Hong Kong Monetary Authority

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INTEREST RATE SPREADS

Key points:

- *Yield spreads of Exchange Fund paper over US Treasuries widened to over 500 basis points during the Asian financial turmoil. A decomposition of the spreads into different risk components suggests that investors were more concerned with currency risk, although credit risk, liquidity risk and other structural factors might also have been at work.*

- *All risk components have come down significantly in the past two years, following the stock market operations and the technical reforms to strengthen the currency board arrangements. The improvement in the external environment has also helped.*

- *Although yield spreads at the short end have dipped into negative territory, there has remained a small risk premium at the longer end. While higher liquidity risk may be a contributory factor, the premium may also suggest that investors have not totally ruled out the currency risk in the long term.*

- *Using a statistical technique known as factor analysis, we confirm a significant degree of interplay among various risk components. It is likely that they are driven by a predominant factor associated with broad systemic risks in the economy.*

- *A simple regression analysis shows that the interest rate spreads are negatively associated with real GDP growth and Hang Seng Index movements, and positively associated with the Aggregate Balance and the yield spreads of emerging markets.*

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I. INTRODUCTION

Under the linked exchange rate system, Hong Kong dollar interest rates are expected to stay close to their US dollar counterparts. In reality, a complete convergence of interest rates has rarely been observed. Rather, the interest rate spreads have exhibited considerable fluctuations. This paper examines the various components that constitute the interest rate spreads, including the currency risk, credit risk, liquidity risk, and structural factors. We also attempt to ascertain the key factors that influence the spreads.

The paper is structured as follows. Section II identifies the main risk components, with reference to the spreads between Exchange Fund paper and US Treasuries. Section III attempts to decompose the spreads into these components, and highlights the measurement problems involved. Using regression studies and factor analysis, section IV analyses the relationships among the risk components and the factors affecting the movement of the spreads. Section V concludes.

II. MAIN COMPONENTS CONSTITUTING THE INTEREST RATE SPREADS

There is a wide array of interest rates on Hong Kong dollar and US dollar assets. A meaningful analysis of the spreads requires us to pick a pair that are representative of the broad spectra of interest rates for the respective currencies. A convenient starting point is to examine the yield differentials between Exchange Fund paper and US Treasuries, which set the benchmarks for Hong Kong dollar and US dollar debt securities respectively.

Chart 1 shows the yield spreads for different tenors. The yields on Exchange Fund paper have generally been higher than corresponding US Treasury yields, except at the short end for some periods. Besides, spreads at the longer end have consistently been larger than those at the shorter end. Yield spreads across all tenors were stable in the pre-crisis period. They surged sharply during the Asian financial turmoil, exhibiting two conspicuous humps between October 1997 and August 1998, with spreads occasionally widening to about 500 basis points. As the turbulence subsided, the spreads across all maturities have declined significantly.

Chart 1. Yield Spreads of Exchange Fund Paper against US Treasuries
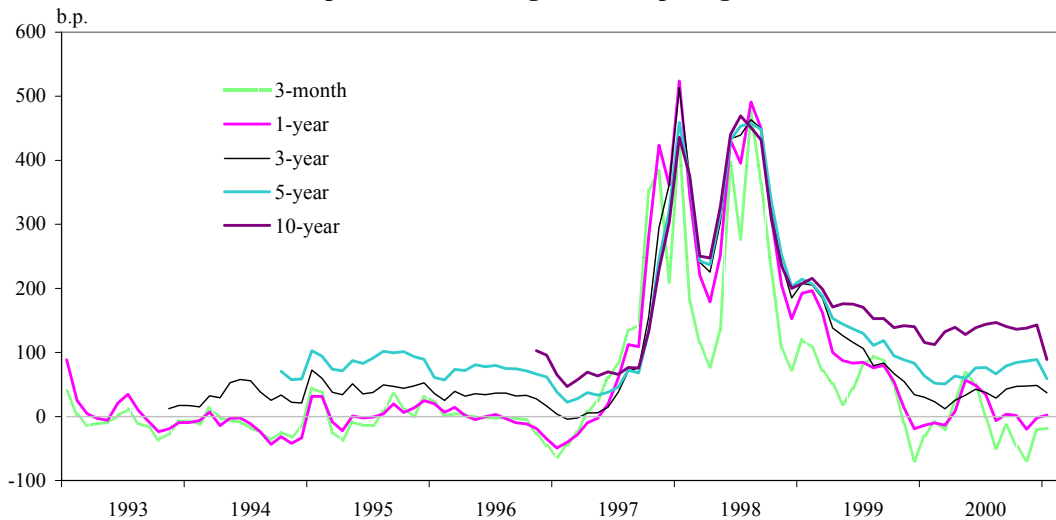
Note:
The 3-year, 5-year and 10-year Exchange Fund Notes Programmes started in October 1993, September 1994 and October 1996 respectively. Data are monthly averages.

