



**The Cost of Currency Stability: Hong Kong's Experiences**

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# **The Cost of Currency Stability: Hong Kong's Experiences**

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## **Abstract**

This study provides an argument against the economic justification of the linked exchange rate system in Hong Kong because the current economic environment is much different from that in 1983. The paper consists of five sections. The first two sections examine the empirical as well as theoretical relationship between exchange rates and the key macroeconomic variables. The third section derives a paradigm to illustrate the transmission process of economic forces under the system. The fourth sections use the paradigm to analyze Hong Kong's economic performance since the introduction of the system and give an account for the cost of currency stability. The final section gives a brief conclusion.

Keywords: Purchasing Power parity Theorem; Exchange Equation; Interest Rate Parity Theorem; Fisher's Equation of Interest; Linked Exchange Rate System; Defensive Operation; Beam Balance Paradigm; East Asian Financial Crisis; Negative equity

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*“A particularly sad feature of economic life is that, no sooner have we collectively achieved some degree of understanding of cause and effect, than circumstances change so radically that the painfully acquired knowledge is already out of date.”*  
(Hogon & Pearce, pp. 14)

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### **(A) The Theoretical Relationship between Exchange Rate and the Key Macroeconomic Variables**

Two fundamental economic theorems can be used to analyze the relationship between exchange rate and macroeconomic variables: they are Purchasing Power Parity theorem and Interest Rate Parity theorem. The former is from the angle of the public and in the long run perspective to see the current account of the country's balance-of-payments, the later is on the ground of individuals and in the short run perspective to see the capital account. While the Purchasing power Parity theorem, which is based on the law of one price, reveals the fact that the relative exchange rates and the relative price levels (especially for traded goods) in two countries are in inverse proportion; the Interest Rate parity theorem, which asserts the convergence of rates of return on international financial securities, demonstrates the relative exchange rates and relative interest rates in two countries are in direct proportion. These two theorems can be described as follows:

#### 1. Purchasing power parity theorem

$$E_{HK/US} = f_1(P_{HK}/P_{US} ; \mathbf{X}) \text{ ----- (1)}$$

Where  $E_{HK/US}$  is the spot exchange rate of the HK dollar against the US dollar, expressed in direct way (HK dollar per unit of US dollar);  $P_{HK}$  and  $P_{US}$  are the price levels of Hong Kong

and the United States respectively; ‘**X**’ is a row vector of exogenous variables that may affect the degree of association between  $E_{HK/US}$  and  $P_{HK}/P_{US}$ .

For simplicity of presentation, we assume **X** remains unchanged; take the logarithm of both sides of equation (1) and differentiate with respect to time, and then use the discrete-time counterpart of difference quotient ‘ $\Delta E_{HK/US} / \Delta t$ ’ to replace the derivative ‘ $d E_{HK/US} / dt$ ’. By letting  $\Delta t = 1$ , we may rewrite equation (1), which represents the external equilibrium condition for an economy, as follows

$$RE_{HK/US} = f_2(RP_{HK} - RP_{US}) = f_2(DRP) \text{-----}(2)$$

Where  $RE_{HK/US}$  is the annual rate of change in the exchange rate,  $RP_{HK}$  and  $RP_{US}$  are the consumer inflation rates of Hong Kong and the United States respectively, and  $DRP$  represents the inflation rate differential.

In addition, we use the cash-balance version of the Quantity Equation <sup>[1]</sup> expressed in terms of annual rates of change to demonstrate an economy’s internal equilibrium condition. If the income velocity remains constant over time, for Hong Kong and the United States, the equations can be written as

$$\begin{aligned} &RM_{HK} = RP_{HK} + RY_{HK} \\ \text{or} \quad &RP_{HK} = RM_{HK} - RY_{HK} \text{-----} (3) \end{aligned}$$

$$\begin{aligned} &RM_{US} = RP_{US} + RY_{US} \\ &RP_{US} = RM_{US} - RY_{US} \text{-----} (4) \end{aligned}$$

Where  $RM_{HK}$  and  $RM_{US}$  are the annual rates of change in money supply of Hong Kong and United States respectively;  $RY_{HK}$  and  $RY_{US}$  are annual rate of change in real GDP of Hong Kong and United States respectively. By substituting equations (3) and (4) into equation (2) and rearranging, we get

$$RP_{HK} - RP_{US} = (RM_{HK} - RM_{US}) - (RY_{HK} - RY_{US}) \text{-----} (5)$$

To incorporate the Exchange Equations into the Purchase Power Parity theorem, we substitute equation (5) into equation (2). The resulting equation may be thought of as the conditions for an economy to achieve internal balance on the one hand, and current account balance on the other hand.

$$RE_{HK/US} = f_2(RP_{HK} - RP_{US}) = f_2\{(RM_{HK} - RM_{US}) - (RY_{HK} - RY_{US})\} \text{-----} (6)$$

or  $RE_{HK/US} = f_2(DRP) = f_2(DRM - DRY) \text{-----} (7)$

Where DRM is the differential in money supply growth and DRY is the differentials in economic growth between Hong Kong and the United States.

