policy Tools. To ensure sufficient liquidity in the banking system on a day-to-day basis, MAS also uses money market instruments such as foreign exchange swaps and repo agreements to complement its exchange rate instrument. Although there is no data available on these operations, the general perception is that MAS is active in these two markets. MAS only transacts repo with the primary dealers of SGS. However, as the repo market develops and is liberalized, banks are expecting MAS to play a bigger role in providing liquidity to the market. In addition to its money market instruments, MAS can also manage liquidity through the control of Treasury bills issuance on a weekly basis.

III. Overview of Bond Market

The bond market in Singapore consists of government securities, government agency bonds, corporate bonds, and Asian dollar bonds. Compared with developed markets, the size of the bond market is small. Moreover, the majority of outstanding bonds are captured and locked away by institutional investors, resulting in an inactive secondary market.

As the Singapore Government has run budget surpluses since the 1980s, issuance of SGS has been mainly to meet investment needs of the CPF and banks' mandatory liquid assets requirements. Nevertheless, the Government remains the biggest issuer in the domestic debt capital market.

From 1987 to 1998, the average gross share of funds raised by the Government was 68 percent of the total domestic debt raised. Net of redemption, the average share was slightly lower at 49 percent.

In 1987, the objective for the development of the SGS market was shifted to the establishment of a benchmark yield curve as a pricing mechanism for domestic corporate bonds, and MAS embarked on several programs aimed at jump-starting the government bond market, including the issuance of the largest ever volume of SGS, worth S$30.3 billion to inject liquidity.

In the same year, it implemented the systems of primary and secondary dealerships and a computerized book-entry system. The third major change was the revision of the liquid asset requirements for banks and finance companies. The revisions removed the distinction between first-tier and second-tier liquid assets, and qualified SGS held as collateral by banks under over-night repo agreements as liquid assets subject to a maximum of 5 percent of the liabilities base.

Meanwhile, statutory boards, which traditionally obtained their funds from the Government, or borrowed from banks, have also been encouraged since 1998 to issue bonds. The Government's intention has been to kick-start the Singapore dollar corporate bond market. The size of issues up to the end of 1999 was S$2.3 billion, equivalent to 31 percent of SGS T-bonds issued in 1999.

Though a good start, this did not go far enough, as focus was still on the development of equity and money markets. Therefore, in 1998 and subsequently in 1999, MAS undertook further initiatives. The objective, spelled out clearly by MAS, was to develop Singapore as an international debt hub in Asia. To encourage active participation, MAS took major steps to broaden the scope of bond activities in both the government and private bond markets.

One of the measures was to improve the responsiveness of a benchmark yield curve to market demand and supply conditions. Notably, in July 1998, MAS successfully issued its first ever 10-year bond, thereby extending the yield curve from seven years to 10 years. Within the same month, MAS announced it would issue bonds according to a published regular issuance calendar. To smooth out the yield curve, MAS also reopened some of the off-the-run issues. Since then, the secondary market has improved markedly (see Table 7).

A. Amount of Outstanding SGS

Since the introduction of a regular issuance calendar in July 1998, the outstanding amount of SGS has increased markedly to S$36.1 billion at the end of 1999, almost a sixfold increase from 1988.

This expansion was mainly due to consistent efforts undertaken by MAS to issue more and longer-tenor SGS, and to ensure that the amount of issues were substantially larger than the amounts maturing. From 1987 to 1998, the gross issuance of SGS grew by about 7.5 percent annually. In 1999, however, gross issuance fell to S$7.4 billion from S$12.8 billion in 1998. This was due to a lower redemption amount in 1999 and a lower and stable interest rate environment, which made investing in government bonds slightly unattractive both in terms of interest income and capital gains. Despite this, the market is expected to grow further, as the Government announced in 1999 that it would issue S$120 billion worth of SGS over the next five years, an amount equivalent to the total new issuance from 1987 to 1998.[1]

B. Trading Volume of SGS

Turnover volume in the SGS market has been small relative to its outstanding amount. For the period from 1987 to 1998, the average daily trading volume was only 2.6 percent of the amount outstanding. Nevertheless, as shown in Table 8 and Figure 2, trading volume has increased gradually, reaching a record high of S$874 million in 1998.

1. Finance Minister's 1999 budget speech.

TABLE 7
Bond Market Reforms in Singapore

Reforms Implemented Up to End of 1999

Singapore Government Securities Market
- Increased SGS issues (1998/99)
- Announced regular calendar of issues (July 1998)
- Issued 10-year SGS (January 1999)

Statutory Board Bonds
- Jurong Town Corporation bond issues (1998/99)
- Housing and Development Board bond issues (1999)
- Land Transport Authority bond issues (1999)

<u>MAS notice 757 – Noninternationalization of S$ (1998)</u>
- Allowed foreign entities to issue S$-denominated bonds (1998)
- Allowed banks to transact S$ repo of up S$20 million with no-bank nonresidents (1998)
- Removed S$ repo limit (1999)
- Allowed banks to transact S$ currency and interest rate swaps with special purpose vehicles for securitizing mortgages

<u>CPF Investment Scheme (1998)</u>
- Allowed CPF-Approved Unit Trusts to invest in high grade bonds

<u>Tax Incentives (1998/1999)</u>
- Introduced tax incentives to encourage debt origination and trading of debt securities in Singapore
- 16 financial institutions accorded Approved Bond Intermediary status (1999)

Reforms to be Implemented
- Promote asset-backed securities market.
- Resolve legal and regulatory issues relating to asset-backed securities.
- Housing and Development Board may issue mortgage-backed securities.
- Introduce regulatory guidelines for underwriters and dealers and trading rules for debt securities.
- Develop efficient clearing system for corporate bonds.

The surge in trading volume in 1998 was mainly the result of the steps taken by MAS to revamp the bond market. The increase of supply of SGS brought about a rapid rise in liquidity. Trading efficiency has also improved as the market has seen more on-the-run SGS being issued regularly. Compared to one issue every 2–3 months in the past, MAS now issues one issue of bond every month, on top of the weekly three-month T-bills issues. Some off-the-run issues were reopened to smooth out the yield curve during 1998 and 1999. The extension of the yield curve to 10 years has also stimulated new interest in the market. In addition to the MAS initiatives, interest rates in 1998 also created a favorable environment for more trading opportunities.

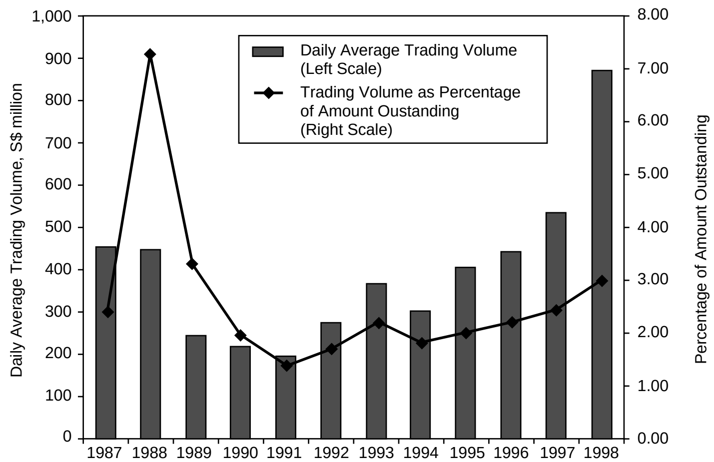
TABLE 8
Size of Government Debt Outstanding and Trading Volume
(S$ million)

Year	Secondary Market		Outstanding Government Domestic Borrowing			
	Bills and Bonds Outstanding[a] (1)	Average Daily Trading Volume (2)	Registered Stocks Outstanding[b] (3)	T-Bill and Deposits (4)	Advanced Deposits by CPF[c] (5)	Total Government Domestic Borrowing (3)+(4)+(5)
1987	19,470	460	34,021.30	2,780	1,169.80	37,971.10
1988	6,200	450	36,972.50	2,360	2,257.40	41,589.90
1989	7,500	250	40,499.10	1,900	3,671.90	46,071.00
1990	11,200	225	41,149.80	2,070	8,137.90	51,357.70
1991	13,200	210	41,810.20	3,470	1,3720.10	59,000.30
1992	15,700	280	56,360.20	4,940	5,928.00	67,228.20
1993	17,211	370	56,851.70	4,990	7,968.70	69,810.40
1994	17,900	300	56,501.90	5,000	13,837.80	75,339.70
1995	20,300	404	59,701.90	5,750	21,055.70	86,507.60
1996	20,500	442	67,853.90	5,990	20,986.80	94,830.70
1997	23,100	534	73,305.70	6,920	22,146.20	102,371.90
1998	28,600	874	80,667.40	8,540	25,967.00	115,183.40
1999 Q1	36,085	594				

[a] Represents the SGS available for the public; [b] Includes T-Bonds held by CPF; [c] Advanced deposits placed by CPF with the MAS.

