

**The impact of the Hong Kong mortgage reference rates:
A statistical analysis of various interest rates in Hong Kong**

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Abstract

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Abstract

This paper examines the fundamental differences among the various interest rates in the HK and US mortgage market from 1982 to 2005. The results indicate that HK Banks generally earn a greater interest margin with a more volatile mortgage rate. The results also suggested that the cost of funding is important for the mortgage rate determination. It also indicates HKMA has an intention to increase banking efficiency by the tradeoff of the banking profitability. Moreover, the Composite rate is a better indicator as the mortgage reference rate.

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1. Introduction

In 1993, Hong Kong Monetary Authority (HKMA) phased the program for liberalizing interest rate in HK. The two main objectives of the program are to increase the market determination of HK interest rate and to introduce more intense competition into the banking system in HK. HKMA would like to transform the existing financial intermediation into a more effective channel, resulting in higher returns for depositors and a lower cost of funds for borrowers.

Besides, the principle of the HKMA is to "promote the general stability and effective working of the banking system." Banking industry in HK is under tight restrictions and supervisory policies. The minimum standards authorized institutions, including banks, are expected to attain. In order to satisfy the requirements of the Banking Ordinances and recommendations on best practices, authorized institutions should achieve them that's why the entering to this market is difficult. When we focus on the nature of the banking industry, it needs to have a good monitoring to assure both the banking and monetary stability, so it is better to control the number of authorized institutions in a limited amount, which helps the government to have a better supervision. As the banking stability is critical in HK, HKMA does not encourage an over-competitive market environment. Also, less inter-bank competition would easily arouse the collusion among different banks. As collusion is beneficial to banks and harmful to the public, HKMA would also introduce some programs to avoid the collusion problem and restrict or guide the authorized institution's behavior.

As we are going to argue in the paper, to a certain extent, adoption of Composite rate¹ in the mortgage market may be beneficial to HK in several aspects— less fluctuations in mortgage rate, better information for the mortgage borrowers and even banking stability. However, HK banking authorized institutions do not accept the adoption of Composite rate when they clearly knew the advantages of Composite rate instead of Best Lending Rate (BLR)². It may be argued that the banks' behaviors were highly depended on their self-interests. With these in mind, this paper is thus concerned with how the adoption of Composite rate influences the mortgage rate fluctuation and examines whether the drop of bank profitability with Composite rate adoption will provide the changes for both micro and macro-economic environments in the mortgage market. Section 2 provides background of Composite rate arguments while Section 3 is the literature reviews, stating related findings. Section 4 provides the methodology, the econometric model used in this paper. Empirical results are presented in section 5. Finally, Section 6 gives the limitations of the model and the overall conclusion in Section 7.

¹ The average interest rate of HIBOR3 and Effective deposit rate weighted by amount of interbank borrowings and the deposit composition of the entire banking sector.

² The lowest interest rate a bank charges on loans extended to its best customers. The Best Lending Rate is often used as a base for quoting interest rates on mortgage loans.

2. Background of Composite rate argument

After the introduction of liberalizing interest rate program, the keen competition led to a narrowing of the net interest margin. HKMA, as a monitor of financial intermediates, introduced the Composite Rate³ to prevent banks from ignoring the interest rate risk under the intensive competition in mortgage lending market. HKMA claimed that the Composite rate is better than BLR in the views of both parties in the mortgage market. HK banks have adopted the BLR as a mortgage reference rate for many years.

In August 2005, HKMA published a research about the feasibility of Composite Rate as a reference mortgage rate. The study also highlighted the use of the composite rate, which closely reflected authorized institutions' cost of funds for the setting of mortgage rates, could provide a means for authorized institutions to better manage the risks of interest rate volatility on their earnings, and help enhance banking stability. The introduction of composite rate aroused a great feedback in banking industry and the feedback shocked HKMA. None of the authorized institutions decided to adopt the Composite Rate. The reasons of rejecting Composite Rate are as followings:

- i) The rate is only weighted rate in one industry which cannot reflect completely on the funding cost of individual institution,
- ii) The rate is a lagged indicator which cannot provide a good measure of present decision,

³ See HKMA Research Memorandum 09-2005 "Hong Kong Mortgage Rate Setting – An Alternative Reference Rate?"

