

THE HONG KONG CURRENCY BOARD AND SPECULATIVE ATTACKS

The Hong Kong dollar is the only Asian currency to be anchored to the dollar using a currency board. The fact that the currency was able to resist speculative attacks during the recent financial crisis should not hide the weaknesses of the foreign exchange regime. A detailed analysis of these episodes indicates that a particular form of speculation emerged in Hong Kong. It is tightly linked to the functioning of currency boards once local financial markets have developed and are opened up. The subsequent reforms should limit such speculation in the future. But, Hong Kong is not immune to a new crisis, especially if China's currency devalues strongly.

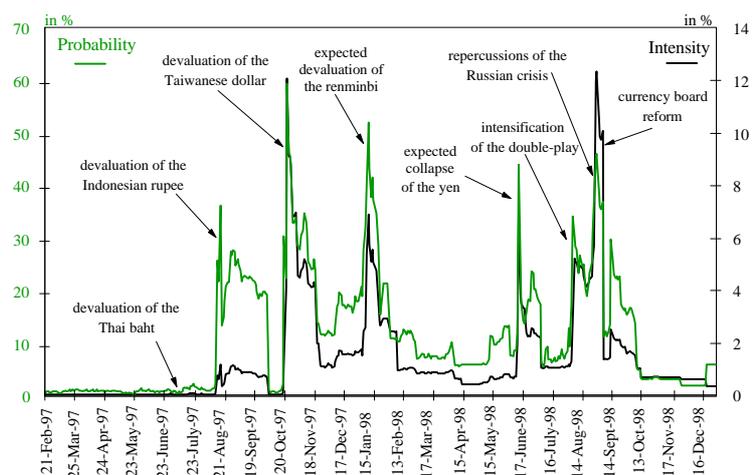
■ Hong Kong during the Asian Crisis

The financial crisis which struck Asia two and a half years ago underlined the particularity of Hong Kong. Its foreign exchange regime, the only currency board in the region, resisted the waves of speculative attacks. At first sight, such resistance confirms the analyses favouring the adoption of currency boards¹ in emerging countries that opt for a fixed parity: the cost of exiting such a regime are greater than in traditional fixed exchange rate systems, and reinforce such anchorage. However, an examination of the speculative attacks against Hong Kong and the behaviour of financial markets highlight the weaknesses of this regime.

The Hong Kong dollar was not spared speculation. Once the Indonesian rupee devalued in August 1997, the Hong Kong dollar too came under pressure during all the major episodes of the international financial crisis. The probability and intensity of

devaluation increased greatly, on several occasions (Graph 1)². Why did Hong Kong experience repeated speculative attacks, even though it did not exhibit macro-

Graph 1- The risks of a devaluation by the Hong Kong dollar



Source: B. Rzepkowski, *op. cit.*

1. A fixed exchange rate system in which the creation of money is restricted directly by the reserves held in the foreign currency on which the exchange rate is pegged (in this case the US dollar).

2. Two indicators have been calculated on the basis of option prices quoted in the OTC markets: i) the probability that the Hong Kong dollar would fall below the official rate of 7.8 to the US dollar, and ii) the intensity of the expected devaluation, which integrates the size of the expected exchange rate devaluation as well as its probability. See B. Rzepkowski, "The Devaluation Expectations of the Hong Kong Dollar and its Determinants During the Crisis 1997-1998", *CEPII Working Paper*, 2000, No 2000-04, February 2000.v

financial disequilibria on the same scale as its neighbours? An analysis of the determinants of an expected exchange rate devaluation indicates that two types of factors played a role in this process³. On the one hand, the continued depreciation of the yen up until the autumn of 1998 led to a squeeze of Hong Kong's competitiveness. On the other hand, psychological contagion took place. As successive Asian currencies devalued, expectations of a fall in the Hong Kong dollar rose. This was due not to economic interdependencies, but arose merely out of the psychological impact of repeated devaluations (see Box 1). A specific form of speculation was thus underway, linked to the characteristics of the currency board and to Hong Kong's financial system.