The interest rate gap has tended to be interpreted as a reflection of the currency risk. Nevertheless, other factors such as credit and liquidity risks may also be at work, as described below.

(a) **Currency risk**: This refers to the uncertainty in exchange rate movements. The Uncovered Interest Parity Theorem postulates that, at equilibrium, the interest rate differential reflects the expected exchange gain or loss.[1] An expected depreciation of the domestic currency will be compensated by a higher interest rate; while an expected exchange gain will be offset by a lower interest rate. However, in the face of uncertainty in predicting currency movements, investors are likely to demand a premium to compensate for the currency risk.[2]

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[1] A key assumption underlying the uncovered interest parity (UIP) is free capital mobility which allows investors to exploit arbitrage opportunities. The UIP states that –

$$(1+i_t) / (1+ i_t^*) = E(s_{t+1}) / s_t$$

As an approximation,

$$i_t - i_t^* = [E(s_{t+1}) - s_t] / s_t$$

i.e. $\quad i_t - i_t^* = \Delta E(s_{t+1})$ $\hspace{2cm}$ (1)

where i_t and i_t^* are, respectively, the domestic and foreign interest rates of the same tenor, and s_t the current exchange rate expressed in terms of domestic currency per unit of foreign currency, and $E(s_{t+1})$ the expected exchange rate at the end of the tenor.

[2] Equation 1 in footnote (1) becomes:

$$i_t - i_t^* = \Delta E(s_{t+1}) + \text{currency risk premium} \hspace{1cm} (2)$$

(b)   <u>**Credit risk (or default risk)**</u>: This refers to the probability that a borrower fails to honour the obligations. For sovereign issuers, credit risk is usually assessed with reference to the macro-economic and political environment, taking into account factors such as fiscal vulnerability, external payments position and possibility of imposing capital controls.

(c)   <u>**Liquidity risk**</u>: An illiquid market makes it difficult for an investor to offload his holdings without putting pressure on the selling price. He may therefore demand a premium to compensate for this risk.

(d)   <u>**Other factors**</u>: Differences in tax and regulatory treatments, and preference of investors for domestic assets (or otherwise) may partly account for the interest rate differential.[3] Another relevant factor relates to the structural characteristics of different markets. For instance, the pricing of the Exchange Fund paper reflects, inter alia, its status as an eligible collateral for access to the Discount Window. Of late, long-term US Treasury yields have partly been distorted by a shrinking supply.[4]

III.   DECOMPOSING INTEREST RATE SPREADS

A simple method to decompose interest rate spreads is to compare the yields of two instruments that are very similar in all but one dimension, so that the difference in yields can be attributable to that particular dimension. As we will see, this is less straightforward than it appears, because the condition of "all other things being equal" is difficult to meet in reality.

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[3] Some studies have noted the existence of "home bias" in investors' choice, that is, domestic residents' portfolios are biased towards domestic assets, even though better returns may be obtained through diversification. Such bias may arise out of domestic residents' customary or inherent preference for domestic assets, higher information and transaction costs involved in investing in foreign assets, or legal or regulatory restrictions on investing abroad.

[4] The above discussion leads to a modification of Equation (2) in footnote (2) to

$$i_t - i_t^* = \Delta E(s_{t+1}) + p \qquad\qquad (3)$$

where p = currency risk premium + credit risk premium + liquidity premium + residual factors

Equation (3) represents a commonly adopted framework in other studies. Examples are Hawkesby, Smith, and Tether (2000) and Favero, Giavazzi and Spaventa (1996).

(a) Currency risk

Estimating the currency risk premium is tricky because of the need to filter out the effect due to expected exchange rate gains or losses. A number of studies proxy exchange rate expectations by using forward exchange rates, conducting surveys on market participants on their expectations, or invoking hypotheses on expectation formation (historical, adaptive or rational). However, reflecting the measurement problem, the estimates derived from different approaches are often found to vary significantly.

Instead of distinguishing between expected exchange rate movements and the uncertainty factor, we define currency risk in a broad sense to cover both elements in this paper, as expectations of significant exchange rate appreciation or depreciation reflect heightened anxiety over the sustainability of the linked exchange rate system. Using this broad concept, we approximate the currency risk premium by examining the following pairs:

(i)   *HIBOR-LIBOR differentials:* Unlike the yields on debt instruments, these differentials should be less tainted by differences in credit risks.[5] Nevertheless, as the size of the Euro-dollar market dwarfs that of the Hong Kong dollar interbank market, there could possibly be a liquidity premium on HIBOR (Chart 2).