- iii) The rate is too theoretical and less popular. It is difficult for market to adopt this rate as mortgage rate in a short period of time.

HKMA disagree all arguments stated-above, it responds that:

- i) Even the funding structures differ from banks, but that do not stop them from using the same best lending rate for a long time.
- ii) HKMA is willing to publish the Composite rate more frequently in order to match up the market situation. Moreover, composite rate to some extent is a forecasting indicator.
- iii) Composite Rate as a reference rate is adopted successfully in United Stated. It is feasible for HK to follow.

HKMA and the authorized institutions argued that which rate is more suitable for mortgage reference rate in the customer's view. And, this paper is going to examine the adoption of the mortgage reference rate, which is highly depended on banks' self-interests.

3. Literature Review

According to the Journal of Housing Research, many countries adopted different ways to determine the mortgage rate. Moreover, there is no standardized way to determine the individual mortgage rate.

In HK, the most common way is using BLR. However, the BLR sometimes is different among banks after abolishing interest rate agreement of Hong Kong Association of Banks in 2001. Sin (2006)⁴ has pointed out that, from the view of the nature in banking industry, it is necessary for HKMA to monitor the banks' performance, and profitability. The composite rate provides a higher visibility to the public on the banks' profit margin in the mortgage rate. It would entail a monitoring effect of banks when they determine the individual mortgage rate. The monitoring effect forms a constraint on the interest rate spread between the mortgage rate and the cost of funding rate. The market mortgage rate fluctuation would be less. The profitability of adopting Composite rate as a reference rate of mortgage would significantly less than BLR. Under the situation which customers do not truly know the funding cost, implying the asymmetric information, customers would get less bargaining power on the mortgage rate determination. Therefore, banks would have fewer restrictions on mortgage rate determination and enjoy a greater profit.

Also, in order to reduce consumer's confusion of different BLR, HKMA (2005)

⁴ Sin C.Y. (2006), personal communication

aim at using a standardized cost of funding rate in HK mortgage market. Since composite rate is newly introduced in HK, a study of oversea experience on funding cost can be a good indicator to evaluate the impact of composite rate in HK. According to the analysis of HKMA (2005), HK has adopted the linked exchange rate system, the HIBOR⁵ and BLR in the response of US interest rate adjustment. To some extent, the funding cost in HK is highly link with the changes of US's funding cost.

The study of HKMA (2005) pointed out in time when HIBOR and time deposit rate rise faster than BLR (typically during an interest rate hike cycle or when the risk premium of the HK dollar over the US dollar widens), the interest margin of banks' existing mortgage portfolios would be squeezed. This may lead to a sharp decline in bank's earnings. And it may influence the banking and financial stability. The market conditions during late January to April 2005 demonstrate such risk. The two criteria for the reference rate assessment are (i) the stability of mortgage rates over time which regarded as the key by both borrowers and authorized institutions, and (ii) conduciveness to risk management of interest rate which is important for banking stability. It compares the BLR with other alternative mortgage rates to consider which one enable banks to better track their funding cost in determining the interest rate for residential mortgage lending. The comparative analysis suggested that the composite rate is probably the best way as it reflects the funding costs closely for most of the banks and it is more stable

⁵ The rate of interest offered on HK dollar loans by banks in the interbank market for a specified period ranging from overnight to one year.

than other reference rates.

To summarize the analysis of the literatures, we can use the funding cost in US as the composite rate for HK in the period of 1982-2005 to compare the impacts of BLR in HK mortgage market.

4. Methodology

As Composite rate is a new topic introduced in HK, there is lack of economists to analysis the effects of adoption Composite rate and BLR. It is difficult to apply the models from others to make up an empirical framework. Also, the publication on the figures of Composite rate by HKMA is not sufficient (up till now, available data has only eight), so there is not enough sample size to evaluate the effects of changes in funding cost to the mortgage rate. The data sets should have some technical estimation in order to assure the findings are reliable. To estimate the Composite rate during the period 1982-2005⁶, the funding structures and different interest rates in the HK banking industry should be collected. Besides, another important variable in this project is the average mortgage rate in HK which is not released to the public. Thus, some mortgage rate data should also have some technical estimation to complete the whole data set⁷.