## 2. Interest Rate Parity Theorem

$$[(E_{HK/US}^e)_{t=1} - (E_{HK/US})_t] / (E_{HK/US})_t = f_3(I_{HK} - I_{US} ; Z) \text{-----}(8)$$

Since the  $E_{HK/US}^e$ , the expected exchange rate, is difficult to specify, we use the forward exchange to replace it. Equation (8) becomes:

$$[(E_{HK/US}^f)_{t=1} - (E_{HK/US})_t] / (E_{HK/US})_t = f_3(I_{HK} - I_{US} ; Z) \text{-----}(9)$$

Where  $E_{HK/US}^f$  is the forward exchange rate,  $I_{HK}$  is the interest rate in Hong Kong,  $I_{US}$  is the interest rate in the United States,  $Z$  is the foreign exchange risk premium <sup>[2]</sup>. For the sake of clarity, we assume the forward exchange rate is an unbiased estimator of future spot exchange rate; we neglect the effects of  $Z$  and use DI to replace  $I_{HK} - I_{US}$ . Writing  $[(E_{HK/US}^f)_{t=1} - (E_{HK/US})_t] / (E_{HK/US})_t = RE_{HK/US}$ , it follows from equation (9) that

$$RE_{HK/US} = f_3(DI) \text{-----}(10)$$

Where  $RE_{HK/US}$  is the annual rate of change in exchange rate and DI is the interest rate differential between Hong Kong and the United States. Equation (10) demonstrates the condition of capital account balance for an economy.

If we link the Fisher's equation of interest <sup>[3]</sup> for Hong Kong and that for the United States by assuming the real interest rate is the same internationally <sup>[4]</sup> and the realized inflation rate (RP) is the unbiased estimator of the anticipated inflation rate, we can write:

$$I_{HK} - I_{US} = RP_{HK} - RP_{US} \text{ ----- (11)}$$

By substituting equation (11) into equation (10) and rearranging, we obtain

$$RE'_{HK/US} = f_3(I_{HK} - I_{US}) = f_3(RP_{HK} - RP_{US})$$

or  $RE'_{HK/US} = f_3(DI) = f_3(DRP) \text{ ----- (12)}$

As we have seen from equations (7) and (12), it is worth pointing out that the price differential (DRP) may have influence over  $RE_{HK/US}$  via the current account and capital account of an economy's balance of payments.

### **(B) Empirical Evidence and Further Exposition**

The Monetary systems in Hong Kong 's history <sup>[5]</sup> after the enactment of the Currency Ordinance of 1935 are listed as follows: the sterling link system (November 9, 1935 – July 5, 1972), the dollar link system (July 6, 1972 - November 25, 1974), the floating exchange rate System (November 26, 1974 – November 16 1983) and the linked exchange rate system ( November 17, 1983 – the present)<sup>[6]</sup>. The following analysis will focus on the linked exchange rate system.

As may be seen from Table 2, under the linked exchange rate system, the correlation coefficient between  $RE_{HK/US}$  and DRP ( $r = 0.06$ ;  $t\text{-value} = 0.23$ ) and the correlation coefficient between  $RE_{HK/US}$  and DI ( $r = 0.12$ ;  $t\text{-value} = 0.47$ ) are insignificant. However, the unfavorable empirical evidence cannot reject the applicability of both the Purchasing Power Parity theorem and the Interest Rate Parity theorem under the system. We will give the reasons immediately.

## 1. The Operation of Purchasing Power Parity Theorem under the Linked Exchange Rate System

For illustrative purpose, let us take the linked exchange rate system as a Beam Balance which is a device consisting of a beam pivoted at its center with the scale pan and weight pan hanging from each of its ends, right and left respectively. In equation (7), we may imagine the DRP is placed on the scale pan (for the sake of analysis, we add a minus sign on the variables placed in the scale pan) and the DRM - DRY are placed on the weight pan, and  $RE_{HK/US}$  is the rider — a small weight hung on the beam. Owing to the rigidity of  $RE_{HK/US}$ , the  $RE_{HK/US}$  rider has been locked in the zero point on the calibrated scale on the beam. To maintain equilibrium, any variations in DRP must be completely offset by the corresponding variations in DRM and/or DRY, or vice versa. In this regard, there is no reason for us to expect any correlation of  $RE_{HK/US}$  with DRP, DRM, and DRY. To describe the situation of the linked exchange rate system, by letting  $\delta$  to represent the narrow margin in which the  $RE_{HK/US}$  is allowed to vary and assuming  $\delta$  is close to zero, we rewrite equation (7) as

$$f_2(DRP) = f_2(DRM - DRY) = \delta \rightarrow 0$$

or  $f_2(RP_{HK} - RP_{US}) = f_2\{(RM_{HK} - RM_{US}) - (RY_{HK} - RY_{US})\} = \delta \rightarrow 0$  -----(13)

Equation (13) reveals that, in order to maintain equilibrium in the foreign market under the linked rate system, the inflation rates in Hong Kong and the United States must be identical, and the annual rates of change in the quantity of money supply per unit of real output of the two economies are identical I that is  $(RM_{HK} - RY_{HK}) - (RM_{US} - RY_{US}) = 0$ .