Source: Monetary Authority of Singapore *Annual Report* (various years).

FIGURE 2
Trading Volume of SGS



C. Corporate Bond Market

The main weakness of the Singapore corporate bond market is the absence of a benchmark yield curve for pricing lower-rated private issues. Other hurdles include the easy availability of alternative sources of funds such as bank loans and the equity market, the prevailing regulatory environment, and lack of significant tax benefits. Although the capitalization of the corporate bonds listed on the stock exchange stood at approximately S$300 billion in 1998, this was dominated by non-Singapore dollar Asian dollar bonds. In terms of secondary market trading, turnover in the exchange was also weak. Though the bulk of the corporate bonds were traded over-the-counter (OTC), and not recorded officially by the authority, the general perception is that the corporate bond market is very illiquid and limited to a few players. In the primary market, because of the lack of a benchmark yield curve, most of the Singapore dollar-denominated bonds were in floating instead of fixed rate. Their tenors were also rarely longer than five years.

Nevertheless, with the initiatives taken by MAS to revamp the bond market, corporate issues will undoubtedly increase. The first to lead the growth in the market will be the statutory boards issues and foreign issues in the Singapore dollar.

TABLE 9
Corporate Bonds Listed in the Stock Exchange of Singapore
(S$ million)

Year	Total Market Capitalization	Turnover Value
1987	193919.27	595.00
1988	181748.39	504.13
1989	187401.15	4446.18
1990	172178.18	2362.33
1991	163532.99	2596.60
1992	166229.83	1505.50
1993	191521.43	7909.73
1994	223396.32	10649.08
1995	212937.90	5623.35
1996	225799.21	4815.66
1997	289189.63	5813.49
1998	01861.23	836.78

Sources: Stock Exchange of Singapore Factbook and SES Journal.

D. Singapore as a Regional Bond Center

With Asian countries now beginning to recognize the importance of a sound and liquid bond market for economic development, strengthening the bond market should help Singapore to enhance its position as an international financial center. Until now, the growth of the Singapore financial market has been driven chiefly by the banking sector. This growth is powered by the Asian dollar market which, as an offshore market, provides financial services ranging from foreign exchange and money market trading to Asian dollar loans. In addition, Singapore has also developed the Singapore International Monetary Exchange (SIMEX) into one of the most efficient exchanges for futures and option trading, covering interest rates, foreign exchange, and stock index markets.

The pace of development in the capital market has been characterized by lack of drive, especially in the bond market. Largely, this has been the result of Singapore's small domestic base and the policy of noninternationalization of the Singapore dollar. In view of this limitation, MAS took unprecedented moves in 1998 and 1999 to speed up reforms in the bond market. The aim is to develop Singapore into a bond center in Asia for issuing, arranging, and trading activities.

Growth in the Financial Services Sector. Singapore's financial market has made significant progress in the last two decades. On average, it was responsible for about 11 percent of GDP. Although growth has been more moderate in the past few years, it will continue to be one of the five pillars of the economy, together with manufacturing, transport and communications, commerce, and business services.

The emergence of Singapore as a financial center has been an important part of the Government's conscious development strategy since the 1970s. In order to develop this sector, the Government has taken steps to create an attractive environment, including low taxation, as well as developing a skilled workforce for foreign financial institutions operating in Singapore.

Strategic Location. The advantage of its geographical and time zone location enables banks in Singapore to deal with banks in Hong Kong, China; Tokyo; and other Asian markets for most of the day, and cross over to the European market later in the afternoon. Many of the overnight orders from North America are also filled in Singapore after markets in the US have closed.

Presence of Foreign Banks. Close to two thirds of the world's top 100 banks have set up offices or regional headquarters in Singapore. Currently, about 198 banks in Singapore hold an Asian currency unit (ACU) license. This is a separate accounting system that handles the banks' non-Singapore dollar business and transactions. As of 1998, the total size of the ACU book was about US$503 billion, compared to US$30 million in 1968, when the ACU was first introduced. Of total ACU assets, near to half are for loans to banks outside Singapore, of which a big portion is for onward lending to finance trade and infrastructure developments in the Asian region. The ability to deal in the Asian dollar loan market will be extremely valuable for the development of the bond market, as both markets are money-raisers.

Foreign exchange trading is also very active in Singapore. According to surveys of the Bank of International Settlements (BIS), Singapore is the fourth largest foreign exchange trading center in the world. In 1998, daily turnover in Singapore totaled US$139 billion, of which less than 10 percent was in Singapore dollars. The low percentage of trade involving the Singapore dollar is the result of the policy of noninternationalization of the currency.

Incentives Provided by the Government. To attract greater foreign participation, the Singapore Government has granted many tax incentives to foreign banks, and many taxes, such as withholding tax on interest payable to nonresidents and stamp duty, were abolished in the 1970s or even before. The liquidity requirement for ACU was also lifted in 1972.

However, in reality many of these incentives could be easily reproduced elsewhere. Their effectiveness diminishes when competitors begin to offer the same or better incentives. They are thus insufficient alone for the development of an efficient and vibrant financial market. The main strengths of Singapore as a financial center thus lie in its stable political environment, strong government, proactive authority, well-educated English-speaking work force, and sophisticated telecommunications and infrastructure.

In addition, Singapore's aim to become the debt center for the Asian region fits well with its present banking system, and complements the range of existing services and high level of sophistication in its financial market, especially the Asian dollar market. As the main objective of Singapore's bond market development is to create a vibrant debt center for the issuing, arranging, and trading of bonds, a stimulus package targeting all areas relating to the bond market was introduced in 1998 with subsequent revisions in 1999.

In August 1998, MAS relaxed its policy on noninternationalization of Singapore dollar and issued a new notice, MAS Notice 757, to allow foreign companies or supranationals to issue bonds denominated in the Singapore dollar, as long as the proceeds are used in Singapore. If not, the Singapore dollar proceeds must be swapped into foreign currencies in Singapore. In addition, the Singapore dollar proceeds received from the swap transaction are classified as exempted assets for banks' minimum cash balance and liquid asset requirements. The relaxation of rules governing the issuance of Singapore dollar bonds and swap transactions will attract more foreign borrowers to issue bonds in the Singapore dollar, and thereby increase debt arranging and underwriting activities.

Further to tax incentives, a tax treatment covering all aspects of the bond market was introduced to stimulate bond activities. Arrangers and underwriters operating in Singapore are given tax exemption on fee income received from the so-called qualifying debt securities (QDS). This will make bond arranging and distribution in Singapore more profitable, with the possibility of reducing the cost of issuance.

Tax incentives are also applicable to interest income and trading. These include a 10 percent concessionary tax rate of interest income earned from holding QDS by financial institutions in Singapore. For foreigners, interest income from QDS is nontaxable. A similar 10 percent concessionary tax rate is applicable to income earned from trading of all debt securities. This will help to attract more investors, promote trading, and improve liquidity.

To minimize the uncertainty about the availability of tax incentives, the Government introduced an approved bond intermediary (ABI) scheme. A financial institution qualified as an ABI should have a substantial team of debt specialists in Singapore capable of bond originating and trading. Approval of ABIs is administered by MAS. At the end of 1999, there were 16 ABIs in Singapore.

E. Types of Securities

1. Government Securities

Singapore Government Securities (SGS). The SGS market is closely modeled on the US Treasury market. There are two types of SGS; the short-dated T-bill and long-dated T-bonds. Both are in book-entry form. T-bills are issued as discount securities with maturities of three months and one year. T-bonds pay coupons semi-annually with four maturity classes of 2, 5, 7 and 10 years.

2. Coupon Rate And Maturity Mix

Most SGS T-bonds are offered at near face value. Therefore, the coupon rate in any coupon-bearing SGS should reflect the prevailing market interest rate. Excluding the tax-free bonds, coupon rates have varied from time to time depending on the market interest rate and tenor. Coupon rates offered by five- and seven-year bonds in the 1993 and 1994 issues were above 4.5 percent. Subsequently, rates started to decrease. During the Asian financial crisis, coupons of five- and seven-year bonds rose to between 4.13 percent and 5.13 percent. A 10-year bond issued during that period offered a coupon of 5.63 percent. After the crisis, coupons of five- and seven-year bonds fell below 3.5 percent.