(ii)   *Swap spreads (HK$ - US$ IRS spread):* These spreads enable us to examine the risk premium at the longer end. However, they probably incorporate a higher liquidity premium as the market gets thinner for longer maturities (Chart 3).[6]

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[5]   Arguably, the spreads may also reflect the risks of the respective banking systems. Nevertheless, given the international nature of Hong Kong's banking system, this should not be a significant factor. Anecdotal evidence also suggests that top-tier local banks are able to borrow Euro-dollars at rates comparable to those quoted to international banks.
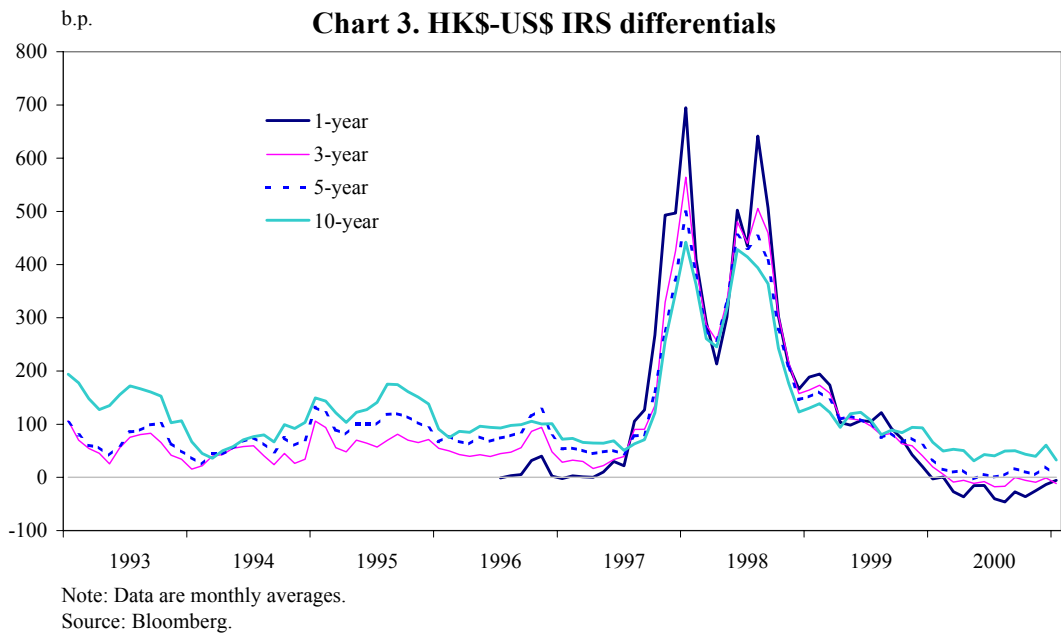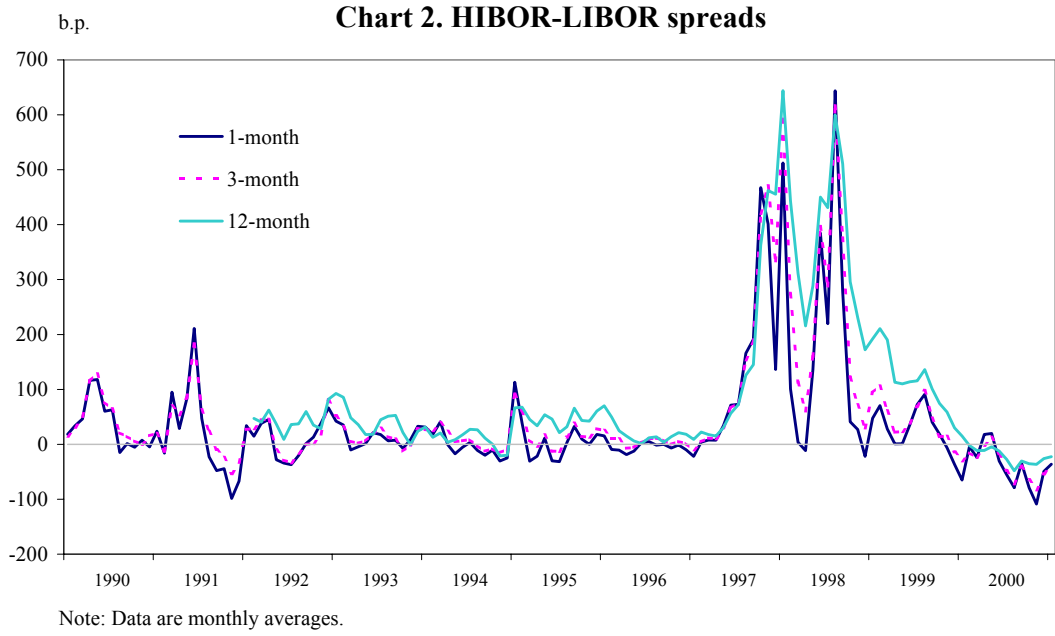
[6]   Interest-rate swap (IRS) is an instrument that exchanges a fixed rate of interest for a floating rate of interest. The average daily turnover (in notional amounts, under gross basis, i.e. short of netting of transactions between AIs in Hong Kong) for Hong Kong dollar IRS tripled from US$0.2bn in April 1995 to US$0.6bn in April 1998, based on the most recent BIS triennial survey on Foreign Exchange and Derivatives Market Activity. The average daily turnover was fairly small, compared to the outstanding Hong Kong dollar IRS contracts amounted to US$54.9bn at end-June 1998 (based on globally consolidated data from the BIS, net of inter-dealer transactions). The US dollar swap market was much larger, as the outstanding amount of US dollar IRS stood at US$8,411bn at end-June 1998, while the average daily turnover was US$35.8bn (both on global basis, net of inter-dealer transactions).
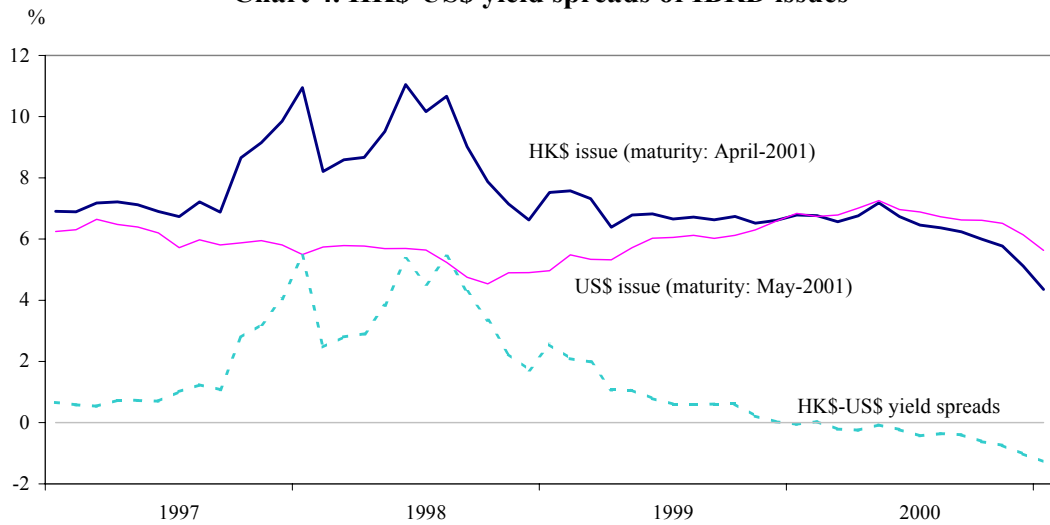
(iii) *Yield differentials of issues denominated in different currencies by the same issuer:* The currency risk can also be ascertained by comparing a pair of issues launched by the same issuer, identical in all major features except currency denomination. The only duo that we can identify are the five-year notes issued by the International Bank for Reconstruction and Development (IBRD) in 1996. As with the first two pairs, the spread is also affected by the liquidity premium: the Hong Kong dollar paper is less actively traded as many investors hold them until maturity (Chart 4).[7]