Under a floating exchange system, a change in the mass of either DRP on the scale pan or DRM – DRY on the weight pan will destroy the initial equilibrium, and then the  $RE_{HK/US}$  rider will automatically adjust its position on a calibrated scale until the beam is horizontal again. We may call this type of operation as a dynamic operation. Assuming  $RP_{US}$ ,  $RM_{US}$  and  $RY_{US}$  are given, it follows from equation (13), we obtain

$$RP_{HK} \uparrow \downarrow \longleftrightarrow RM_{HK} \uparrow \downarrow ; RY_H \downarrow \uparrow \longleftrightarrow RE_{HK/US} \uparrow \downarrow$$

Under the linked exchange system, however, no matter whether the force against the rider is endogenous or exogenous, some endogenous variables on the pans have to adjust their values to stabilize  $RE_{HK/US}$  and to restore equilibrium. We may call this type of offsetting force (in square brackets) as a defensive operation. Analogously, we write

$$\begin{aligned}
 & GY_{HK} \uparrow \downarrow \longrightarrow RP_{HK} \downarrow \uparrow \longrightarrow RE_{HK/US} \downarrow \uparrow \\
 & \longrightarrow [ RM_{HK} \uparrow \downarrow \longrightarrow RP_{HK} \uparrow \downarrow \longrightarrow RE_{HK/US} \uparrow \downarrow ] \\
 & \longrightarrow RE_{HK/US} = 0 \text{ ----- (14)}
 \end{aligned}$$

or

$$\begin{aligned}
 & RE_{HK/US} \uparrow \downarrow \longrightarrow [ RP_{HK} \downarrow \uparrow \longrightarrow RM_{HK} \downarrow \uparrow ; GY_{HK} \uparrow \downarrow \\
 & \longrightarrow RP_{HK} \downarrow \uparrow ] \longrightarrow RE_{HK/US} = 0 \text{ ----- (15)}
 \end{aligned}$$

As may be seen from equation (15), if other things are unchanged, the rise or fall in the price level (especially for the domestic asset prices), the increase or decrease in money supply, and the expansion or contraction of GDP can jointly or separately substitute for currency appreciation or depreciation. The price deflation in Hong Kong from 1999 to 2001 may be attributed to the realization of the substitution effect of deflation for currency depreciation.

## 2. The operation of Interest Rate Parity Theorem under the Linked Exchange Rate System

Although interest differential represents the cost of holding foreign currency deposits, the main concern of participants in foreign exchange markets where large-denomination foreign currency deposits are traded is the short-term expected spot exchange rate. Because of the expected interest differential is one of the major factors affecting the expected short-term spot exchange rate, we believe that the expected interest differentials rather than the interest differential may have stronger effects on the exchange rate. For instance, when the interest differential is constant but the expected interest differential is increased, then the exchange must be decreased.

To make the analysis more sophisticated, we have to look at the measurement problem in

detail. On a specific point of time under normal circumstances, it is quite obvious that the expected changes in short-term spot exchange rates formulated by individual market participants should be in the form of a normal distribution with expected value equals zero; similarly, the expected changes in short-term spot exchange rates formulated by an individual market participant on various point of time within a given year should also be in the form of a normal distribution with the expected value equals zero. It follows that if the annual rates of change in exchange rate is measured in terms of the exchange rate on a specific point of time to that on the same point of time of a previous year (i.e. 10 a.m. of 25 November 2000 to 10 a.m. of 25 November 2001). Since the average of the annual rates of change in exchange rate for all the possible points in a year is close to zero, it is not advisable to use this measurement in empirical studies. From the definitions of the annual rate of change in the exchange rate ( $RE_{HK/US}$ ) and the interest rates ( $I_{HK}$  &  $I_{US}$ ) in Table 1, we find that  $RE_{HK/US}$  measures the annual change in exchange rate between only two particular point of time (i.e. the year-end value of a given year to the year-end value of the previous year), whereas  $I_{HK}$  and  $I_{US}$  are calculated from the interest rates applicable to each day in a given year (i.e. the weighted average in the year). As such, while the  $I_{HK}$  and  $I_{US}$  have captured all the information of variations in interest rates in a given year, the  $RE_{HK/US}$  only observe the values on two specific points of time. It is true, of course, that the correlation coefficient of  $RE_{HK/US}$  and  $DI$  cannot reflect the reality. Furthermore, it is the Hong Kong Inter-Bank Offered Rate (HIBOR) not the Best Lending Rate, which changes occasionally during a year, playing the role to transmit the economic impetus to and from the exchange rate; and therefore, the use of Best Lending Rate to represent the interest rate level in Hong Kong to measure the correlation with the exchange rate would understate the real situation.

Now, let us come back to our Beam-Balance illustration. In this case, we take the interest differential ( $DI$ ) as the weight of the  $RE_{HK/US}$  rider. If the weight of the rider is increased (e.g.  $I_{HK} \uparrow$ ) with other things being equal, the beam must be askew to the right. To make the beam horizontal again, we can move the rider to the left ( $RE_{HK/US} \downarrow$  i.e. Appreciation), raise the domestic price level ( $RP_{HK} \uparrow$ )<sup>[7]</sup>, or a combination of them; a similar operation will take place under the linked exchange system except the  $RE_{HK/US}$  rider must be remained at the initial position. Writing  $RE_{HK/US} = \delta$ , it follows from equation (12), we obtain