The maturity class now consists of 3 months, 12 months, 2, 5, 7 and 10 years. The maturity mix is currently a good spread across different years up to nine to 10 years. The result is obviously due to more, and more regular, issues in 1998 and 1999. The amounts issued in seven and 10-year bonds are significantly less than the short-dated bonds which comprise one-year bills, and two and five-year bonds. There were also many re-openings of off-the-run issues.

Government Agencies Bonds. Over the past 10 years or so, Singapore statutory boards never issued any bonds, as they could always obtain funds from the Government or borrow directly from commercial banks. In 1998, however, the Government began to ask its statutory boards to tap funds from the bond market. The issues were to act as a catalyst for the development of the domestic corporate bond market. From the fourth quarter of 1988 to the third quarter of 1999, the size of statutory board bonds increased from nil to S$2.3 billion, with a significant amount of bonds placed to the public, from boards including HDB, the Land Transport Authority (LTA), and the Jurong Town Corporation (JTC). As Singapore has about 44 such government agencies, it is expected that the statutory boards will become the main drivers of the domestic bond market over the next few years. Most are long-dated bonds with maturities of 10 years.

3. Corporate Securities

Foreign Issues of Singapore Dollar Bonds. According to MAS Notice 621, which outlines the exchange rate policy on the noninternationalization of the Singapore dollar, foreigners are not allowed to issue Singapore dollar-denominated bonds in Singapore. This has effectively shut foreign issuers off from entering the Singapore dollar bond market and seriously hindered the growth of the bond market. However, in August 1998, MAS Notice 757 replaced Notice 621, virtually removing this restriction. Under the new ruling, foreign entities are now allowed to issue Singapore dollar-denominated bonds in Singapore, whether rated or not, if the proceeds are to be used for economic expenditure in Singapore. If not, Singapore dollar proceeds must be swapped into foreign currency in Singapore. Since the issuing of MAS Notice 757 until the end of 1999, the total issuance of Singapore dollar bonds by foreign issuers increased from zero to S$2,950 million, or more than 15 percent of total private debt, represented by a diverse group of international issuers.

TABLE 10
Foreign Issues Since MAS Notice 757 and up to December 1999

	Issue (percent)	Issue Date (years)	Tenor (S$ million)	Amount
1998				
International Finance Corporation	4.5	Oct-28-98	3	300
1999				
GE Capital	3.75	Feb-11-99	3	400
Nordic Investment Bank	4.125	Mar-31-99	5	200
Nordic Investment Bank	4.75	Mar-31-99	10	150
Ford Motor Credit	4.5	Apr-6-99	5	150
European Bank of Reconstruction & Development	4.125	Apr-8-99	5	150
JP Morgan	4.00	May-27-99	5	100
JP Morgan	4.625	May-27-99	10	100
John Hancock	4.375	Jul-6-99	5	150
Rabobank	4.35	Jul-15-99	5	100
Toyota Motor Credit	4.00	Aug-16-99	3	200
Westpac Banking	4.75	Sep-7-99	5	150
DePfa Deutsche Pfandbriefbank AG	4.75	Sep-20-99	7	100
International Finance Corporation	4.28	Sep-23-99	5	100
Abbey National Treasury Services	5.00	Oct-6-99	10	100
ABN Amro Bank NV	4.72	Oct-14-99	5	100
United Parcel Service of America, Inc	4.50	Nov-11-99	3	100
Morgan Stanley Dean Witter & Co	4.70	Nov-12-99	5	100
Telefonaktiebolaget LM Ericsson	4.20	Dec-6-99	3	100
Lehman Brothers	5.18	Dec-10-99	7	100
Total since MAS Notice 757 (August 1998)				**2,950**

Sources: Monetary Authority of Singapore and Bloomberg.

TABLE 11
Asian Dollar Market—Assets
(US$ million)

Year	Loans to Nonbank Customers	Loans to ACUs	Loans to Banks Outside Singapore	Subtotal	Other Assets	Total Assets
1990	125,516	34,440	195,935	355,891	34,504	390,396
1991	134,078	26,626	162,181	322,885	34,840	357,725
1992	134,184	26,740	158,291	319,216	36,163	355,379
1993	136,857	31,714	169,849	338,417	47,686	386,103
1994	145,823	36,357	180,875	363,054	53,291	416,345
1995	173,265	39,670	200,509	413,443	64,790	478,233
1996	180,506	40,237	216,149	436,891	69,979	506,870
1997	173,286	48,883	251,956	474,126	83,068	557,194
1998	131,750	40,697	263,566	436,013	67,597	503,610

ACU = Asian currency unit.

Source: Monetary Authority of Singapore *Annual Report* (various years).

Asian Dollar Bonds. Another segment of the Singapore bond market is in Asian dollar bonds, the Asian version of Eurobonds. So far, most of these bonds have been issued by international organizations and placed in Asia. The currency denomination of the bonds is usually US dollars, with a smaller portion in Japanese yen. However, an Asian dollar bond can be denominated in any currency. For instance, in 1998, 45 of the 83 issues of Asian dollar bonds were denominated in Indonesian rupiah. The year-to-year new funds raised through these bonds are largely determined by demand for funds by international issuers.

TABLE 12
New Issues of Asian Dollar Bonds

Year	Number of Issues	Amount of Issued (US$ million)
1987	18	1,500
1988	12	1,300
1989	18	3,500
1990	5	300
1991	6	749
1992	12	965
1993	19	3,513
1994	12	1,257
1995	15	888
1996	27	2,213
1997	49	1,200
1998	83	2,700

F. Investor Base

Institutional Investors. The investor base has long been a largely captive market. A high proportion of Singapore's national savings are placed with the CPF, which in turn uses the funds to purchase SGS, of which it is the largest investor. Up to the end of 1998, employees and employers each contributed 20 percent of the employee's monthly wages to the employee's savings with CPF. In the midst of recovery from the Asian financial crisis, the employer's contribution was cut to 10 percent. However, in 2000, this was revised upwards to 12 percent. Subsequent upward revision is likely as the economy moves out of crisis.

On the average, from 1987 to 1998, SGS purchased by CPF was about 73 percent of the total bills and bonds outstanding. In absolute terms, although CPF holdings of SGS have increased, percentage holdings have been stable at around 70 percent. It should also be noted that SGS are placed directly with CPF by MAS, bypassing the primary dealers (PDs), thus having no direct impact on market liquidity. They are long-term, nontradable SGS. In a sense, the portion of SGS held by the CPF should be considered as a separate market from the tradable SGS. In addition to holding a sizable amount of SGS, the CPF also places a large amount of deposits with MAS.

A series of liberalization schemes was introduced since 1998 with the aim of broadening the investor base and accommodating risk appetite. For example, CPF members may now invest their savings directly in approved professionally managed funds and in Singapore dollar statutory board bond issues. However, the size of the CPF is not likely to be drastically reduced in the near future, due to the sizable amount of long maturity securities it holds. This is a problem that touches on the ability to establish a responsive benchmark yield curve.

The second largest group of investors in SGS is the commercial banks. Other than for trading purposes, banks in Singapore hold large amounts of SGS, mainly to meet the mandatory reserve requirements MLA.[2] Under Singapore's stringent Banking Act, banks are required to maintain their MLA at no less than 18 percent of their liabilities base, with the MAS. Of assets, at least 10 percent must be in the form of SGS, up to 5 percent under overnight repo agreements, and no more than 4 percent in bills of exchange. Furthermore, banks must also maintain an MCB by the end of each day with MAS of at least 3 percent of their liabilities base—a reduction from 6 percent since 2 July 1998. The cash balance earns no interest.