Furthermore, HK has not adopted the cost of funding index as a reference for mortgage rate. Therefore, the data in US mortgage market, as a proxy for the mortgage rate affected by the cost of funding index, should be used to evaluate the effects on the Composite rate. Thus, only basic components, like the mortgage rate and the cost of funding index, are included in testing whether HK banks' behaviors violate the mortgage rate's stability in this paper for

⁶ The method of calculation is explained in Appendix 9.1

⁷ The method of calculation is explained in Appendix 9.2

simplification. Goldfeld-Quandt Test is used to examine the size of mortgage rate fluctuation in both HK and US. Also, Ordinary Least Squares (OLS) method is used and several cross-countries regressions with both HK and US data should be run in the period 1982-2005, in order to estimate the fundamental differences on the effects of both rates in the mortgage markets.

There are totally 96 observations in both HK and US. This paper aims at capturing the impacts on the different mortgage reference rates and how they vary in HK. For simplifying the models, some presumptions have been made.

4.1 Presumptions

Some presumptions have been made for simplifying the models. First of all, the mortgage reference rates were BLR in HK and cost of funding rate in United State respectively. Secondly, the cost of funding in HK was very responsive to the changes of US rate. Thirdly, the publication of Composite rate and the cost of funding index provide more information to customers about the banks profit margin, which restrict the interest margin of bank into a mild variation.

4.2 The differences of HK and US mortgage markets

Under different mortgage reference rates in HK and US, they would lead to different behaviors of banks to determine the mortgage rates. As the cost of

funding index in US would generally provide more information to the mortgage borrowers and the bargaining power to customers would be increased. While the customers in HK obtain less market's information, HK banks can be more capable to alter the interest rate spread which can improve the profitability of banks. The Goldfeld-Quandt Test is needed to examine whether different bank's behaviors in HK and US reflect distinctions on the interest margin fluctuations. And the interest margin is defined as the mortgage rate minus the cost of funds. More precisely, the model is specified as follows:

$$\mathbf{MR = \alpha + \beta_1 COF + \beta_2 RGDPG}$$

While MR is the effective mortgage rate, COF is the funding cost of banks, and RGDPG is the real Gross Domestic Product (GDP) growth rate. Positive sign in COF is expected. And, the real GDP growth rate is a proxy of market mortgage demand. It is because a better macroeconomics environment would increase the mortgage demand.

It is also suggested that the HK banks earn an abnormal profit with the imperfect competitive market nature. Therefore, HKMA has a tendency to introduce new regulation and policy to improve the market efficiency by the stronger market competition. Interest Rate Liberalization is one of the policies adopted by HKMA. The effect of Interest Rate Liberalization can be a reference for us to analysis the intention of HKMA. Considering the effect on the interest margin after the interest rates liberalization, econometric model is constructed as follows:

$$\mathbf{INTM = \alpha + \beta_1 PIRL + \beta_2 CIRL}$$

While INTM is the interest margin in the mortgage market, PIRL is the dummy variable estimating the squeeze of interest margin under partial interest rates liberalization. And CIRL is also a dummy variable which is used to measure the squeeze of interest margin under completed interest rates liberalization. PIRL – 1: time series data in HK during 1994 to 2000, when the interest rates liberalization was in progress; 0: otherwise. CIRL – 1: time series data in HK during 2001 to 2005 when the interest rates liberalization was completed; 0: otherwise. Positive sign in α is expected. The interest margin in most of the time is positive, since banks intend to lend fund when it seeks the profit. The PIRL and CIRL dummies are expected to show negative relationships with the interest margin. The reason is that the more freedom of interest rate determination, the more intensive competition. As such, banks also posted fewer interest margin and profits.

4.3 The suitability in the reference rates and the market interest rate

Beside the two key criteria for the assessment, a good mortgage reference rate should closely reflect the changes in the mortgage rate in order to provide a better insight for the mortgage borrowers. To examine the suitability of the reference rate, a similar model is as following:

$$\mathbf{MR = \alpha + \beta REFR}$$

MR is the effective mortgage rate and the REFR is the mortgage reference rate (Composite rate or BLR). The β of the two reference rates regression result which

is near to 1 should be a better indicator, because it is more closely responsive to the changes of market mortgage rate.

