

## **Sustainable Exchange Rate Regimes and Regional Stability**

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## Abstract

This paper argues that both regional economic stability and world financial market stability require that values of national currencies, particularly those in the developing world, maintain such real values as to be consistent with the underlying fundamentals of the real economy. This means that the nominal values of the currencies adjust spontaneously to changing nominal values to preserve the underlying needed real values. The mechanism to achieve this is to adopt a monetary anchor in terms of stable purchasing power vis-à-vis world output.

It is not an exaggeration to say that currency crises have now become the single most serious threat to regional stability. The Asian Financial Crisis in 1997 through 1998 was simply devastating, as the contagion spread from country to country, to the extent that Indonesia, which was rated by PECC as a “star performer” in its 1996 Pacific Economic Outlook for its impressive growth and low inflation, got hit so badly that its currency lost some 80 per cent of its value in just months. In Latin America, the sharp depreciation of the Brazilian Real was the beginning of the nightmare for Argentina.

It is the thesis of my paper that neither the fixed exchange rate (in a currency board setting or otherwise) nor a floating exchange rate regime will be adequate to eliminate this source of regional instability. So some kind of “managed adjustment” is necessary. The trick is to work out the nature and the mechanism of “managed adjustment.”

In the next Section I will discuss how and why currency crises occur and how and why currency crises cause serious instability in the regional economy. Section III will put forth the thesis that *an anchor for the world's currencies that is compatible with the changing fundamentals of our economies is necessary for regional stability* and is available in the form of a properly designed unit of account. Linking a currency to such an anchor, and allowing for marginal adjustments as needed, will

pave the way for regional stability and indeed the stability of the world's financial markets. Section IV will provide the conclusions.

## **II. Currency Crises, Regional Instability, and Efficiency Loss**

In general, markets run efficiently on the condition that inefficient firms get penalized and efficient firms get rewarded. What happens during currency crises is that efficient and aggressive firms may get penalized, while relatively inefficient and conservative firms may be rewarded.

During currency crises, firms that have borrowed to invest in production capacity almost inevitably get burnt. If they have borrowed from abroad, depreciation of the domestic currency will increase their debt servicing cost greatly. Even if they have borrowed domestically, if their borrowing is relatively short term, these loans may be recalled as creditors want to convert their assets into those that are of a more reliable currency denomination. Inefficient firms, firms that sit on "a pile of cash" will benefit by earning high interest income and capturing sizeable exchange gains if they had siphoned the money to offshore markets.

At the threat of an impending currency crisis, investors will try to get their

money out as quickly as possible. This will depress the currency, thus validating the expectation. What must be noted is that sharp currency depreciation always hurt net debtor nations, whose foreign currency denominated liabilities will become more difficult to service. Most countries in the developing world require capital inflow to finance their investment and are net debtors<sup>1</sup>, and it is a fact that many of them are located in proximity to one another. In any case, the fact is that countries in the same region tend to be similar in the stage of development. Thus many countries in South America, in Eastern Europe, and in South East Asia belong to the category of “emerging markets.” This is one reason behind the regional contagion: the fact that foreign investors want to get out from where they hold net positions and thus contain their risks.

It should be noted that when investors perceive exchange risks for a region’s currencies, then *all* the enterprises in the entire region will be adversely affected. They all have to pay higher interest rates. In the event the local currency does depreciate, even greater difficulty will be encountered.

If a currency floats freely, large capital inflows will cause it to appreciate. This

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<sup>1</sup> The corollary, that most countries in the industrialized world can provide capital and are therefore net creditors, is also true—with the notable exception of the United States.

will increase the country's imports, including imports of consumption goods, while depressing the ability of the country to export. As the current account deficit accumulates the risks of exchange loss increases. This will tend to boost domestic interest rates, which will further weaken the economy. When the currency eventually depreciates, debtors will face great difficulty and the economy may run into great difficulty.

If a currency links to a host currency like the US dollar, the fate of the country will depend on the behavior of the host currency. If it is strong, similar problems as depicted in the last paragraph will occur. Once the flood gate opens the extent of devaluation can become quite drastic.