2. See MAS Notice 613, 20 June 1998.

TABLE 13
Investor Base of SGS
(S$ million)

Year	Central Provident Fund		Commercial Banks			Others		
	CPF Investment in SGS[a]	% Held by CPF	Commercial Banks' Investment in T-Bills	Commercial Banks' Investment in T-Bonds	% Held by Commercial Banks	Others[b]	% Held by Others	Total SGS Outstanding
1987	28,620	77.77	2,399.40	2,887.40	14.36	2,894.50	7.86	36,801.30
1988	32,120	81.66	2,161.20	3,251.20	13.76	1,800.10	4.58	39,332.50
1989	32,120	75.76	1,773.30	5,053.10	16.10	3,452.70	8.14	42,399.10
1990	32,120	74.32	1,988.90	5,934.000	18.33	3,176.90	7.35	43,219.80
1991	32,120	70.94	3,362.00	6,403.10	21.57	3,395.10	7.50	45,280.20
1992	45,620	74.42	4,660.00	6,945.80	18.93	4,074.40	6.65	61,300.20
1993	44,620	72.15	4,798.50	7,975.10	20.66	4,448.10	7.19	61,841.70
1994	42,620	70.92	4,888.10	8,681.30	22.06	4,312.50	7.01	61,501.90
1995	45,120	68.94	5,661.40	10,092.50	24.07	4,578.50	7.00	65,451.90
1996	51,620	69.90	5,939.00	11,599.00	23.75	4,685.90	6.35	73,843.90
1997	57,120	71.20	6,738.30	12,145.10	23.54	4,222.30	5.26	80,225.70
1998	59,620	66.83	8,103.70	18,392.10	29.70	3,091.60	3.47	89,207.40
1999 Q1	59,620							

CPF = Central Provident Fund; SGS = Singapore Government Securities.
[a] Direct placements with CPF. [b] Includes corporations, insurance companies, Post Office Saving Bank, etc.

Compared with CPF investments in SGS, however, banks hold a relatively low percentage of total outstanding SGS. For example, in 1998, the composition was 67 percent for CPF and 30 percent for banks. If CPF's nontradable SGS, which have no impact on the yield curve, are excluded, the amounts of SGS held by banks in 1998 represent about 93 percent of total tradable SGS. This indicates that banks are the major players in the SGS market. They trade the whole maturity spectrum of SGS. However, for reserve requirement purposes, their preferences are bills and short-dated bonds up to five years.

In addition to the CPF and commercial banks, other SGS investors are insurance companies, the Post Office Saving Bank, and fund managers. Insurance companies tend to hold the other segment of the yield curve, the long-dated 7- and 10-year bonds. A point to note is that Singapore's Post Office Saving Bank was acquired by the Development Bank of Singapore in 1998. Hence 1998 and 1999 first quarter figures show a drop in the "others" column in Table 13. Despite several tax incentive schemes developed by the Government in a bid to attract the fund management industry, managers tend to invest heavily in the equity market and significantly less in the bond market. There are currently no bond funds in Singapore.

Individual Investors. Unlike the local financial institutions and corporations, which have been granted a concessionary tax rate of 10 percent on interest income earned, individual investors do not enjoy any tax benefit from purchasing SGS. Given the unattractive yields on SGS, this implies that individuals are likely to stay away from the SGS market, thereby limiting the growth of the investor base.

III. Bond Market Infrastructure

A. Primary Dealer System

The SGS primary market is an auction market, in which a group of nine PDs currently participates. All PDs are required to bid and underwrite new issues of T-bills and T-bonds. Hence, except for those placed with the CPF, all new issues are channeled through PDs to the investors. They accept competitive and noncompetitive bids from the public and distribute the issues to successful bidders. Auctions for bills are conducted on a competitive bid basis only.

PDs also bid in the auctions for their own accounts and provide liquidity in the secondary market. All PDs of SGS are fully licensed banks, consisting of five local banks (Development Bank of Singapore, Keppel Tat Lee Bank, Overseas Chinese Bank Corporation, Overseas Union Bank, and United Overseas Bank) and four foreign banks (Bank of America, Citibank, Hong Kong and Shanghai Bank Corporation, and Standard Chartered Bank).

PDs have several advantages over other SGS dealers. First, direct access to the primary market allows them to keep their positions private. In contrast, when a non-PD bids, he or she has no choice but to disclose his or her potential long positions to the PD. Second, PDs are often the counterparties of the MAS' SGS repo transactions, though MAS can deal with any bank. Third, close and regular dialogue with MAS helps PDs to appreciate new developments in the government bond market. Fourth, since 1998, profits generated by PDs from trading in SGS are tax-exempt.

PDs are required to make market on all issues under all market conditions. In addition to the PDs, there are 19 secondary dealers represented by banks, merchant banks, and stock brokerage houses. Among dealers, deals are in standard lots of S$3 million for benchmark issues and S$1million for off-the-run issues. When dealing with customers, the deal size ranges from S$1,000 for bonds to S$10,000 for bills. In addition to the dealers, two international money brokers, Exco and Prebon Yamane, are also authorized to quote on SGS. PDs are not obliged to provide quotes for statutory board bonds.

In October 1999, MAS rejected a recommendation by a debt market advisory group to modify the existing system of primary dealership. The recommendation suggested MAS to create another category of registered dealers. These registered dealers would be given direct access to the SGS primary market with minimum roles in underwriting and market making. This additional system, according to the advisory group, would be especially appealing to restricted or offshore banks in Singapore. MAS responded that the demand for SGS should only be channeled through PDs or brokers, and encouraged more banks to become PDs.[3]

B. Issuance Methods and Procedures

Singapore government bills and bonds are auctioned off on a regular basis. Three-month bills are issued weekly, with each auction ranging from S$450 million to S$650 million in size. One-year bills and T-bonds are issued according to an annual calendar. The size of issues at each auction ranges from S$600 million to $1 billion for one-year bills

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3. See MAS Responds to Debt Capital Market Working Group Recommendations, MAS Press Release, 7 October 1999.

and from S$600 million to S$1.5 billion for T-bonds. Auctions are made in terms of yield, expressed in annual rate up to two decimal places.

The annual published issuance calendar, introduced in July 1988, helps investors and banks in their investment planning, although the exact size of an issue, and whether it is a new issue or a reopening, is not announced in the calendar.

TABLE 14
A Typical Annual Issuance Calendar, Published End 1999

Date of Issue	Tenor of Issue
01 Feb. 2000 (Tues)	5-year
01 Mar. 2000 (Wed)	7-year
17 Apr. 2000 (Mon)	2-year
15 May 2000 (Mon)	1-year
03 Jul. 2000 (Mon)	10-year
17 Jul. 2000 (Mon)	2-year
01 Aug. 2000 (Tues)	5-year
02 Oct. 2000 (Mon)	7-year
27 Nov. 2000 (Mon)	2-year
15 Dec. 2000 (Fri)	1-year

Note: MAS may, if necessary, adjust the date and the tenor of the issue according to market conditions.

Source: Monetary Authority of Singapore.

Auctions for bills are conducted on a competitive bid basis only. A competitive bid is one where the bidder will pay what he bids if he/she successfully wins the securities. A noncompetitive bid pays the weighted-average price of the successful competitive bids.

Bonds are distributed first to the noncompetitive bids and then to the competitive bids from the lowest to the highest yields. The minimum nominal amount of T-bill applications is S$100,000, and additional amounts must be in multiples of S$10,000. For T-bonds, the minimum and multiples are S$1,000.

Bonds issued by statutory boards, except one issue, are also made through tender auctions by the same group of SGS PDs, although no minimum bid requirement is imposed.

C. Secondary Trading Systems

The secondary market for SGS is an OTC market. Trading of SGS begins upon the announcement of the details of the auction. However,when issued (WI) trading has been thin and provides little price discovery

TABLE 15
Singapore Statutory Board Issues since 1998

Company	Issue (percent)	Tenor (year)	Issue Date	Rating	Size (S$ million)
1998					
Jurong Town Corporation	4.75	7	1 Dec 98	Not rated	300
1999					
Jurong Town Corporation	4.875	10	28 Jan 99	Not rated	300
Housing Development Board	3.875	5	11 Feb 99	Not rated	300
Housing Development Board	4.25	7	13 May 99	Not rated	500
Jurong Town Corporation	5.00	10	23 jun 99	Not rated	300
Land Transport Authority	4.92	10	13 Jul 99	Not rated	300
Housing Development Board	5.07	10	21 Sep 99	Not rated	300
Total Issues since 1999					2,300

Source: Monetary Authority of Singapore.