To analyze whether there is a long-run interest rate relationship of the mortgage rate and the mortgage reference rates, the Cointegration testing is introduced. As the estimated mortgage rate can be derived by the above regression, we can test the goodness-of-fit by the regression error term with time lag.

$$u_t - u_{t-1} = \beta_1 u_{t-1} + \beta_2 (u_{t-1} - u_{t-2}) - \beta_3 (u_{t-2} - u_{t-3})$$

where u_i is defined as the difference between the estimate mortgage rate and the actual mortgage rate.

4.4 Data Source

The HK interest rate, deposit structure and mortgage market data are all collected from the HKMA official website and Hong Kong digest of Statistics. The HK GDP and price level data are quoted from the Hong Kong Census and Statistics Department. The data on US mortgage market are obtained from the official website of Bureau of Economic Analysis, US department of Commerce. And the cost of funding index was cited from the Bank of San Francisco official website.

5. Empirical Results

Table 5.1: Test for Equality between Series

Dependent Variable	Mean (μ)	S.D. (σ)	Count	$\mu_1=\mu_2$		$\sigma_1=\sigma_2$	
				F-statistic	P-Value	F-statistic	P-Value
1 : HK Mortgage Rate	8.78	3.61	96	0.1988	0.8880	4.5094	0.0000
2 : US Mortgage Rate	8.83	1.70	96				
1 : HK Cost of Funds	5.43	3.15	96	2.0799	0.1509	1.3155	0.1832
2 : US Cost of Funds	6.05	2.75	96				
1 : HK Interest Margin	3.28	1.22	96	7.1284	0.0082	1.1299	0.5529
2 : US Interest Margin	2.79	1.30	96				
1 : HK Mortgage Rate	8.78	3.61	96	46.9293	0.0000	1.3088	0.1916
2 : HK Cost of Funds	5.43	3.15	96				
1 : US Mortgage Rate	8.84	1.70	96	71.6293	0.0000	2.6192	0.0000
2 : US Cost of Funds	6.05	2.75	96				

Table 5.1 shows the statistics result for the interest rate in HK and US. Noted that the mortgage interest rate fluctuation in HK is significantly greater than US, on average the standard derivation of mortgage rate is 3.61% in HK and 1.70% in US. The less restriction on HK mortgage determination would definitely entail a greater lending rate fluctuation of HK Banks. Looking at the cost of funding index, it is not significantly different. It can be accounted for the Linked-exchange rate system between HK and US. The costs of funds are responsive among each other. Further, the interest margin of HK Banks is significantly greater than US, and HK Banks can get 0.49% much higher

interest margin than US banks. This finding supports the argument that HK Banks can earn a greater profit with it negotiated with the less information customers, and the mortgage rate determination by BLR helps HK banks earn a greater profit.

Beside, the fluctuation of mortgage rate is responsive to the variation of the funding cost in HK but not in US. The US mortgage rate tends to have a smaller changing than the cost of funds. It is because the larger proportion of fixed rate mortgage in US and the BLR referenced mortgage dominated the HK market.

Table 5.2: Simple Regression Model of Mortgage rate estimated by the Cost of Funding and Real GDP Growth Rate of HK and US

$$\mathbf{MR = \alpha + \beta_1 COF + \beta_2 RGDPG + \beta_3 AR(1)}$$

Dependent Variable		HK Mortgage Rate		US Mortgage Rate	
		Coefficient	t-ratio	Coefficient	t-ratio
Independent Variable	Constant (α)	5.2607**	4.0968	12.6635**	3.6196
	Cost of Funds (COF)	0.3946**	5.9112	0.1054**	4.2621
	Real GDP growth rate (RGDPG)	0.0384	1.4248	-0.0030	-0.9502
	AR(1)	0.9254**	25.7867	1.0082**	169.3246
	R-square	0.9484		0.9979	
	SEE	0.8142		0.0788	
	D.W. Statistics	2.0954		0.5191	
	Observations	95		95	

Notes: ** indicates significance at 1%. T-statistics are given in parentheses. AR(1) variable is used to correct the autocorrelation problem in the model.