■ The Vulnerability of the Currency Board

The way in which speculation evolved is directly linked to the workings of currency boards, as well as to the existence of a developed, deregulated financial market in Hong Kong. Under a currency board regime, capital inflows and outflows automatically alter the level of liquidity in the banking system and hence the rate of interest. Aside this predictable feature of currency boards, Hong Kong is also characterised by a very high sensitivity of interest rates to capital flows. Indeed, the monetary base is very narrow (only cash clearing accounts with the monetary authority are included), while the possibility of short-term, bank refinancing is very limited.

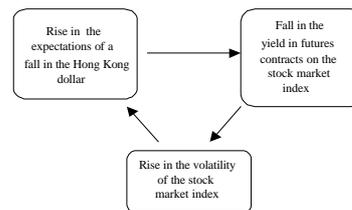
This leads to a twofold speculation, both in the equity and forex markets: speculators borrowed Hong Kong dollars, and then massively sold shares and futures contracts on the stock market index⁴, before unleashing a speculative attack on the Hong Kong dollar. Such sales of the Hong Kong dollar immediately led to rises in the interest rate, which brought on a fall in the stock market, favouring the sellers of futures contracts on the index. When converted into US dollars, the profits thus earned reinforced the speculative pressure on the Hong Kong currency and contributed to a rise in the rate of interest. This circular, self-fulfilling characteristic of expectations is shown in Box 1.

Such speculative behaviour was largely adopted by several hedge funds, in 1998. To combat this "double-play", Hong Kong's monetary authorities bought considerable shares and futures contracts on the stock market index. Between the 14 and 28 August 1998, US\$ 15 billion, or about 7% of the stock market capitalisation, was spent to

BOX 1 - EXPECTATIONS IN THE REALIGNMENT OF THE HONG KONG DOLLAR AND STOCK MARKET SPECULATION*

A Vectorial Auto-regressive Model was estimated to analyse the interaction between expectations of a realignment on the Hong Kong dollar and positions taken in the stock markets during the crisis of 1997-1998. The endogenous variables are: the intensity of the devaluation of the Hong Kong dollar (taken from the OTC market in forex options), the yield on futures contracts on the stock market index and the variation in the expected volatility of the index, which indicates the perceived uncertainty of the evolution of the future movements of the stock market.

The estimation draws out the underlying logic of the double, speculative play. Circulatory and self-fulfilling dynamics characterise the formation of expectations held by market operators, which may be summarised by the following diagram.



Furthermore, several exogenous variables have been introduced into the regression, which are likely to take into account the various channels through which contagion in Asia spreads to the credibility of the currency board. The estimation underlines the importance of variables that represent psychological contagion (the yields on Brady bonds, devaluation announcements concerning Asian currencies), even if the evolution of the dollar with respect to the yen also appears as significant.

* - For further information see B. Rzepkowski, *op cit.*

this end. Such unusual intervention was able to stave off the fall in the stock market. But it did not manage to reduce the risks of devaluation. On the contrary, it was strongly penalised by the markets, which increased their holdings against the Hong Kong dollar (Graph 1).

In the end, the monetary authorities announced a reform of the stock market and the currency board. At first, this focused on raising the transparency of the stock market and increasing the costs of speculative practices in the spot and the futures markets⁵. The plan aimed at reinforcing bank assets against any devaluation of the Hong Kong dollar below 7.75 to the US dollar, for a period of six months⁶. At the same time, several measures have striven to limit the volatility of interest rates, by modifying the system of monetary regulation, which until then had been based on imprecise rules set at the discretion of the monetary authorities. In particular, a discount window was created: it allows licensed banks to

3. See the estimates given by B. Rzepkowski, *op cit.*

4. A futures contract is a firm commitment to buy or sell a financial instrument (in this case the stock market index) at a fixed price when the contract is concluded, at a fixed date.

5. At the beginning of 1999, the Hong Kong government complemented these emergency measures by reforming the supervision of the financial markets.