$$f_3(I_{HK} - I_{US}) = f_3(RP_{HK} - RP_{US}) = \delta$$

or

$$f_3(DI) = f_3(DRP) = \delta \rightarrow 0 \text{ ----- (16)}$$

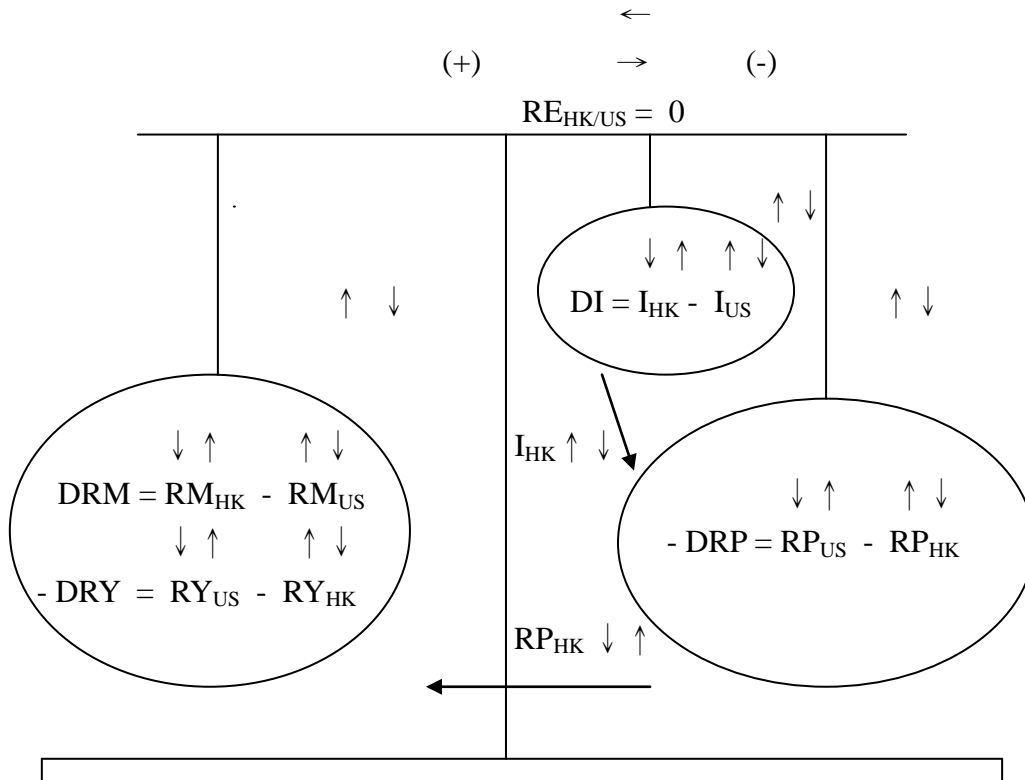
Under the linked exchange system, no matter whether the force on the  $RE_{HK/US}$  rider is endogenous or exogenous, some other endogenous variables (i.e.  $RP_{HK}$  or  $I_{HK}$ ) have to adjust their values to stabilize  $RE_{HK/US}$  and to restore equilibrium. We may call this type of offsetting forces (in square brackets) as a defensive operation. If  $RP_{US} = \Delta I_{US} = 0$ , it follows from equation (16), we write

$$I_{HK} \uparrow \downarrow \rightarrow RE_{HK/US} \downarrow \uparrow \rightarrow [ RP_{HK} \uparrow \downarrow \rightarrow RE_{HK/US} \uparrow \downarrow ] \rightarrow RE_{HK/US} = 0 \text{ -----(17)}$$

$$RE_{HK/US} \uparrow \downarrow \rightarrow [ I_{HK} \uparrow \downarrow ; RP_{HK} \downarrow \uparrow \rightarrow RE_{HK/US} \downarrow \uparrow ] \rightarrow RE_{HK/US} = 0 \text{ ----- (18)}$$

### (C) The Beam Balance Paradigm under the Linked Exchange Rate System

Owing to the distinguishing feature of equations (13) and (16), an attempt to integrate these two equations to form a new equation could be extremely risky in both economics and statistics sense. However, it is justifiable to use a paradigm to show how these two theorems work together to link the exchange rates, inflation rates, money supply growth rates, economic growth rates, and interest rates across two Economies. The construction of the following Beam-Balance-Paradigm is on the basis of equations (14), (15), (17) and (18).



To illustrate this paradigm, suppose the Beam-Balance is at its horizontal position initially, an endogenous variable, say  $RY_{HK}$ , is increased with other things being equal (i.e.  $RY_{HK} > RY_{US}$ ), it will generate an upward force on the beam (represented by the arrow in boldface); consequently, the beam will be askew to the right, and then a leftward pressure will be generated by  $RE_{HK/US}$  itself immediately to restore balance. In order to eliminating the pressure of appreciation in exchange rate, a set of defensive operations in Hong Kong will be activated, and finally the beam will go back to its initial position with  $RE_{HK/US} = 0$ . Since the US variables are exogenous, we write

$$\begin{aligned}
 RY_{HK} \uparrow \downarrow &\longrightarrow RE_{HK/US} \downarrow \uparrow \longrightarrow [ I_{HK} \downarrow \uparrow ; RP_{HK} \uparrow \downarrow ; RM_{HK} \uparrow \downarrow ] \\
 &\longrightarrow RE_{HK/US} \uparrow \downarrow ] \longrightarrow RE_{HK/US} = 0 \text{ ----- (19)}
 \end{aligned}$$

Proceeding in this manner, suppose a disturbance creates a change in an exogenous variable, say a fear of currency depreciation ( $RE_{HK/US} \uparrow$ ), the resulting defensive operation in Hong Kong to stabilize the exchange rate can be written as

$$RE_{HK/US} \uparrow \downarrow \longrightarrow [ I_{HK} \uparrow \downarrow ; RP_{HK} \downarrow \uparrow ; RM_{HK} \downarrow \uparrow ; RY_{HK} \uparrow \downarrow \longrightarrow RE_{HK/US} \uparrow \downarrow ]$$

$$\longrightarrow RE_{HK/US} = 0 \text{ ----- (20)}$$

Suppose the variations in interest rate, inflation rate, money supply growth, and economic growth in the United States are followed almost immediately by Hong Kong, then there would be no pressure on the exchange.