From Table 5.2, it shows the considering factors when banks setting the mortgage rate. The signs of the constant terms are positive, to some extent, the constant term can be expressed into the profit margin when the real GDP growth is zero. It shows that the banks would earn a positive interest margin most of the time no matter the economy situation was. It is reasonable and obvious as all economics theory mentioned before. Moreover, the COF in HK and US are positive, showing the cost of funds leads to a higher mortgage rate. The profit maximizing behavior and the adjustable rate mortgage market contribute the reflection of the cost of funding to the mortgage rate. The RGDPG coefficients are insignificant in both HK and US market, showing the real GDP growth may not the critical consideration factor of banks to setting

the mortgage rate. To conclude, the cost of funding dominates the mortgage rate determination.

Table 5.3: Simple Regression Model of Interest Margin estimated by the Interest Rate Liberalization Dummy

$$\text{INTM} = \alpha + \beta_1 \text{PIRL} + \beta_2 \text{CIRL} + \beta_3 \text{AR}(1)$$

Dependent Variable		HK Interest Margin	
		Coefficient	t-ratio
Independent Variable	Constant (α)	3.7447**	12.2846
	PIRL	-0.3833	-0.8548
	CIRL	-1.6193**	-3.1340
	AR(1)	0.6388	7.6378
Adjusted R-square		0.6045	
D.W. Statistics		2.1719	
SEE		0.7733	
Observations		95	

Notes: ** indicates significance at 1%. T-statistics are given in parentheses.

The sign of constant term is positive as the previous finding, suggesting the banks earn interest margin on mortgage market that includes the cost of operation. The CIRL dummy coefficient is negatively significant, i.e. after the completion of Interest Rate Liberalization, the interest margin of HK banks

reduce dramatically of 1.62%. Apart from the above result, PIRL also shows a negative coefficient. Even the Interest Rate Liberalization was introduced and not completed. The stronger market competition caused a squeeze in interest margin. The reduction of interest margin after the launching Interest Rate Liberalization is showing that HKMA having a tendency to increase banking efficiency by increasing inter-bank competition, which would greatly reduce banks profitability. And, the introduction of Composite rate can also be a measure of HKMA to increase banking efficiency.

Table 5.4: Simple Regression Model of Mortgage Rate estimated by the fitness on the Mortgage Reference Rate

$$MR = \alpha + \beta \text{ REFR}$$

Reference Rate		Composite rate		BLR	
Dependent Variable		HK Mortgage Rate			
		Coefficient	t-ratio	Coefficient	t-ratio
Independent Variable	Constant (α)	3.0157**	10.9521	-2.5611**	-4.6715
	REFR	1.0618**	24.1820	1.3502**	21.5319
R-square		0.8615		0.8314	
SEE		1.3502		1.4896	
Sample Period		1982:01 - 2005:12		1982:01 - 2005:12	

Notes: ** indicates significance at 1%. T-statistics are given in parentheses.

As shown in Table 5.4, all of the coefficients are significant. A better mortgage reference rate should be more closely reflected the mortgage rate movement. Comparing the coefficients of REFR, the Composite rate one is more close to 1 and the BLR one is more far way from 1. In the viewpoint of customer convenience, Composite rate is better than the BLR because the change of Composite rate has a one-to-one relation with the mortgage rate. It is easier for mortgage borrowers to understand and reduce the market confusion on mortgage rate determination.

Table 5.5: Cointegration Test of Long-run relationship between Mortgage Rate and Mortgage Reference Rate

$$u_t - u_{t-1} = \beta_1 u_{t-1} + \beta_2 (u_{t-1} - u_{t-2}) - \beta_3 (u_{t-2} - u_{t-3})$$

Reference Rate		Composite rate		BLR	
Dependent Variable		ut – ut-1			
		Coefficient	t-ratio	Coefficient	t-ratio
Independent Variable	ut-1	-0.2387	-2.4808	-0.0729	-1.2766
	ut-1 – ut-2	-0.2767	-2.4959	-0.2633	-2.4964
	ut-2 – ut-3	-0.2804	-2.7876	-0.1264	-1.2509
Adjusted R-square		0.2626		0.0979	
SEE		1.0327		0.7415	
Akaike info criterion		2.9340		2.2714	
D.W. Statistics		1.9364		2.0677	
Observations		93		93	

Beside the analysis from Table 5.4, the Cointegration test can further provide an informative analysis to the goodness-of-fit on the mortgage reference rates. The time lag of the tests is 3-quarters⁸. The t-Statistics of Composite rate is -2.4808. It shows a significant result that there are long-run relationship and cointegration between HK mortgage rate and the Composite rate. However, comparing with the Composite rate, the t-Statistics of BLR is -1.2766. The insignificant result suggests it cannot conclude an existing of long-run relationship between HK mortgage rate and BLR. These findings show Composite is a better indicator than BLR for the mortgage rate, which is supporting the HKMA argument and opposing HK banks claiming.