TABLE 16
SGS Auctions since the Announcements of Issue Calendar

Month of Issue	Tenor (year)	Bond or Bill[a]	Issue	New or Reopening	Size (S$ million)
1998					
Sep	5	Bond	5.125	New	850
Oct	7	Bond	4.375	New	900
Nov	1	Bill	0.0	New	1000
Dec	2	Bond	3.25	New	850
1999					
Jan	10	Bond	4.375	New	900
Feb	5	Bond	3.5	New	1000
Mar	7	Bond	4.375	Reopening	400
Apr	2	Bond	1.875	New	980
May	5	Bond	3.375	New	900
Jun	1	Bill	0.0	New	900
Jul	10	Bond	4.375	Reopening	600
Aug	7	Bond	4.375	Reopening	300
Sep	2	Bond	2.25	New	1000
Oct	5	Bond	3.375	Reopening	850
Nov	1	Bill	0	New	1300
Dec	2	Bond	2.25	Reopening	500

[a] Three-month T-bills are issued weekly.
Source: Monetary Authority of Singapore.

leading up to auction day. Bid-ask quotes are provided by dealers. The bid-ask spreads for T-bonds are S$0.05 for benchmark issues and S$0.10 for off-the-run issues. For T-bills, the bid-ask spreads are five basis points (bps) for benchmark and 10 bps for off-the-run.

Statutory board bonds are also traded OTC. The normal trading size is S$1 million at a bid-ask spread of S$0.50.

D. Repo Market

The development of a repo market is critical to the establishment of a benchmark yield curve. An efficient repo market complements the cash market and improves its liquidity, for example, by allowing market players who are short in SGS to cover their positions.

MAS recognizes the importance of a liquid repo market for the successful development of the SGS and Singapore dollar bond market. Thus, as part of initiatives to liberalize the use of the Singapore dollar onshore, MAS Notice 757 issued in 1998, gave banks the green light for the first time to transact repo of up to S$20 million with nonbank nonresidents. Above the S$20 million limit, banks had to consult MAS for approval. Although a step forward, banks were of the opinion that S$20 million was too small and would not help to stimulate the market.[4] Hence, in November 1999, MAS decided to lift the S$20 million repo limit. In a speech made on 26 November 1999, the Deputy Prime Minister and Chairman of MAS, BG Lee Hsien Loong noted that: "Banks in Singapore may now, without prior consultation with MAS, enter into repo transactions in SGS and Singapore dollar-denominated bonds listed on the Stock Exchange of Singapore with any party, and for any amount, on condition that there is full delivery of collateral."

Currently, trading on SGS repo is mostly overnight, though term repo is developing.

E. Other Aspects

1. Benchmark Yield Curve

A benchmark yield curve is crucial to the development of a corporate bond market. Without the proper development of the former, the latter will not function efficiently. The shape of the yield curve also reflects market expectations of future interest rates and inflation, liquidity preferences, and the health of the economy.

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4. See "MAS Responds to Debt Capital Market Working Group Recommendations," MAS Press Release, 7 October 1999.

While comparative interest rates such as interbank interest rates, forward rate agreements, and bank deposit rates may be available, they are mostly short-term, and hence represent only a partial segment of the yield curve. At best, they can only be used to benchmark the short-term instruments, aside from the fact that most of the rates incorporate other risk premia and costs, which may not be easily assessable. For instance, the Singapore interbank offer rate (SIBOR) incorporates the reserve requirement costs. In contrast, government securities are often regarded as the ideal instruments for benchmarking, because they are backed by the taxing power of the Government and therefore virtually default-free. However, for a benchmark to be useful, there must be a deep and liquid market that facilitates price discovery at any point in time.

Up until 1998, the development of SGS yield curves was somewhat limited. The primary reason was that the Government had run sizable budget surpluses and therefore found little incentive to issue excessive SGS, except for meeting the investment needs of the CPF and the reserve requirements of banks. Since 1998, however, after a major policy review, the government securities market has come to life. In less than two years, MAS has successfully re-established the benchmark yield curve, which is now more responsive to market conditions.

SGS are now actively traded and have been used to price off several corporate issues, thanks to a series of concerted efforts undertaken by MAS to further develop the bond market. To increase liquidity in the market, MAS has consistently increased new issuance of SGS. Since July 1998, new issuance has been offered according to a regular issuance calendar, and MAS successfully auctioned off the first 10-year government bond, extending the yield curve out from seven to 10 years. Tax exemptions were also granted to PDs' trading profits. The development of the repo market is also important.

As efficient pricing using a benchmark yield curve develops, it is expected that the improved yield curve will bring about more corporate issuance in the Singapore bond market, especially by the statutory boards and foreigners.

2. *Taxation*[5]

In 1998 and 1999, the Singapore Government made several important changes to the tax treatment of debt securities to promote the bond market in Singapore. Under the new tax scheme, which is also applicable

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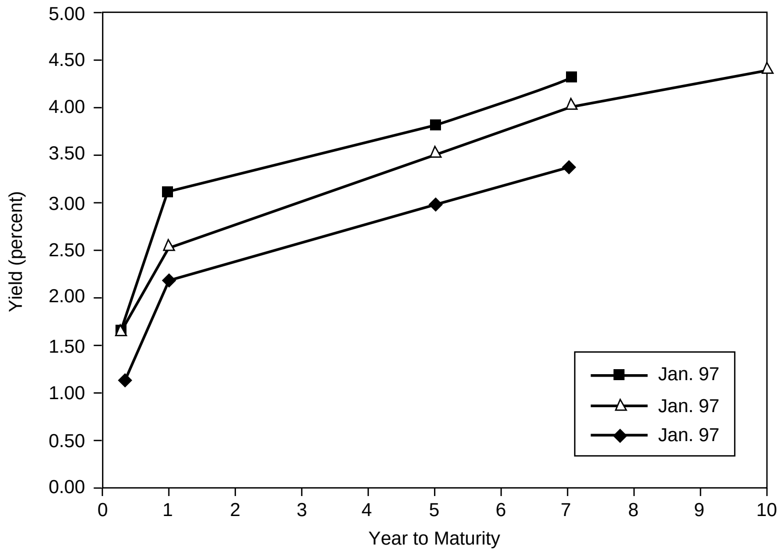
5. For details, refer to MAS Circular No. FPD 01/1998, 30 June 1998 and MAS Circular No. FPD 02/1999, 26 April 1999.

FIGURE 3
Yield Curves of SGS



to SGS, tax incentives have been granted with respect to the trading and arranging of debt securities denominated in any currency as follows: (i) fee income earned by financial institutions in Singapore from arranging, underwriting, and distributing qualifying debt securities (QDS) is tax exempt; (ii) income earned by financial institutions in Singapore from trading in all debt securities is taxed at a concessionary rate of 10 percent; (iii) interest income earned by financial institutions and corporations in Singapore from QDS is taxed at a concessionary rate of 10 percent; (iv) interest income from QDS earned by nonresidents of Singapore without permanent establishments in Singapore is tax-exempt; (v) interest income from QDS earned by nonresidents with permanent establishments in Singapore is also exempted from tax; and (vi) requirements under Section 45 of the Income Tax Act to withhold tax from interest paid on QDS are automatically waived for issuers of QDS, on the condition that the issuer, in the offering circular of the debt securities, publishes the fact that any persons not exempt from tax must declare their interest income received from the QDS in their income tax returns.

QDS are debt securities that are substantially arranged by financial institutions in Singapore. The tax incentives in (i), (iii), and (iv) apply to QDS issued between 28 February 1998 and 28 February 2003. The tax incentive in (ii) applies for five years commencing on 28 February 1998. For (v) and (vi), the tax incentive only covers the period from 27 February 1999 to 27 February 2003.

As SGS and statutory board bonds are treated as QDS, they enjoy the treatment mentioned above. MAS has also made it clear that where an SGS was originally issued before 28 February 1998, but reopened on or after 28 February 1998, it should not be considered as QDS. A point to note is that there is no capital gains tax in Singapore.

- The tax incentive scheme was further enhanced, or made easier to operate, by the approved bond intermediary (ABI) scheme. Under the scheme, debt issues arranged by an ABI will be treated as QDS. The scheme provides ABIs with greater certainty when dealing with clients in terms of eligibility for tax exemption. Without the ABI scheme, each transaction would be assessed on a case-by-case basis. On 5 August 1999, 16 financial institutions were accorded ABI status. These were: ABN Amro, Citibank, Credit Agricole Indosuez, Deutsche Bank, Development Bank of Singapore, Hong Kong and Shanghai Bank, JP Morgan, Merrill Lynch, Morgan Stanley, Oversea Chinese Bank Corporation, Overseas Union Bank, Schroder, Standard Chartered Bank, Tokyo-Mitsubishi Bank, United Bank of Switzerland, and United Overseas Bank.