It is worth pointing out that changes in  $I_{HK}$ ,  $RPI_{HK}$ , and  $RM_{HK}$  in equation (19), and the effect of changes in  $I_{HK}$ ,  $RP_{HK}$ ,  $RM_{HK}$ , and  $RY_{HK}$  on  $RE_{HK/US}$  are to offset other factors from bringing about unwanted changes in  $RE_{HK/US}$  (i.e. deviates from  $\delta$ ). Since the effect of these types of defensive forces on the exchange rate is unobservable, it could be a large loophole in statistical analysis when dealing with the movement in exchange rates.

#### **(D) The Cost of Currency Stability**

The financial scene in 1983 was dominated by a confidence crisis of the Hong Kong dollar which principally arising from the concern over Hong Kong's future after 1997. The most noticeable development was the sharp depreciation of the Hong Kong dollar during the first nine months of the year: from HK\$6.515 to US\$1 at the beginning of the year fell sharply to HK\$9.6 on September 24, 1983 at which the crisis was peaked. On 17 October, the floating exchange system was replaced by the linked rate system; the instant effect of this decision was to put an end to the two-year confidence crisis of Hong Kong dollar. Six months later, the Best Lending Rate and the CPI(A) inflation rate dropped from 16% and 12.7% to 8.5% and 3.95% respectively, Hang Seng index rebounded 20% and total exports increased by 11%, showing that the economy was back on its feet.

As shown in Table 1, from the inception of the linked rate system to 1997, the average

annual economic growth rate in Hong Kong is significantly higher than that in the United States; with its interest rates followed closely to that in the United States, Hong Kong's inflation rates and money growth rates were much higher than those in the United States. The empirical fact is perfectly consistent with equation (19).

In the 1984-97 expansion phase, contrary to common economic policy objectives, Hong Kong could not deter the money supply from growing at an accelerating rate to aggravate the over heating economy. The low level of real interest rate and the local bankers' lenient lending policy called forth several rounds of price hike in assets price and wages; as a result, the average wage level was increased by 3 times, the average price for private premises was 9 times, and Hang Seng Index was 16 times in the period. The prosperity of the economy reached its climax in 1997; at the same time, the economic bubbles also reached their critical points.

As a free and open economy with intensive trade and investment links with the rest of East Asia, the Hong Kong economy has experienced a severe setback since the outbreak of the East Asian financial crisis in 1997. In the beginning October 20, hedge funds and other speculators mounted a massive onslaught on the Hong Kong dollar, as has been pointed out by equation (20), in order for maintaining currency stability, the pressure of currency depreciation has to be offset by a defensive operation by arising local interest rates, lowering domestic price level, decreasing money supply, and boosting the GDP up through encouraging exports and discouraging imports. Fortunately, the Hong Kong Monetary Authority could fend off such attacks and alleviate the depreciation pressure very quickly; if the depreciation pressure was not so short-lived, the extraordinary high overnight Hong Kong Inter-bank offered rate (e.g. 280% at noon on October 23) would spread its influence to the Best Lending Rate, and the consequences would be a tragedy to Hong Kong people.

The sequela of the East Asian financial crisis was the assets price slump. From 4 August 1997 to 13 August 1998, Hong Kong lost a huge sum of money (about HK\$220 billion or 175% of GDP) in terms of the total market capitalization of listed companies. Assuming 20% of the loss has to be realized, to reimburse their losses in the security market by selling property premises was thought to be the last resort to the defeated; as a result, a down turn movement of property prices would be inevitable. Official statistics reveals that the property price index <sup>[8]</sup> has been slipping from 420 at the end of 1997 to 202.5 at the end of 2000 — a

drop in 52% within three years' time. Until now, there has no harbinger of a recovery. The money lost in security and property markets means a decrease in national wealth, and in turn, it shrinks the future income stream of the economy. As pointed out by equation (14), when there is a decline in the economic growth rate with other things being equal, growth rate in money supply and inflation rate must be adjusted downward in order to maintaining currency stability; and it was exactly the case in Hong Kong since the financial crisis. Compare to the prosperous period of 1984-97, Hong Kong was in the other extreme since 1998: a significant drop in money supply growth and the price deflation exacerbated the economic recession.

It is unfair to attribute the above-mentioned undesirable economic environment to the linked exchange rate system alone. However, we have to admit that the system does prolong the duration and extend the amplitude of the business cycles. We call this kind of excessive swings the macroeconomic cost of the linked exchange rate system.

Furthermore, recall the concept of the substitution effect of a price change for a change in exchange rate in section (B1), we can therefore classify Hong Kong people into two groups: one group of people, who supports the linked exchange rate system, prefer a price change to an exchange rate change; whereas the other group of people, who do not support the system, prefer an exchange rate change to a price change. Take the current economic recession for instance; on the one hand, people who are creditors of HK dollars will be benefited from deflation because they can buy the same amount of US dollars or more goods and services in Hong Kong. On the other hand, people who are asset holders or debtors of Hong Kong dollars will find themselves in a disadvantage position because their assets will be sold at a price lower than the purchasing price, and their debt burdens will become heavier because they earn less income than before under the condition of deflation. On the contrary, when the economy is expanding rapidly, these two groups of people will act in opposite ways. We call this kind of disadvantages or losses to individual groups of people the microeconomic cost of currency stability.