The three charts show very similar patterns. Having widened markedly to 600 – 700 basis points during the Asian crisis, the yield spreads came down sharply in late 1998 and 1999, following the stock market intervention and the introduction of the technical measures to strengthen the currency board arrangements. Two other observations are worth noting. The risk premium at the short end stayed above that at the long end in most of 1997 and 1998. This implies that even in the depths of the crisis, the market perceived the exchange rate pressure to be transitory, rather than causing a continuous downward drag on the exchange rate. Secondly, while the interest rate spreads at the short end dipped into negative territory in most of 2000, there has remained a small premium at the long end. The liquidity factor may be partly responsible. But this may also suggest that the market has not totally ruled out the currency risk in the long term.

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[7] Although the IBRD's rating (AAA) is higher than that of Hong Kong (A3), the yield on the IBRD issue is on average around 50 basis points above that of Exchange Fund paper of corresponding maturity. Apart from the use of Exchange Fund paper as discountable securities, this reflects largely the higher liquidity in the Exchange Fund paper market.

Chart 2. HIBOR-LIBOR spreads

b.p.

Legend:
- 1-month
- 3-month
- 12-month

Note: Data are monthly averages.

Chart 3. HK$-US$ IRS differentials

b.p.

Legend:
- 1-year
- 3-year
- 5-year
- 10-year

Note: Data are monthly averages.
Source: Bloomberg.

Chart 4. HK$-US$ yield spreads of IBRD issues

%

HK$ issue (maturity: April-2001)

US$ issue (maturity: May-2001)

HK$-US$ yield spreads

Note: The remaining maturity of the paper reduces with the passage of time. Data are monthly averages.
Source: Bloomberg.

(b) Credit risk

The credit risk premium can be estimated by comparing the yields on financial instruments denominated in the same currency but issued by different issuers. Since the Hong Kong government has not issued any foreign currency debt, we draw reference from the US dollar securities issued by statutory bodies, such as KCRC and MTRC, whose credit ratings are at par with the government.

The following table shows the US dollar issues of the KCRC and MTRC in the past five years. The premium on the MTRC issue rose significantly to 287.5 basis points in January 1999, which was significantly higher than average spread of around 100 basis points for A-rating US industrial companies prevailing at that time. The spreads at issuance subsequently narrowed, but have not yet returned to the level in 1995.