⁸ More regression results are showed in the Appendix 9.3, the 3-quarter time-lag model shows the most reliable finding when we compare the Adjusted R-squared and Akaike info criterion.

6. Limitations of the Model Estimations

In my paper, the data of banking deposit in year 1982-2005 are from official website of HKMA and Monthly Digest of Statistics. However, some data are not available in both materials especially for those deposits in foreign currency at the early period, i.e. the 1980s. This cause estimation problem when we further estimate the Composite rate using HKMA definition, there may have some biases in the estimation.

Another limitation comes from the data estimated to the HK mortgage rate. The rate is not opened to the public and it is difficult to get the official statistics data. And some more calculation needed to make for completing the data set, also there may have some biases in the estimation.

7. Conclusion

Mortgage reference rate is a controversial issue in banking industry recently. The mortgage market brought great impacts over the financial system. Using the OLS model and calculating the Composite rate which since 1982, this paper examines the effects of mortgage reference rate on the mortgage market. Several conclusions can be drawn in this paper.

First, the HK and US cost of funding is similar. The fluctuation of HK mortgage market is greater than the US, with a higher bargaining power of HK banks. The results of this paper are not surprising. It found that the higher bargaining power of HK banks also results the greater interest margin. HK banks get a higher profitability by enlarging mortgage rate fluctuation.

Second, apart from the mortgage market structure, in both of HK and US, the economics environment does not act a critical factor to influence the mortgage rate. Comparably, there is an important role for cost of funding to setting the mortgage rate. It can conclude that the cost of funding index can be a good indicator for the mortgage market. There is no different on the important role of funding cost in HK and US.

Third, the findings suggest HK banks earn a huge profit when the mortgage rate was setting. Consequently, my paper further evaluated the

impact on Interest Rate Liberalization by introducing dummy variables PIRL and CIRL. The squeeze of interest margin provides an insight that HKMA would like to increase banking efficiency by the tradeoff of the banking profitability.

Fourth, the Composite rate is a better than BLR as the mortgage reference rate. In term of the changing amount and the long-run relationship on the two rates (reference rate and mortgage rate), Composite rate makes fewer market confusion, higher stability of mortgage rate and better conduciveness to the interest risk management of banks.

Even replacing the BLR by Composite rate, the change in the pricing method would have far-reaching impacts on the mortgage market. And, it could also a complex process. Composite rate as a mortgage reference rate beneficial for the customers and improving banking stability, however, banks would prefer the BLR with its profit maximizing behavior⁹. The choosing of the reference rate would depend on the bargaining power of the both involved parties in the future.

⁹ A detailed discussion of the Profitability of mortgage reference rates is given as a technical note in Appendix 9.4

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9. Appendix

9.1 Deriving the Composite rate

Composite rate can be defined as COF as followed:

$$COF = (\sum CC_i \times IR_i) / \sum CC_i$$

Where dependent variable **COF** is the cost of funding per dollar, **CC_i** is the funding component from retail or wholesale market, **IR_i** represents the corresponding interest rate of the *i* funding component and **∑CC_i** is the sum of all components from the two markets.

By the above definition, Composite rate can be calculated by defining the corresponding interest rate and the funding component,

Funding Component	Corresponding Interest Rate
Demand Deposit	---
Saving Deposit	Saving Deposit Rate
Time Deposit	3-Month Time Deposit Rate
Interbank Loan	3-Month HIBOR

9.2 Deriving the Mortgage rate

The effective mortgage rate can be derived as followed:

$$MR = \sum (MP_i \times R_i)$$

Where dependent variable MR is the effect mortgage rate, MP_i is the mortgage component in HK mortgage market and R_i represents the corresponding mortgage rate of the i component.