In summary, the macroeconomic cost of the linked exchange rate system can be very hazardous to the Hong Kong economy if we do not have a set of efficient counter-cycle fiscal policy. Besides, if the microeconomic cost of one group of people far outweighs the benefits of the other group, this tremendous net microeconomic cost could also be very

destructive to the economy.

### **(E) Conclusion**

In 1967, a number of people with their families left Hong Kong to immigrate to other countries in fear of the political disturbances and social unrest; they sold their local assets pressingly at closeout prices and incurred sharp drops in the property prices and Hang Seng index; because of the link with the Pound Sterling, the exchange rate was not affected. In 1983, although there were a lot of anxieties among the people over the 1997 problem, the number of emigrants did not increase markedly; the floating exchange rate system has contributed to the relatively stability in both the property price and Hang Seng index by substituting exchange rates depreciation for assets price slump. In the 1998 financial crisis, there was a significant drop in the number of emigrants; the property prices and Hang Seng index fell drastically were due mainly to the linked exchange rate system. It is obvious that floating exchange rate system can alleviate the impact of economic crisis on the economy.

Several points about Tables 1 and 2 should be noted. Firstly, the degree of association between the business cycles of Hong Kong and the United States has been declining gradually since 1990, while the correlation between the business cycles of Hong Kong and China has become more and more obvious. Secondly, from 1986 onward, China has replaced the position of the United States as Hong Kong's largest trading partner. Finally, the exchange rate of the US dollar against SDR has increased since 1995, because of the linked rate relationship, HK dollar has to appreciate against the currencies of its principal competitors; and hence weakened the competitiveness of our exports. It would not be justifiable for Hong Kong to conduct monetary policy in accordance with the Federal Reserve System of the United States.

Unemployment and negative equity are the two unprecedented problems we have to face, they are not only an economic problem but also a political problem. Considering the HK\$127 billion mortgage loans in negative equity <sup>[9]</sup>, and the 6% unemployment rate <sup>[10]</sup> in 2001, if the probability of unemployment occurs in a negative equity family increase, it would be a threat to the prosperity and stability of Hong Kong. In closing, I would like to state my personal opinion that it is not advisable for the Hong Kong people to sacrifice so much in order to maintain the linked exchange rate system. Remember that Hong Kong was on the brink of collapse several times in the past 158 years, but it rose like a phoenix from

the ashes again and again. We have confidence that Hong Kong will survive.

Table 1: The Key Macroeconomic Variables in Hong Kong, USA, and China

	$I_{HK}$	$I_{US}$	$RY_{HK}$	$RY_{US}$	$RY_{CHINA}$	$RP_{HK}$	$RP_{US}$	$E_{HK/US}$	$E_{Y/US}$	$E_{US/SDR}$
1975	6.89	7.89	0.3	-0.4	8.7	1.5	9.1	4.935	1.860	1.214
1976	6.29	6.84	16.2	5.6	-1.6	6.1	5.7	4.905	1.941	1.155
1977	4.97	6.82	11.7	4.6	7.6	4.3	6.5	4.662	1.858	1.168
1978	5.83	9.06	8.5	5.5	11.6	5.2	7.6	4.684	1.684	1.252
1979	12.67	12.67	11.5	3.2	7.6	12.6	11.3	5.003	1.555	1.292
1980	13.63	15.27	10.1	-0.2	7.8	12.6	13.5	4.976	1.498	1.302
1981	17.49	18.87	9.2	2.5	5.2	12.0	10.3	5.589	1.704	1.179
1982	14.16	14.86	2.7	-2.0	9.1	10.0	6.2	6.070	1.893	1.104
1983	12.32	10.79	5.7	4.3	10.9	7.7	3.2	7.265	1.976	1.069
1984	12.52	12.04	10.0	7.3	15.2	7.9	4.3	7.818	2.320	1.025
1985	8.17	9.93	0.4	3.8	13.5	2.9	3.6	7.791	2.937	1.015
1986	7.12	8.35	10.8	3.4	8.8	4.6	1.9	7.803	3.453	1.173
1987	6.60	8.21	13.0	3.4	11.6	5.4	3.7	7.798	3.722	1.293
1988	7.91	9.31	8.0	4.2	11.3	7.1	4.0	7.806	3.722	1.344
1989	10.54	10.92	2.6	3.5	4.1	9.3	4.8	7.800	3.765	1.282
1990	10.53	10.01	3.4	1.8	3.8	8.7	5.4	7.789	4.783	1.375
1991	9.40	8.46	5.1	-0.5	9.2	8.9	4.2	7.771	5.323	1.368
1992	7.32	6.25	6.3	3.0	14.2	7.3	3.0	7.741	5.515	1.408
1993	6.50	6.00	6.1	2.7	13.5	5.8	3.0	7.736	5.762	1.396
1994	7.26	7.14	5.4	4.0	12.6	8.0	2.6	7.728	8.619	1.432
1995	8.95	8.83	3.9	2.7	10.5	8.8	2.8	7.736	8.351	1.517
1996	8.25	8.27	4.5	3.6	9.6	5.4	2.9	7.734	8.314	1.452
1997	8.83	8.44	5.0	4.4	8.8	4.1	2.3	7.742	8.290	1.376
1998	9.94	8.35	-5.3	4.4	7.8	3.1	1.6	7.745	8.279	1.357
1999	8.49	7.99	3.1	4.3	7.1	-4.3	2.2	7.758	8.278	1.367
2000	9.22	9.23	10.5	5.0	8.0	-4.4	3.4	7.791	8.279	1.319