Table 1. Yield differentials against 10-year US Treasury bond at issue

Issue Date	Issuer	Spreads at issue (bp)	Market of issue	Amount issued (US$ mn)
11/00	MTRC	187.0	Global	600
03/00	KCRC	168.0	Global	1,000
07/99	KCRC	160.0	Europe	1,000
01/99	MTRC	287.5	Global	750
10/95	MTRC	113.0	US	300

Source: Bloomberg

Another useful indicator is the movement of the yield spread between a ten-year MTRC bond issued in October 1995 and a similar US Treasury bond issued around the same time (Chart 5). It shows that the credit premium started to creep up much earlier than the adjustments of credit ratings (or rating outlook) by international rating agencies. Also worthy of notice is that the rise in the yield differentials during the crisis (of around 250 basis points) was smaller than the spread in swap rates (of around 400-500 basis points), suggesting that the market was probably more concerned about the currency risk than the credit risk.[8] It is puzzling why the yield spreads have not come down to the pre-crisis levels. This may possibly be due to a tightening of the corporate debt market in 2000, which saw a 70 basis points rise in the average spread of A-rating industrials over 10-year US Treasuries.

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[8] Beyond the crisis period, the spread of MTRC US$ issue over US Treasuries was generally larger than that of a comparable Exchange Fund paper, likely due to the lower liquidity of the MTRC issue as well as the credit risk of the MTRC against that of the Hong Kong government.

Chart 5. Yields of MTRC's 10-year US$ issue against US Treasury Note
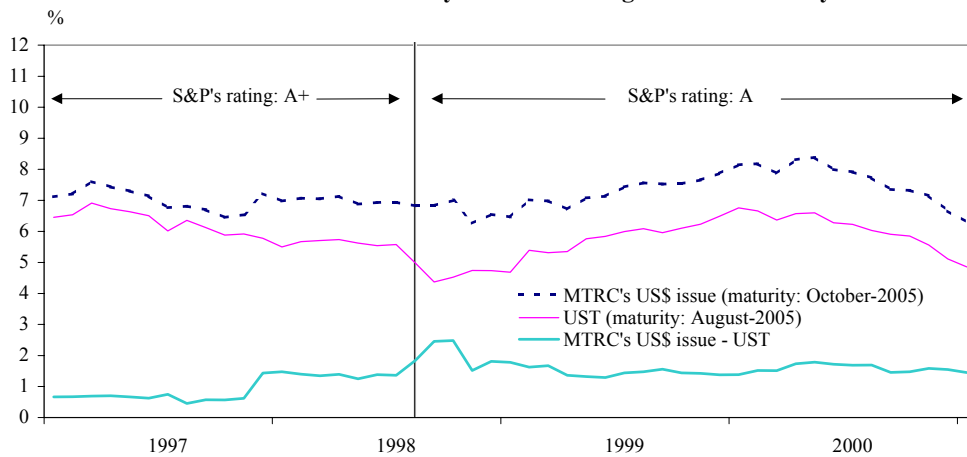
Notes:
1. Moody's maintained the rating of MTRC's long-term foreign currency debt at A3 during the period, but put it on watchlist for possible downgrading between 3-September 1998 and 3-December 1998.
2. Data are monthly averages.
Source: Bloomberg.


(c) Liquidity premium and residual factors

It is difficult to quantify the liquidity premium, as this varies considerably among financial instruments. As reflected by the bid-ask spreads, the US dollar markets, whether treasuries or IRS, are obviously more liquid than the Hong Kong dollar markets (Table 2). The liquidity risk may well explain part of the interest rate spreads. Charts 6 and 7 show the bid-ask spreads of HIBOR and 10-year HK$ IRS. They both point to a shrinkage of liquidity during the Asian financial turmoil.

Table 2. Bid-ask spreads

Maturity	Exchange Fund paper	US Treasuries	HK$ IRS	US$ IRS
Below 1 year	< 5 pips	)	10 bp	)
1-5 years	10-25 pips	) < 2 pips	10 bp	) 4 bp
5-10 years	> 25 pips	)	15 bp	)

Note: Based on price quotes available from Bloomberg. Indicative only.