3. Credit Rating

Singapore does not have any home-grown credit rating agencies, but instead relies on international rating services. To develop Singapore as an international bond center in Asia, it is particularly important that MAS should put considerable effort into ensuring that market practices meet international standards. Rating is the most obvious way of doing this.

Currently, however, while the SGS is AAA-rated, the statutory board issues are unrated, as are most corporate bonds issued by local corporations. To a certain degree, the development of the Singapore corporate market is dependent upon the success of the statutory board issues. It is thus important for these issues to seek rating to set standard practice for the whole corporate market.

4. Clearing and Settlement

Transactions on SGS are done by telephone and cleared electronically T+1 on a delivery versus payment (DvP) basis through MAS' Electronic

Payment System (MEPS) and MAS' SGS book-entry clearing system. MEPS is a Real Time Gross Settlement (RTGS) system. Same day settlement is also possible if the trade is entered into the system before 3:30 p.m. Currently, there are 148 banks with book-entry SGS accounts with MAS. Dealers maintain two accounts with MAS, one for their own trading, and the other for their customers. Dealers keep track of their customers' accounts at their own systems. No fee is applicable to transaction on SGS because the bid and ask prices quoted by the dealers already include the transaction cost.

According to MAS,[6] by the fourth quarter of 2000, clearing and settlement of SGS will be moved to the Central Depository, Singapore's clearing system initially established for clearing equity transactions but now also capable of clearing debt transactions.

V. Regulatory Framework

The regulatory framework of Singapore is simpler than in many other ADCs, with the government securities market governed and supervised only by MAS. This makes for less conflict, or at least less need for complicated coordinating activities.

As chief supervisor of the financial market, MAS plays a watchdog role and prescribes regulatory requirements for financial institutions, though it is slowly shifting its emphasis from regulation to supervision. The main institutions under its supervision include the commercial banks, merchant banks, finance companies, fund managers, and insurance companies. It is also empowered to approve or disapprove amendments to the rules, by-laws, and regulations of the Singapore Exchange, a new name for the merged Stock Exchange of Singapore and SIMEX.

With respect to the government securities market, the MAS' guidelines, Rules and Market Practices of the SGS, govern the primary and secondary markets of SGS, detailing the obligations and privileges of dealers and their representatives, transaction confirmation, safeguarding of transaction records, clients' rights, and dealing with repo agreements. They also specify the types of securities book-entry accounts the dealers should maintain with MAS. The guidelines are formulated under the advice of the SGS Market Committee. The members are mostly representatives of each of the PDs.

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6. Speech by Deputy Prime Minister BG Lee Hsien Loong at the launch of the Singapore Exchange, 1 December 1999.

VI. Major Policy Issues and Recommendations

The Singapore Government bond market has made remarkable progress in the last two years, largely due to MAS policy changes aimed at developing a vibrant debt market in Singapore. Nevertheless, as the market is still developing, and has yet to become a fully functioning efficient benchmark bond market, a few problems still persist.

A. Unfair Tax Incentives[7]

No Tax Incentive For Individual Investors. Unlike the local financial institutions and corporations, which have been granted a concessionary tax rate of 10percent on interest income earned, individual investors do not enjoy any tax benefit from purchasing SGS. Given the unattractive yields on SGS, this implies that individuals are likely to stay away from the SGS market, thereby limiting the growth of the investor base. The Debt Capital Market Working Group (DCMWG), a private consultative group to MAS, highlighted the same concern. In its response to DCMWG, MAS said: "The Ministry of Finance has reservations about introducing additional incentives that may further distort individual saving and investment decisions."

Unequal Tax Treatment On SGS Issues Of Different Origination Dates. The withholding tax exemption introduced in February 1998 is applicable only to SGS issued after 28 February 1998. This has artificially created two distinct classes of SGS in the market, and might distort demand for and liquidity of issues of different issuing dates. This is a particular problem for re-opened issues that were originally offered prior to 28 February 1998. The DCMWG also recognized this problem and recommended that the same tax incentives should be granted to issues originated prior to 28 February 1998. However, this was rejected on the grounds that "tax concessions/incentives granted do not have retrospective effect".

Unclear Tax Treatment On Zero-Coupon Bond. At present, it is still unclear how zero-coupon or discounted bonds are taxed. This is further complicated by the fact that there is no capital gains tax in Singapore. This uncertainty may hinder the development of certain segments of the

7. Some of the observations here have been discussed in the "MAS Responds to Debt Capital Market Working Group (DCMWG) Recommendations," MAS press release, 7 October 1999.

bond market and distort borrowing and investment decisions. The Inland Revenue Authority of Singapore (IRAS) is currently studying this tax issue.

Capital-Gains Tax Exemption Makes Bond Investment Less Attractive. Considering after-tax returns, bond investment is less attractive than equity investment. Returns on bonds come in three parts: price appreciation, coupon payments, and reinvestment income. In an inactive secondary bond market and a stable interest rate environment, opportunities for capital gains are limited. Hence, bond investors do not benefit much from the capital gains tax exemption. On the other hand, coupon payments that form the bulk of the bond returns are taxable at income level. In contrast to returns on equity investments, which rely on price appreciation and are not taxable, after-tax returns on bonds are comparatively unattractive.

B. Compulsory Subscriptions

Mandatory subscriptions can affect liquidity if the phenomena of oversupply or lack of demand arise. As SGS are issued via competitive bidding, any imbalance in supply and demand is self-adjusted by the pricing mechanism. In addition, due to the reserve requirements of banks and the preferences of some institutions, such as insurance companies, the demand for SGS has been strong. However, given the small number of PDs, compulsory subscription is potentially a burden to them. By increasing the number of auction bidders, not necessarily PDs, to bid directly, the burden of compulsory subscription can be spread and shared among bidders in the event of an imbalance in supply and demand.

C. Impact of Reserve Requirement on Yield Curve

Banks are required under the Banking Act to hold at least 10 percent of their liability bases in the form of SGS. This may distort segments of the yield curve, as it affects liquidity. In an efficient bond market, the yield curve or interest rate should reflect the price of money and risk, but not supply scarcity of a particular instrument. However, this may not be the case in the SGS market. In May 1999, there was speculation that the MLA component would be reduced. As banks were expected to release the short-dated SGS, which form bulk of their MLA, the result was a flattening yield curve.

D. Recommendations

Extend Tax Incentives to Individual Investors. A broader investor base, comprising institutional and individual investors, will improve liquidity in the SGS market. In view of this, the tax incentive scheme announced in 1998 to grant local corporations a concessionary tax rate of 10 percent on interest income earned from SGS should be extended to individual investors. No doubt such a tax incentive scheme may distort individual investment and savings decisions, but its merits should outweigh the concern. For personal investment and retirement planning purposes, risk-free government securities offer a great opportunity for mitigating portfolio risk. The extension of tax incentives to individuals would enhance the after-tax return and generate higher demand for SGS. Over time, this will create greater awareness in bond investment.

Reduce Mandatory Holdings of SGS as a Liquid Asset. Liquidity of SGS is limited by the mandatory reserve requirement. Under the current Banking Act, banks are required to hold at least 10 percent of their liability base in SGS. As a result, a huge amount of SGS is being locked away. MAS should consider the possibility of reducing the MLA, cutting the 10 percent SGS component in the MLA, and/or classifying the statutory board bonds as a form of MLA. This is also consistent with MAS' current aim of moving away from regulation to supervision to liberalize the Singapore banking sector.

Encourage More Foreign Banks to Register as Primary Dealers. MAS stresses that "the market-making responsibility of primary dealers is an important element in generating liquidity in the SGS market" and it has welcomed more qualified banks as PDs. Currently, all local banks are PDs, and so any more PDs will have to be foreign banks. To appeal to the group of offshore banks in Singapore, MAS should consider revising the entry requirement for PDs. Of course, this should be without lowering the standard of practice. This group of "foreign PDs" would broaden and add variety to the investor base. As non-residents of Singapore are exempt from withholding tax on interest earned from SGS, foreign PDs will not find it too difficult to attract more foreign investors to the SGS market.

MAS to Play Active Role in the SGS Repurchase Market. The development of a repo market is a critical component for the successful development of a liquid government securities market. The recent lifting of the limit for transacting repo with nonbank nonresidents has improved the development of the SGS market significantly. Currently, trading on SGS repo is mostly over-night, though term repo is developing. To further increase liquidity, MAS should continue playing an active role in the repo market by committing itself to trade with any counterparty of repo.