(Cont'd) Table 1: The Key Macroeconomic Variables in Hong Kong, USA, and China

	T <sub>CHINA</sub>	T <sub>US</sub>	RE <sub>HK/US</sub>	DRP	DI	RM <sub>HK</sub>	RM <sub>US</sub>	DRM	DRY
1975	11.00	18.70	n.a.	-7.5	-1.00	n.a.	n.a.	n.a.	0.7
1976	9.30	20.45	-6.08	0.2	-0.55	21.05	13.33	7.72	10.6
1977	8.85	21.92	-4.954	-2.1	-1.85	20.73	10.37	10.36	7.1
1978	9.26	20.38	0.472	-2.3	-3.23	13.73	7.69	6.04	3.0
1979	10.51	19.20	6.810	1.4	0.00	13.24	7.90	5.34	8.3
1980	13.42	18.51	-0.540	-1.1	-1.64	13.00	8.51	4.50	10.3
1981	15.48	18.53	12.312	1.6	-1.38	13.76	9.69	4.07	6.7
1982	16.50	19.29	8.606	4.0	-0.70	25.00	8.97	16.03	4.7
1983	18.15	21.05	19.687	4.4	1.53	14.77	11.42	3.35	1.4
1984	21.31	21.93	7.612	3.6	0.48	24.30	8.66	15.64	2.7
1985	15.86	20.15	-0.345	-0.6	-1.76	12.81	8.00	4.81	-3.4
1986	25.37	19.81	0.154	2.8	-1.23	22.16	9.47	12.70	7.4
1987	27.09	18.14	-0.064	1.6	-1.61	30.76	3.57	27.19	9.6
1988	29.02	16.47	0.103	3.1	-1.40	14.20	5.76	8.44	3.8
1989	30.24	16.77	-0.077	4.4	-0.38	13.78	5.49	8.29	-0.9
1990	30.70	16.02	-0.141	3.4	0.52	16.82	3.77	13.05	1.6
1991	32.37	15.02	-0.231	4.6	0.94	26.25	3.09	23.16	5.6
1992	33.37	15.06	-0.384	4.3	1.07	12.17	1.68	10.49	3.3
1993	34.88	15.08	-0.065	2.9	0.50	27.28	1.67	25.61	3.4
1994	35.25	14.88	-0.103	5.4	0.12	16.49	0.44	16.05	1.4
1995	34.76	14.34	0.104	6.0	0.12	22.15	4.16	17.99	1.2
1996	35.34	14.20	-0.026	2.5	-0.02	21.04	4.66	16.38	0.9
1997	26.29	14.37	0.103	1.8	0.39	9.92	5.72	4.20	0.6
1998	37.55	15.15	0.039	1.5	1.59	10.83	8.78	2.04	-9.7
1999	38.52	15.28	0.168	-6.4	0.50	5.48	5.91	-0.43	-1.2
2000	38.90	14.79	0.425	-7.8	-0.01	5.20	6.20	-1.01	5.5

Sources:

- i. Hong Kong Monthly Digest of Statistics, Hong Kong Census and Statistics Department, various issues.
- ii. Gross Domestic Product 1961-2000, Government of the HKSAR, 2001
- iii. International Financial Statistics, Year Book 2001 & International Financial Statistics, September 2001, IMF.
- iv. China Statistical Yearbook, 2000, China Statistics Press, 2000

v. <http://www.stats.gov.cn/english/index.html>

Where:

**I<sub>HK</sub>** represents the Best Lending Rate in Hong Kong, period averages in percent per annum.

**I<sub>US</sub>** represents the Prime Rate in the United States, period averages in percent per annum.

**DI** represents the interest rate differentials between Hong Kong and the United States, i.e.

$DI = I_{HK} - I_{US}$ .

**E<sub>HK/US</sub>** and **E<sub>Y/US</sub>** represent the exchange rates of Hong Kong dollars and Chinese Renminbi to one unit of US dollar. Figures are average of the closing middle market rates for the respective period.

**RE<sub>HK/US</sub>** is the percent change over previous year of the **E<sub>HK/US</sub>**.

**E<sub>US/SDR</sub>** represents the end of period exchange rate of US dollars to one unit of SDR.

**RY<sub>HK</sub>**, **RY<sub>US</sub>** and **RY<sub>CHINA</sub>** represent real economic growth rates in Hong Kong, the United States, and China measured in terms of GDP at constant market prices.

**DRY** is the difference in economic growth between Hong Kong and the United States, i.e.

$DRY = RY_{HK} - RY_{US}$ .

**RP<sub>HK</sub>** and **RP<sub>US</sub>** represent the inflation rates in Hong Kong and the United States measured in terms of consumer prices.

**DRP** is the inflation differential between Hong Kong and the United States, i.e.

$RP = RP_{HK} - RP_{US}$

**T<sub>CHINA</sub>** and **T<sub>US</sub>** represent the relative shares of Hong Kong's total external trade value with respect to China and the United States.

**RM<sub>HK</sub>** and **RM<sub>US</sub>** represent the percent change over previous year of M<sub>2</sub> in Hong Kong and the United States, in which M<sub>2</sub> in Hong Kong are figures unadjusted for foreign currency swap deposits.