Chart 6. Bid-ask spreads of HIBOR
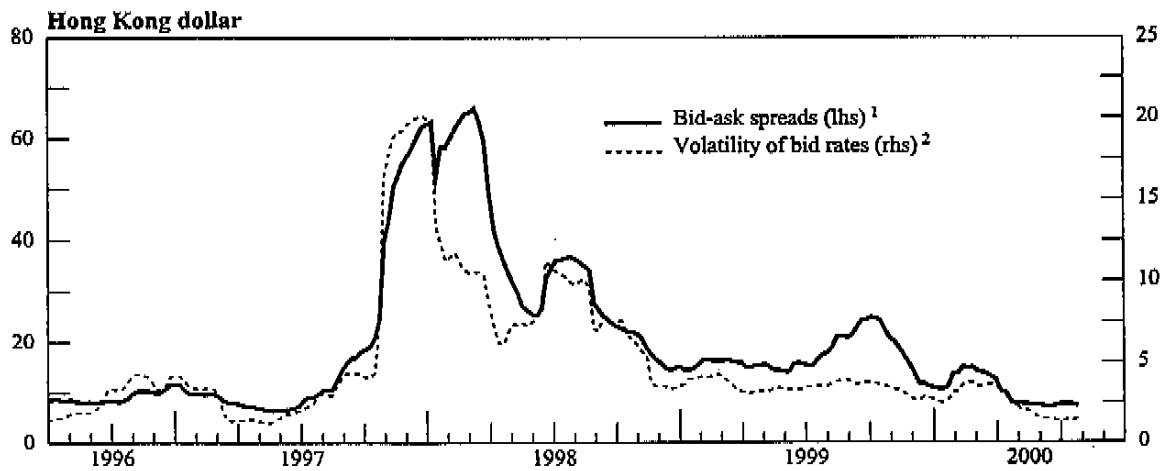
Hong Kong dollar

Bid-ask spreads (lhs) [1]

Volatility of bid rates (rhs) [2]

[1] Uncentred 50-day moving average, in basis points.   [2] Measured by the standard deviation of daily percentage changes over a rolling window of 50 days.

Source: Standard & Poor's DRI (Reuters America).

Chart 7. Bid-ask spreads of 10-year HK$ IRS

10-year

Bid-ask spreads (lhs) [1]

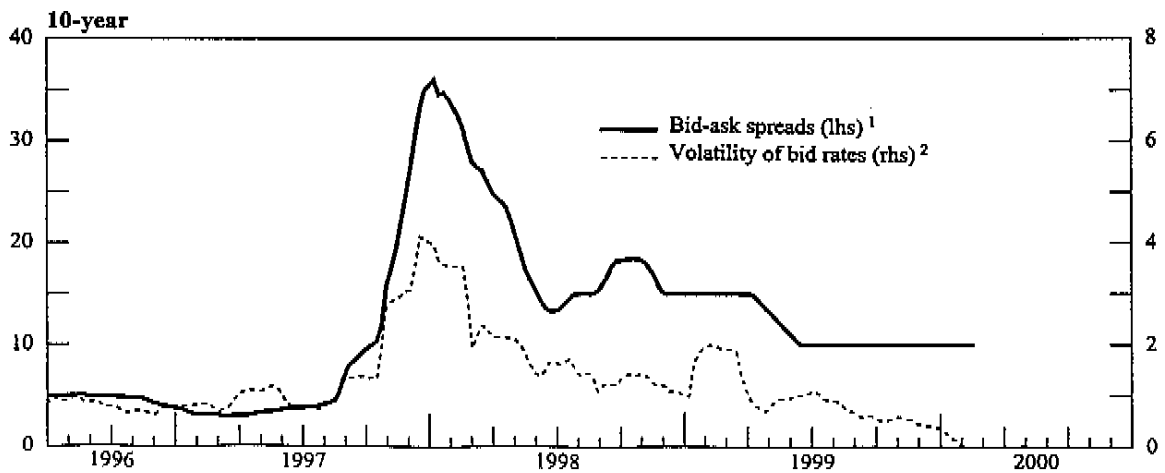Volatility of bid rates (rhs) [2]

[1] Uncentred 50-day moving average, in basis points.   [2] Measured by the standard deviation of daily percentage changes over a rolling window of 50 days.

Source: Standard & Poor's DRI (Reuters America).

(d)   Main observations

The decomposition exercise has probably raised more questions than it can answer. We set out to decompose the yield spreads between Exchange Fund paper and US Treasuries into different components. However, our estimation suggests that the currency risk premium alone is already larger than the yield spreads. We suspect that the estimates for different risk components contain a lot of noise, as it is difficult to find a pair of instruments that are identical except in one dimension. In particular, the yield on the Exchange Fund paper may have been substantially lowered by its status as an eligible repo securities for Discount Window purposes. Notwithstanding these measurement problems, a few broad conclusions can still be drawn. First, all risk components have come down significantly over the past two years, as speculative pressure abated after the stock market operations and the implementation of the package of monetary reforms. The improvement in the external environment has also helped. Secondly, different risk components are closely related to one another.[9] Thirdly, investors seemed to be more concerned with the currency risk than the credit risk during the crisis period. In the next section, we employ some statistical techniques to test the first two observations.