6. This rate was slightly higher than the official rate, and constituted a first line of defence of the peg by the monetary authorities, which had intervened almost systematically at this level, since 1992. In fact, the current exchange rate only rarely rose above this rate. Since April 1999, this guaranteed conversion rate has been brought back progressively to 7.80, by 0.0001 dollars per day.

obtain unlimited short-term liquidity, with no penalties. Implicitly, exchange paper presented at the discount window also benefit from the convertibility undertaking. This allowed the monetary base to be practically doubled, thus making interest rates less sensitive to capital inflows and outflows. This simultaneously raised the capital levels which speculators would have to mobilise to repeated the "double-play" episodes observed in 1998. Speculative pressures fell as soon as the plan was announced.

These reforms strongly reduced the intrinsic vulnerability of the Hong Kong currency board, to a form of speculation that implicated other markets apart from just the forex market. This weakness is not shared by all currency boards: countries which do not have liquid, open, deregulated financial markets (such as Estonia, Bulgaria and to a lesser extent Argentina) are relatively protected against the vicious-circle dynamics of speculative attacks, for the time being. However, Hong Kong's experience shows that the likely development of their stock and derivative markets will make these countries more vulnerable in the future. It also underlines the importance of grounding the system on precise and transparent monetary rules.

■ The Risks from China

The reforms undertaken by the Hong Kong authorities henceforth limit the possibilities of manipulating the market and reduce the vulnerability of the exchange rate

regime. However, the latter remains under threat from a crisis affecting China's currency. This risk stems primarily from the real appreciation of the renminbi since the mid-1990s⁷. Even if China has been able to avoid a worsening of its current account, the removal of trade barriers required for its membership of the WTO could lead to strong growth in imports. In this case, China may need to adopt a more flexible exchange rate policy.

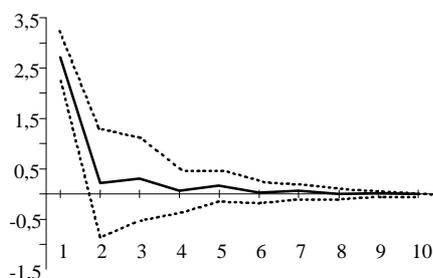
The Hong Kong dollar and the renminbi are not linked in any institutional way. Despite the return of Hong Kong to Chinese rule on 1 July 1997, the former has retained authority over its own monetary, financial, regulatory and supervisor policies, under the "one country, two systems" principle. However, expectations held by market operators in the two currencies appear to be strongly synchronised: they reacted to the events in 1997 in concert (Graph 2).

This relationship between expectations on the two currencies can be analysed using a VAR model (see Box 2). It shows that a shock on expectations for one of the countries spreads immediately to the other. This reciprocal causality is explained by the intensity of trade relations between China and Hong Kong, which have completely integrated the whole economic zone. Hence, any fluctuation in either currency affects the relative competitiveness across both, leading to distortions within the zone that push the other currency to adjust. Chinese financial rules reinforce the interdependence between the two currencies. Given that the Chinese forex market is

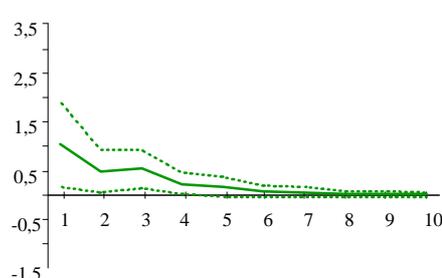
BOX 2 : THE LINK BETWEEN EXPECTATIONS CONCERNING THE RENMINBI AND THE HONG KONG DOLLAR

To establish the direction of causality between two currencies, a VAR model was estimated with two endogenous variables: expectations concerning the renminbi and the expected intensity of a devaluation of the Hong Kong dollar over a period of one month. The estimation of this model using weekly data, establishes a bilateral causality between expectations about the evolution of the two currencies. It shows that an expected depreciation of the renminbi raises the intensity of the devaluation of the Hong Kong dollar, and vice versa. The following two graphs show that the responses of each variable to a shock on the other are asymmetric. The expected response of the renminbi to a shock on the expectations of a Hong Kong dollar devaluation is very strong and significant, during the first week, though the shock is rapidly absorbed (Graph A). In contrast, the intensity of the devaluation of the Hong Kong dollar to a shock on the forward renminbi rate is weaker, but more persistent (Graph B). A self-fulfilling mechanism forming expectations may thus spread a shock from one of the two currencies throughout the China-Hong Kong "currency zone".