**DRM** is the money supply growth differential between Hong Kong and the United States.

Table 2: The Correlation Matrix of Key Macroeconomic Variables in Hong Kong, China, and the United States

	RE <sub>HK/US</sub>	E <sub>HK/US</sub>	RP <sub>HK</sub>	RP <sub>US</sub>	DRP	I <sub>HK</sub>	I <sub>US</sub>	DI	DGM	DGY
RE <sub>HK/US</sub>	1	0.80	0.68	0.21	0.81	0.84	0.80	0.39	-0.01	-0.26
	1	0.41	0.11	0.22	0.06	0.63	0.58	0.12	0.41	-0.06
E <sub>HK/US</sub>	0.80	1	0.51	-0.06	0.91	0.75	0.71	0.41	0.49	-0.24
	0.41	1	0.00	-0.57	-0.16	0.36	0.73	-0.55	-0.08	0.34
RP <sub>HK</sub>	0.68	0.51	1	0.79	0.56	0.92	0.86	0.49	-0.31	-0.29
	0.11	0.00	1	0.46	0.97	0.13	0.12	0.03	0.64	0.13
RP <sub>US</sub>	0.21	-0.06	0.79	1	-0.07	0.59	0.61	0.07	-0.70	0.39
	0.22	0.57	0.46	1	0.22	0.45	0.58	-0.17	0.27	0.27
DRP	0.81	0.91	0.56	-0.07	1	0.69	0.57	0.71	0.45	-0.06
	0.06	-0.16	0.97	0.22	1	0.22	-0.03	0.08	0.62	0.07
I <sub>HK</sub>	0.84	0.75	0.92	0.59	0.69	1	0.98	0.39	-0.14	0.06
	0.63	0.36	0.13	0.45	0.02	1	0.81	0.38	-0.28	-0.36
I <sub>US</sub>	0.80	0.71	0.86	0.61	0.57	0.98	1	0.19	-0.18	-0.06
	0.58	0.73	0.12	0.58	-0.03	0.81	1	-0.24	-0.23	-0.13
DI	0.39	0.41	0.49	0.07	0.71	0.39	0.19	1	0.19	0.54
	0.12	0.55	0.03	-0.17	0.08	0.38	-0.24	1	-0.09	-0.38
DGM	-0.01	0.49	-0.31	-0.70	0.45	-0.14	-0.18	0.19	1	-0.35
	0.41	-0.08	0.64	0.27	0.62	-0.28	-0.23	-0.09	1	0.55
DGY	-0.26	-0.24	0.29	0.39	-0.06	0.06	-0.06	0.54	-0.35	1
	0.06	0.34	0.13	0.27	0.07	-0.36	-0.13	-0.38	0.55	1

\* The upper and lower figure in the cells are the correlation coefficients of the variables under the floating exchange system (1976-1982) and those under the linked exchange rate system (1984-the present) respectively, where  $0 \leq |r| \leq 1$ .

## Notes

- [1] See “Quantity Theory of Money” by Milton Friedman in J. Eatwell, 1987.
- [2] Risk premium is the difference between the forward rate and the expected future spot rate. See Husted & Melvin, 1995, pp395.
- [3] The Fisher’s equation of interest is an equation connecting nominal interest rate (I), real interest rate ( $I^*$ ), and anticipated inflation rate ( $PR^*$ ). The equations for Hong Kong and the United states are:  $I_{HK} = I_{HK}^* - RP_{HK}^*$  and  $I_{US} = I_{US}^* - RP_{US}^*$ .
- [4] Research evidence supports that real interest rates may not be equal across countries. See Merrick & saunders, 1986.
- [5] See Money in Hong Kong 2000, HKMA, pp. 4-9, and Hong Kong Annual Reports 2000, HK government, pp. 485.
- [6] A concise description of the background and features of the linked exchange rate system can be found in Y.C. Jao, 2001, pp.29-38.
- [7] as mentioned already in section (B)1, the  $RP_{HK}$  in the scale pan is multiplied by a minus sign, so that when  $RP_{HK} \uparrow$ , it will generate a force on the scale pan as if  $RP_{HK} \downarrow$ , and consequently it can create an upward force to offset the downward force generated by an increased weight on the rider.
- [8] The 1999=100 property price index of private domestic premises has been changed to a new series with 1989=100. Data are taken from various issues of the Hong Kong Monthly Digest of Statistics.
- [9] Negative equity refers to the loan exceeds the current market value of the mortgaged property. See “Survey on Residential Mortgage Loans in Negative Equity” from <http://www.info.gov.hk/hkma/eng/press/2001/20011016e4.htm>
- [10] Unemployment rate =  $[1 - (\text{the number of working population} / \text{the number of$

economically active population)] \* 100%. See 2001 Population Census, Summary Results, pp. 50 & 56.

## **References**

- [1] W.G. Hogon & I.F. Pearce, *The Incredible Eurodollar, or, Why the World's Money System is Collapsing*, Unwin Paperback, 1983.
- [2] J. Eatwell and Others (Edit), *The New Palgrave: A Dictionary of Economics*, Volume 4, Macmillan, 1987
- [3] John J. Merrick & Anthony Saunders, *International Expected Real Interest Rates*, *Journal of Monetary Economics*, November 1986.
- [4] S. Jomok (Edit), *Tigers in Trouble: Financial Governance, Liberalization and Crises in East Asia*, Hong Kong University Press, 1998.
- [5] Steven Husted & Michael Melvin, *International Economics*, 3<sup>rd</sup> Edition, HarperCollins, 1995
- [6] Y.C. Jao, *The Asian Financial Crisis and the Ordeal of Hong Kong*, Quorum Books, 2001.

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