IV.   FACTORS INFLUENCING THE INTEREST RATE SPREADS

Our earlier analysis suggests a significant degree of interplay among the various risk factors. With the use of a statistical technique known as "factor analysis", we try to find out whether there are a few independent factors that can succinctly explain a comprehensive set of interest rate spreads (see **Annex A** for a more detailed description of the methodology and the result). Interestingly, our findings show that there is a pre-dominant factor which affects spreads ranging from short- to long-term spreads, from yield spreads of Exchange Fund paper to that of corporate paper. This factor even covers spreads supposed to represent "purely" currency risk as well as those for "purely" credit risks. This suggests that currency and credit risks may be driven by the same forces, making it rather difficult to disentangle the two components, or even the liquidity risk. However, the factor analysis technique does not tell us what the independent factor is. Judging from its predominant influence on a wide-ranging set of interest rate spreads, it probably relates to systemic risks in the economy, particularly those related to the monetary and financial sectors.

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[9]   The yield spreads of the Exchange Fund paper and US Treasuries showed a high correlation of about 0.9 with IRS spreads, and a correlation of 0.4 with the estimated credit spreads of the MTRC paper.

Precisely what influences the perception of systemic risks is difficult to identify. As an initial attempt to explore this issue, we regress the interest rate spreads against a number of macro-economic variables and financial market indicators. These include real GDP growth, foreign reserves, the Aggregate Balance, Hang Seng Index, banks' foreign currency position, yield spreads of emerging market bonds, and Hong Kong dollar deposits. We have run regression on both short-term spreads between HIBOR and LIBOR and longer-term yield spreads between Exchange Fund paper and US Treasuries (see details in **Annex B**).

Our preliminary findings suggest that real GDP growth and stock market performance are negatively associated with the interest rate spreads. [10] Investors probably take these variables as indicators of economic performance. The Aggregate Balance, which represents the level of interbank liquidity, displays a positive relationship with the spreads. This result is not as surprising as it appears. Under the currency board arrangements, the size of the Balance largely reflects the liquidity demand of the banking sector. Such demand surged during the Asian turmoil along with increased volatility in the domestic and external environment. [11] The yield spreads of emerging markets are also found to be positively associated with the interest rate spreads (for both short- and longer-term spreads), indicating the presence of contagion effect.

The regression results should be interpreted with caution. In particular, the causal relationships among the variables have not been tested. There are considerable endogenous interactions between the exchange rate, interest rate, and fund flows, which should be better represented by a system of equations, rather than a single regression equation. Possible structural changes following the monetary reforms should also be considered when sufficient data have been accumulated for statistical analysis. Also, for a better understanding of short-term movements of interest rate spreads, further work will need to be done using high frequency daily data, and capturing the announcement effects of key economic and financial variables.

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[10] Note, however, that the movement of the Hang Seng Index is not found to be a significant factor in explaining the spread between Exchange Fund paper and US Treasuries.

[11] Following the introduction of the Discount Window in September 1998, the Aggregate Balance shows a negative correlation with the interest rate spreads. However, due to the relatively short time after the reforms, we do not have sufficient data to run a regression to ascertain any change in the relationship statistically.

V.   CONCLUSION

In this paper, we have tried, with only partial success, the conventional method of decomposing interest rate spreads into different risk components. Our findings suggest that after the sharp surges during the Asian financial turmoil, all risk components have come down significantly in the past two years. We also find that investors were apparently more concerned about the currency risk, rather than the credit risk, during the crisis period. Nevertheless, different types of risks do tend to move together, as confirmed by the factor analysis on a large set of interest rate spreads. Simple regression analysis also suggests that the interest rate spreads are negatively associated with real GDP growth and Hang Seng Index movements, and positively associated with the Aggregate Balance and the yield spreads of emerging markets.

Factor Analysis on Interest Rate Spreads

Factor analysis is a statistical technique that seeks to identify a few *mutually independent factors* that can explain the behaviour of many variables, i.e. a broad range of interest rates spreads in our case. As these factors are constructed hypothetically from the variables, interpretations of the factors require further exploratory analysis as well as judgement.[12] A broad spectrum of interest rate spreads were selected for the study, including both short- and long-term spreads, covering a number of instruments (see table below). Data from November 1997 to May 2000 are used for estimation.