9.3 Cointegration Test of Long-run relationship between Mortgage Rate and

Mortgage Reference Rate

Reference Rate		Composite rate		BLR	
Dependent Variable		ut- ut-1			
		Coefficient	t-ratio	Coefficient	t-ratio
Independent Variable	ut-1	-0.3434**	-3.6948	-0.1070#	-1.8777
	ut-1 - ut-2	-0.1277	-1.2326	-0.1806#	-1.7569
Adjusted R-square		0.1997		0.0807	
SEE		1.0792		0.7676	
Akaike info criterion		3.0113		2.3298	
D.W. Statistics		2.0628		2.0231	
Observations		94		94	

Reference Rate		Composite rate		BLR	
Dependent Variable		ut- ut-1			
		Coefficient	t-ratio	Coefficient	t-ratio
Independent Variable	ut-1	-0.3976	-4.8037	-0.1432*	-2.6185
Adjusted R-square		0.1971		0.0679	
SEE		1.0785		0.7760	
Akaike info criterion		2.9995		2.3412	
D.W. Statistics		2.1409		2.2710	
Observations		95		95	

9.4 Projection on the change of Bank Profitability

Suppose HK banks adopt the COF as the mortgage reference since June 1996. And all the mortgage rate is determined by the Composite rate plus a fixed interest margin throughout the period. Table I shows the BLR and Composite rate from June 1996 to December 2005. And Table II shows the theoretical mortgage rate and the actual mortgage rate. Table III shows the interest margins and HK mortgage amount.