a- Response of expectations concerning the renminbi to a shock on the Hong Kong dollar



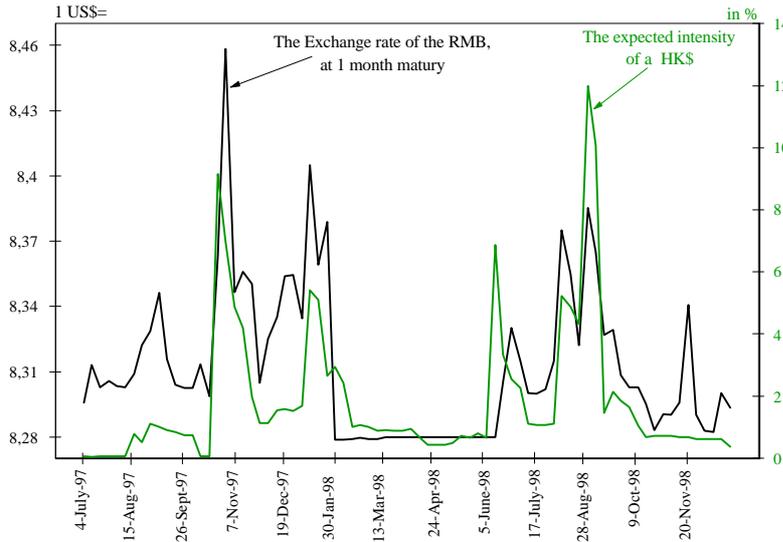
b- Response of expectations concerning the Hong Kong dollar to a shock on the renminbi



Note: The average response on an orthogonalised shock to a variable. The dotted lines represent this average + or - 1.96* standard deviations.
 * Derived from the Chinese forward exchange rate (non-deliverable forward exchange rates).

7. See S. Déès and F. Lemoine, *La lettre du Cepii*, "The Devaluation of the Yuan: 'A little impatience may ruin a great project'", No 178, April 1999, available in English on Internet: www.cepii.fr.

Graph 2 - Expected Devaluations of the Renminbi (RMB) and the Hong Kong Dollar (HK\$)



Source: B. Rzepkowski, *op. cit.*

under strict controls and that the renminbi is not convertible for capital movements, it is impossible to hedge transactions and speculate legally against the Chinese currency. Yet, as international investors perceive the currencies as being strongly correlated, they are able to take positions on the Hong Kong dollar, using it as a sort of substitute for the renminbi⁸. Hence, if investors expect that the Chinese forex system is unsustainable, the peg of the Hong Kong dollar will be brought into question.

It is likely that the liberalisation of China's foreign trade will require the forex policy to be relaxed in the coming

months. A strong depreciation of the renminbi would, indeed, very likely trigger a renewed speculative attack against the Hong Kong dollar, due to the contagion of expectations. This would menace the continuation of the currency board. More likely, however, is an enlargement of the fluctuation margins of the official exchange rate of the renminbi against the US dollar, rising from $\pm 0.3\%$ to $\pm 5\%$. This would allow for a relaxation of China's forex policy, without leading to the feared devaluation. The Chinese Central Bank has recently indicated that the "fluctuation margins should be enlarged in proportion to the reduction of the balance of payments' surplus"⁹.

Given that most of the Asian countries have current account surpluses and have substantially reduced their levels of foreign debt, the overall environment is more favourable today than it was in 1997. As a result, such adjustment should not be too destabilising for Hong Kong and the rest of Asia.

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8. J. Fernald, H. Edison and P. Loungani, "Was China the First Domino? Assessing Links Between China and the Rest of Emerging Asia", Board of Governors of the Federal Reserve System, International Finance Discussion Paper, No 604, 1998. Such practices have persisted, despite the creation in July 1997 of an offshore futures market in the renminbi (which is indeed the market used to analyse expectations concerning the Chinese currency).
9. *Revue hebdomadaire des marchés chinois*, the Economics and Finance Section of the French Embassy in China, No 28, 29 November 1999.

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