Table 1. Results of Factor Analysis on Interest Rate Spreads

Interest Rate Spreads	Factor Loadings				Communalities
	F1	F2	F3	F4	
1-day HIBOR – average Fed Funds rate	**0.28**	-0.02	0.00	**0.95**	98%
6-month HIBOR – 6-month LIBOR	**0.88**	**0.27**	-0.16	**0.20**	91%
12-month HIBOR – 12-month LIBOR	**0.94**	**0.25**	-0.11	0.14	98%
6-month Exchange Fund Bill – 6-month Treasury Bill	**0.94**	0.14	-0.09	**0.20**	95%
12-month Exchange Fund Bill – 1-year Treasury Note	**0.97**	0.13	-0.08	0.12	98%
2-year Exchange Fund Note – 2-year Treasury Note	**0.98**	0.14	-0.04	0.06	99%
5-year Exchange Fund Note – 5-year Treasury Note	**0.98**	0.09	0.03	0.06	97%
10-year Exchange Fund Note – 10-year Treasury Note	**0.95**	0.11	0.02	0.09	92%
2-year HK$ swap rate – 2-year Exchange Fund Note	**0.27**	**0.84**	-0.07	**0.23**	83%
5-year HK$ swap rate – 5-year Exchange Fund Note	0.14	**0.96**	-0.16	0.00	96%
10-year HK$ swap rate – 10-year Exchange Fund Note	0.01	**0.90**	-0.17	-0.19	88%
Hutchison 6.95% 1-Aug-2007 (144A) – UST 6.125% 15-Aug-2007	**0.82**	-0.17	**0.43**	0.19	91%
Swire 8.5 29-Sep-2004 (144A) – UST 7.25 15-Aug-2004	**0.91**	0.00	**0.25**	0.13	91%
MTRC 7.25 5-Oct-2005 (Yankee) – UST 6.5 15-Aug-2005	-0.03	**-0.31**	**0.92**	-0.02	95%
Cumulative % of variance explained	56.9	76.6	85.3	93.6	

Notes:

1. Factor loading reveals to what extent a particular spread is exposed to a certain factor. Factor loadings larger than 0.2 are in bold for easy reference.
2. Communalities indicate the explanatory power for a particular spread of the four factors.
3. Cumulative percentage variance explained refers to the explanatory power of a certain factor on all spreads.

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[12] In statistical terms, factor analysis characterises the covariance relationship among a set of variables S_1, $S_2,\ldots, S_n$ by a few underlying factors $F_1, F_2,\ldots, F_n$. Mathematically,

$$S_{it} = \mu_i + b_{i1} F_{1t} + b_{i2} F_{2t} + \ldots\ldots + b_{im}F_{mt} + \varepsilon_{it}$$

where

S_{it} denotes the universe of interest rate spreads,

μ_i denotes time-independent mean of S_i,

b_{ij} denotes the exposure of S_i to the jth factor F_j and is called the factor loading, and

ε_{it} denotes the error term.

The results reveal a predominant factor (F1) that explains more than half of the variance of the comprehensive set of spreads. It is notable that this factor covers most of the interest rate spreads, including those supposed to represent solely currency risks (HIBOR-LIBOR differentials) and those supposed to represent solely credit risks (yield spreads of Hutchison and Swire US dollar issues against US Treasuries). This suggests that currency risk and credit risk are not independent of each other, but are under the influence of the same forces. In view of the wide exposure of interest rate spreads to this factor, it is believed to be related to the broad systemic risks in the economy.

Regression results

Dependent variable : **3M HIBOR – LIBOR** (in basis points)

Period : Jan 1993 - Sep 2000 (monthly)

Independent variables:

	Coefficient	P-value
Aggregate Balance (HK$ bn)	6.1941	0.040*
Change in foreign reserves (HK$ bn)	-0.1157	0.834
Change in banks' foreign currency position (HK$ bn)	-1.4741	0.264
Change in HSI (%)	-2.2869	0.047*
Emerging market bond yield spreads (basis points)	0.1896	0.044*
Real GDP growth[1] (mom%)	-39.4569	0.000*
Change in deposits (HK$ bn)	-0.3934	0.236

$R^2 = 45.89\%$

Final results after eliminating insignificant variables:

	Coefficient	P-value
Aggregate Balance (HK$ bn)	6.1627	0.039*
Change in HSI (%)	-2.6779	0.018*
Emerging market bond yield spreads (basis points)	0.1883	0.042*
Real GDP growth[1] (mom%)	-39.1706	0.000*

$R^2 = 43.82\%$

* *Statistical significance at 5% level.*

[1] *Monthly data are interpolated with use of quarterly data.*

Dependent variable : **Yields of 3Y Exchange Fund Note – Yields of 3Y UST Note**
(basis points)

Period : Nov 1993 - Sep 2000 (monthly)

Independent variables:

	Coefficient	P-value
Aggregate Balance (HK$ bn)	6.3948	0.010[*]
Change in foreign reserves (HK$ bn)	0.0220	0.961
Change in banks' foreign currency position (HK$ bn)	-0.2939	0.794
Change in HSI (%)	0.0766	0.936
Emerging market bond yield spreads (basis points)	0.4092	0.000[*]
Real GDP growth[1] (mom%)	-40.3351	0.000[*]
Change in deposits (HK$ bn)	-0.1326	0.650

$R^2 = 62.73\%$

Final results after eliminating insignificant variables:

	Coefficient	P-value
Aggregate Balance (HK$ bn)	6.3868	0.008[*]
Emerging market bond yield spreads (basis points)	0.4098	0.000[*]
Real GDP growth[1] (mom%)	-40.2537	0.000[*]

$R^2 = 62.56\%$

[*] *Statistical significance at 5% level.*

[1] *Monthly data are interpolated with use of quarterly data.*

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