Table I

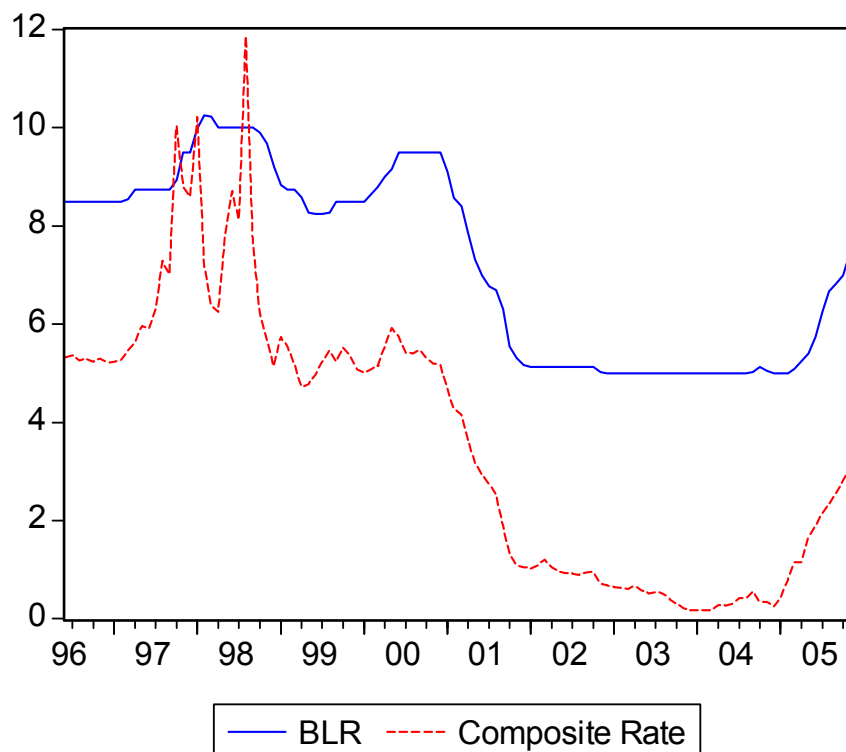


Table II

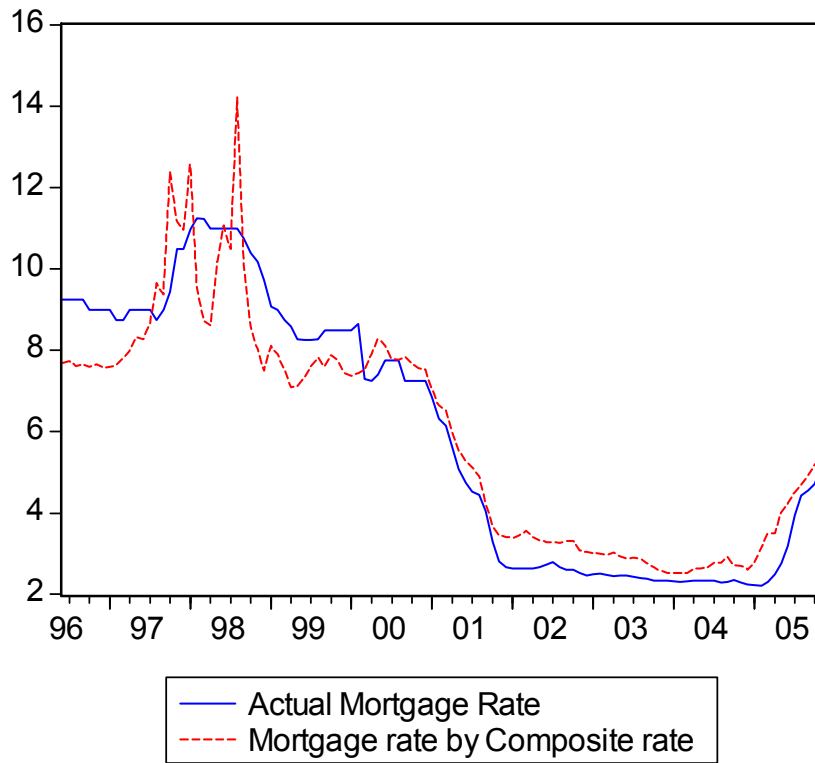
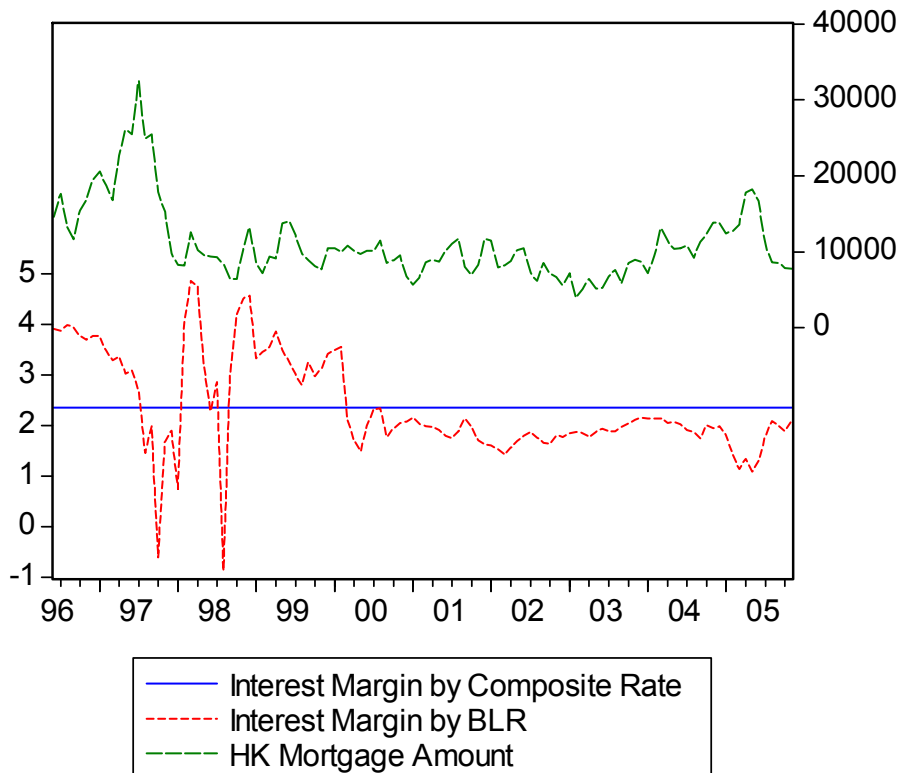


Table III



We can simply calculate the profit by mortgage lending of HK banks with the following equation: $\pi = \sum (MA_i \times IS_i)$. Where dependent variable π is the profit, MA_i is the mortgage amount and IS_i represents the interest spread in the i period.

After the calculation of profit throughout the period, the interest margin can be obtained 1.25% more by the adoption of BLR instead of Composite rate.