Singapore Exchange to Launch Singapore Government Bond Futures Contracts. The establishment of a bond futures market will enhance cash market liquidity. A well-developed futures market enables participants to hedge their cash positions, arbitrage between the cash and futures markets, and take speculative positions. It not only enhances cash market liquidity, but also facilitates price discovery, leading to greater pricing accuracy. To this end, the SGX should consider launching the Singapore government bond futures contract in its futures exchange. It should be noted that the Singapore dollar interest rate futures contract currently offered in SGX caters to the short-term money market only. A government bond futures contract, however, would cover the whole maturity spectrum of SGS.

Disseminate Real-Time Trade Information to Enhance Price Transparency. Dissemination of real-time transaction information to market participants will help enhance price transparency and thereby increase liquidity. To this end, MAS should consider taking the lead in establishing a real-time SGS trade information agency. A good example is GovPx in the US. GovPx is a joint-venture of PDs and inter-dealer brokers, designed to release real-time trade information to the public in the United States and throughout the world.

Encourage Statutory Board Bonds to Seek Rating. To develop Singapore as an international bond center in Asia, MAS should put considerable effort into ensuring that market practices in its local bond market meet international standards. Rating is the most obvious means of doing this. Currently, the SGS is AAA rated and the statutory board issues are not rated. Most corporate bonds issued by local corporations are also not rated. To a certain degree, the development of the Singapore corporate bond market will depend on the success of statutory board issues. Therefore, to set standard practice for the corporate bond market, it is important for the statutory board bonds to seek rating.

Appendix

FIGURE A.1
New Debt Capital Raised

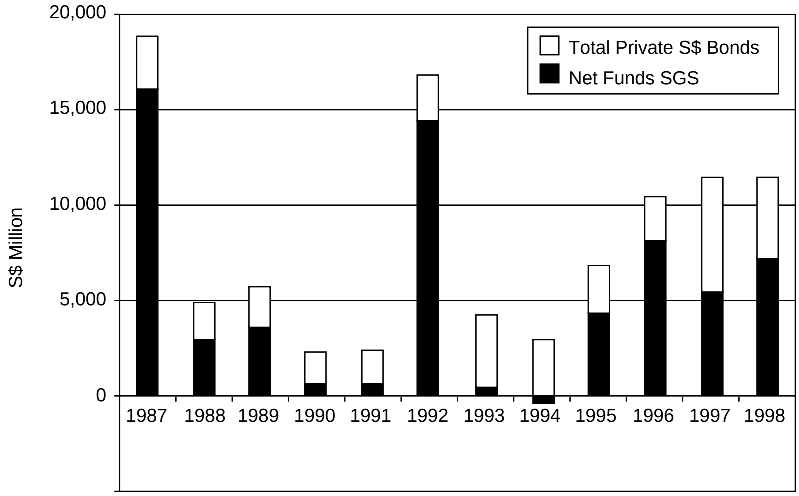


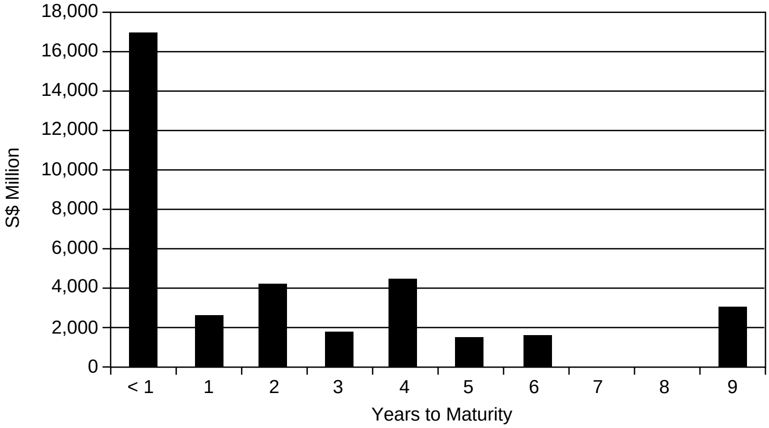
TABLE A.1
Funds Raised in S$ Debt Capital Market
(S$ million)

Year	Singapore Government Securities			Singapore Dollar Private Bonds					
	Gross Bond Issues (1)	Redemption (2)	Net Funds Raised in SGS (1) - (2)	DBL Listed in SGX[a] (4)	Unlisted Bonds (5)	RUF and NIF[b] (6)	NCD[c] (7)	Total S$ Private Bonds (8)	Total New Debt Raised (3) + (8)
1987	30,330	14,068.80	16,261.20	441.00	595.00	1,265	465	2,766.00	19,027.20
1988	3,630	678.80	2,951.20	254.50	270.00	1,225	105	1,854.50	4,805.70
1989	4,350	820.50	3,529.50	1,458.20	90.00	612	97	2,257.20	5,786.70
1990	1,850	1,199.00	651.00	499.30	395.00	728	10	1,632.30	2,283.30
1991	2,300	1,639.30	660.70	671.90	571.00	450	100	1,792.90	2,453.60
1992	17,700	3,150.00	14,550.00	1,258.50	812.00	130	180	2,380.50	16,930.50
1993	3,260	2,768.40	491.60	1,518.30	1,325.00	615	201	3,659.30	4,150.90
1994	3,750	4,100.00	-350.00	643.90	1,808.00	445	30	2,926.90	2,576.90
1995	7,200	4,000.00	3,200.00	1,695.00	1,784.60	280	7	3,766.60	6,966.60
1996	12,150	3,998.00	8,152.00	589.50	1,620.00	0	100	2,309.50	10,461.50
1997	10,460	5,008.20	5,451.80	1,168.10	4,813.90	0	0	5,982.00	11,433.80
1998	12,800	5,538.40	7,261.60	721.40	3,425.20	0	82	4,228.60	11,490.20
1999:1	2,300	909.70		1,285.10	458.90	0	0	1,744.00	
1999:2	1,880								
1999:3	1,900								
1999:4	1,350								

[a] Bonds, debentures, and loanstocks. [b] Revolving Underwriting Facilities and Notes Issuance Facilities; [c] Negotiable Certificate of Deposits.

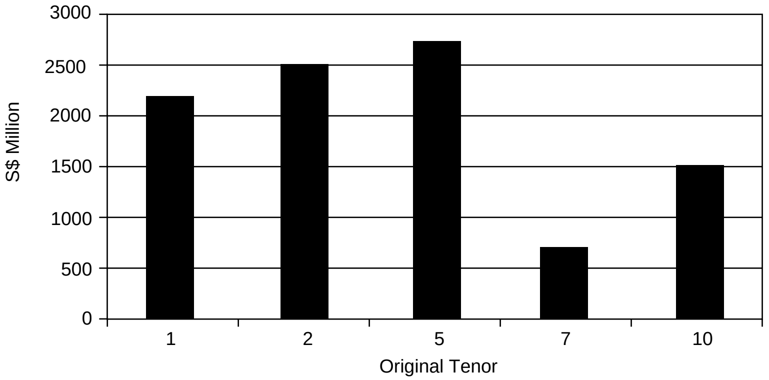
Sources: Monetary Authority of Singapore *Annual Report* (various years).

FIGURE A.2
Maturing Dates of Bills and Bonds as at 31 December 1999



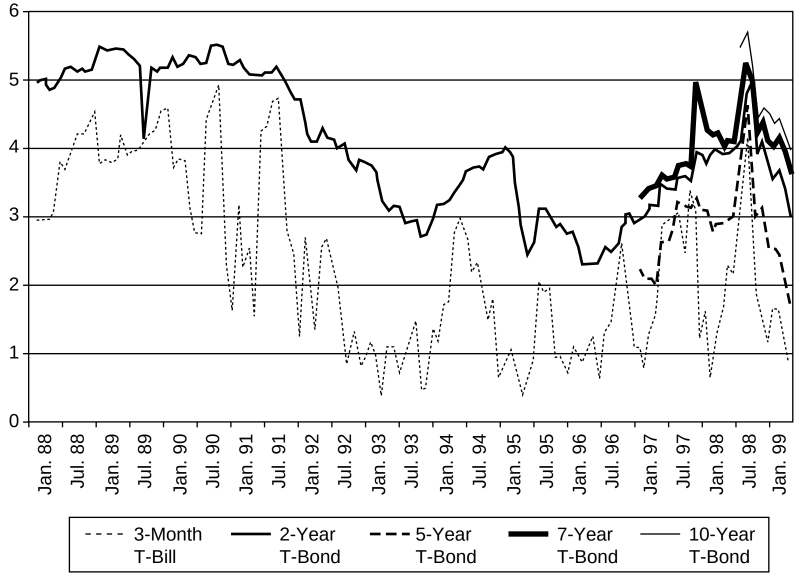
Note: Except less than one year maturity. All others are nearest to full year.
Sources: MAS, Bloomberg, and Reuters.

FIGURE A.3
Distribution of Original Tenor of Bonds and One-Year Bills Issued (1999)



Sources: MAS, Bloomberg, and Reuters.

FIGURE A.4
Month-End Yields of Singapore Government Securities



Source: Monetary Authority of Singapore.

TABLE A.2
SGS Issues Outstanding as at 31 December 1999

Number	Coupon (percent)	Issue Date	Maturity	Amount Outstanding (S$ million)
1	0	Jun-24-99	Jun-22-00	900
2	0	Oct-7-99	Jan-6-00	800
3	0	Oct-14-99	Jan-13-00	1,020
4	0	Oct-21-99	Jan-20-00	1,250
5	0	Oct-28-99	Jan-27-00	750
6	0	Nov-4-99	Feb-3-00	880
7	0	Nov-11-99	Feb-10-00	670
8	0	Nov-18-99	Feb-17-00	650
9	0	Nov-25-99	Feb-24-00	600
10	0	Nov-25-99	Nov-23-00	1,300
11	0	Dec-2-99	Mar-2-00	600
12	0	Dec-9-99	Mar-9-00	700
13	0	Dec-16-99	Mar-16-00	600
14	0	Dec-23-99	Mar-23-00	690
15	0	Dec-30-99	Mar-30-00	750
Total Outstanding T-Bills				**12,160**
1	6.25	Sep-1-64	Mar-1-00	88 (tax-free bond)
2	6.25	Oct-15-64	Apr-15-02	56 (tax-free bond)
3	6.25	Jan-15-65	Jul-15-00	118 (tax-free bond)
4	6.25	May-15-65	Nov-15-00	49 (tax-free bond)
5	6.25	May-23-83	May-15-03	474 (tax-free bond)
6	4.50	Feb-25-93	Mar-1-00	830
7	4.50	Jun-15-94	Jun-15-01	1,000
8	4.00	Jan-26-95	Feb-1-00	700
9	3.125	Aug-1-95	Aug-1-00	800
10	3.00	Oct-26-95	Nov-1-02	600
11	2.375	Mar-15-96	Mar-15-01	800
12	2.50	Jun-20-96	Jun-15-03	900
13	2.375	Aug-30-96	Aug-1-01	800
14	3.250	May-15-97	May-15-02	780
15	5.125	Nov-14-97	Nov-15-04	1,500
16	4.125	Feb-2-98	Feb-1-03	700
17	3.125	Apr-16-98	Apr-15-00	700
18	3.250	Jul-1-98	Jul-1-00	1,500
19	5.625	Jul-1-98	Jul-1-08	1,500
20	5.125	Sep-3-98	Sep-1-03	850
21	4.375	Oct-23-98	Oct-15-05	900
	4.375	Oct-23-98	Oct-15-05	400 (reopening)
	4.375	Oct-23-98	Oct-15-05	300 (reopening)
22	3.250	Dec-10-98	Dec-15-00	850
23	4.375	Jan-12-99	Jan-15-09	900

TABLE A.2
Continued

Number	Coupon (percent)	Issue Date	Maturity	Amount Outstanding (S$ million)
	4.375	Jan-12-99	Jan-15-09	600 (reopening)
24	3.500	Feb-1-99	Feb-1-04	1,000
25	1.875	Apr-1-99	Apr-1-01	980
26	3.375	May-20-99	May-15-04	900
	3.375	May-20-99	May-15-04	850 (reopening)
27	2.250	Sep-1-99	Sep-1-01	1,000
	2.250	Sep-1-99	Sep-1-01	500 (reopening)
Total Outstanding T-Bonds				**23,925**
Total SGS Outstanding				**36,085**

Sources: Monetary Authority of Singapore, Bloomberg, and Reuters.

TABLE A.3
Summary of Features of SGS and Statutory Board Bonds

	Singapore Government Securities	Statutory Board Bonds
Issuer	Issued by the MAS on behalf of the Ministry of Finance	As of end 1999: Land Transport Authority Housing Development Board Jurong Town Corporation
Rating	T-bonds: Aaa (Moody's) and AAA (S&P) T-bills: A-1+ (S&P)	Not rated
On Issue	As at December 31, 1999: T-bonds: S$23,925 million T-bills: S$12,160 million	As at 31 December 1999: S$2,300 million
Average Daily Turnover	As in Q1 1999: S$594 million	Data not available
Coupon	T-bonds: semi-annually T-bills: zero coupon	Typically Semiannually
Bond Day Count	T-bonds: Actual/Actual T-bills: Actual/365	Typically Actual/Actual
Interest Payment	1st and 15th of the month	As specified on the bond
Tax	Qualified as QDS: Local financial institutions and corporations: 10 percent concessionary rate for issues 28 Feb 1998 to 28 Feb 2003 Nonresidents with no permanent establishment in Singapore: 0 percent for issues between 28 Feb 1998 to 28 Feb 2003 Nonresidents with permanent establishment in Singapore: 0 percent for issues between 27 Feb 1999 to 28 Feb 2003	Qualified as QDS: Local financial institutions and corporations: 10 percent concessionary rate for issues 28 Feb 1998 to 28 Feb 2003
Tenor	T-bonds: 2, 5, 7, and 10 years T-bills: 91 and 364 days	So far mostly in 7 and 10 years
Minimum Lot Size	Benchmarks: S$3 million Others: S$1 million	—

TABLE A.3
Continued

	Singapore Government Securities	Statutory Board Bonds
Normal Trading Size	Benchmarks: S$5 million Others: S$2 million	S$1 million
Pricing Bid-Ask Spread	Clean price T-bonds: 5 cents for benchmarks, 10 cents for others T-bills: 5bp for benchmarks, 10 bp for others	Clean price 50 cents
Settlement	T+1 Same day if trade done before 3:30 pm	T+3
Clearing	MAS Electronic Payments System (MEPS) – DVP based Banks must maintain accounts with MAS	Debt Securities Clearing and Settlement System (DCSS) within the Central Depository (CDP) – choice of DVP or non-DVP
Primary Issue	T-bills: weekly issues, expressed in yield up to 2 decimal points, competitive bids T-bonds: according to MAS calendar, expressed in yield up to 2 decimal points, competitive and noncompetitive bids	Variable: auction and/or private placement

Sources: The Singapore Bond Market, Global Markets Research, and Deutsche Bank.

TABLE A.4
Singapore GDP by Sectors
(Percentage of Total GDP at 1990 Market Prices)

Year	Manufacturing	Transport and Communication	Commerce	Financial Services	Business Services	Construction
1990	29.20	13.12	19.22	13.78	13.08	5.61
1991	28.73	13.11	19.60	11.11	16.06	6.40
1992	27.68	13.08	19.17	10.09	17.18	7.33
1993	25.05	12.85	20.04	12.33	15.25	7.06
1994	25.41	12.78	20.21	11.65	15.63	7.38
1995	25.79	13.09	20.28	11.09	15.76	7.38
1996	24.71	13.22	20.08	11.12	15.94	8.37
1997	23.92	13.37	19.65	12.44	15.45	8.91
1998	23.45	13.89	18.59	12.67	15.67	9.12

Source: Economic Survey of Singapore.

TABLE A.5
Number of Financial Institutions in Singapore
(End of March of the Year)

Year	Banks	Merchant Banks	Stock Brokerage Companies	Futures Companies	Investment Advisors	Insurance Companies	Total
1990	141	68	57	91	60	124	541
1991	137	71	63	90	81	135	577
1992	131	76	71	85	93	136	592
1993	128	78	72	81	108	140	607
1994	132	76	78	81	125	142	634
1995	140	77	81	81	136	141	656
1996	143	79	82	77	151	146	678
1997	152	80	95	76	162	154	719
1998	154	80	89	73	156	164	716

Source: Monetary Authority of Singapore *Annual Report* (various years).