### **III. The "World Currency Unit" as the Basis for an Anchor**

Our earlier discussion suggests that neither a free float nor a tie to a host currency will address the fundamental problem of potential excessive strength of the currency in the beginning, followed by a prolonged period of high interest rates and then finally devaluations/depreciations. What is needed is an anchor that is "in sync" with the fundamentals of the country.

Two considerations argue strongly in favor of linking a currency (particularly the currency of countries that depend on the inflow of foreign capital to finance their investments) to an anchor that is compatible with full employment in the domestic economy and that represents a stable unit of real purchasing power. The first consideration is that as long as the currency is at such a level, full employment in the economy becomes possible, and a meaningful fiscal policy becomes possible. The second consideration is that because the currency is linked to a stable unit of real purchasing power, debt instruments can be issued in the domestic currency. Creditors will not need to worry about devaluation eroding the value of their assets, and debtors will not need to worry about devaluation increasing the servicing cost of their debts.

Ho(2000) suggested that a unit of account based on a basket of “world output” will serve the purpose. This unit emphatically is NOT a basket of currencies. This basket consists of the GDPs of the key economic zones in the base year. The five economic zones include the United States, the Euro zone, Japan, Canada, and Australia.<sup>2</sup> Together they account for something like 80 per cent of world output.

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<sup>2</sup> These economic zones are representative in that they comprise the world’s major industrial zones as well as major producers of primary goods.

Having now defined the basket, we shall proceed to valuation. Since the GDPs of these zones are priced in different currencies, they must be converted into a common currency for summation. The total value, in US dollars, is scaled down to equal US\$100 during the base year. Over time the valuation in US dollars (and for that matter in any other currency) will change, depending on exchange rate and price movements.

Let  $Q_{i0}$  be the GDP of country/zone  $i$  in base year 0. Thus

$$1 \text{ WCU} = \{ Q_{10}, Q_{20}, Q_{30}, Q_{40}, Q_{50} \} \quad [1]$$

Valuation in the base year is obtained by defining:

$$?? \quad Q_{i0} \cdot e_{i0} = \text{US\$ } 100 \quad [2]$$

where  $e_{i0}$  is the scaling factor

$i$  is any of the five major economies

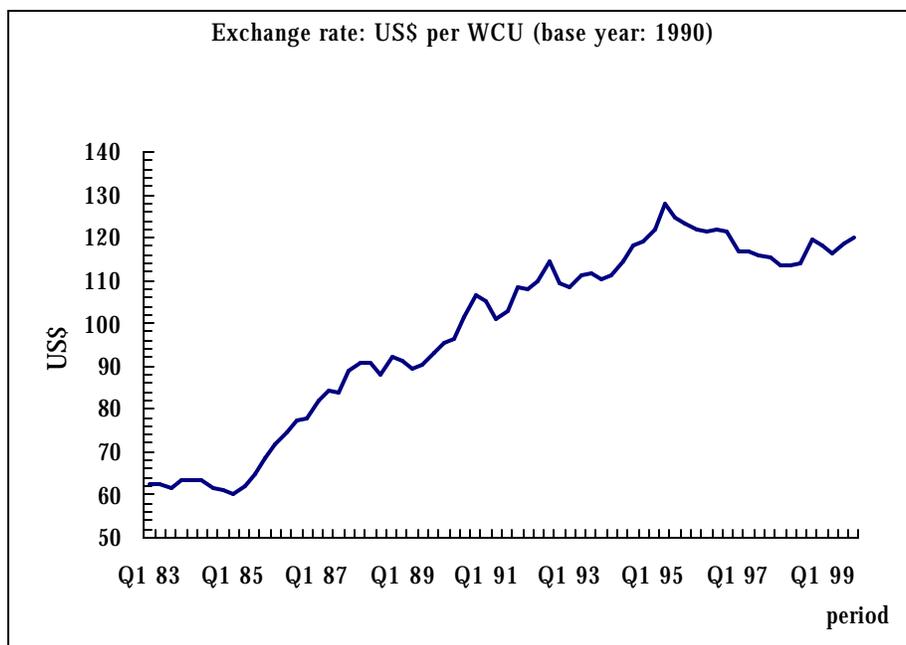
$e_{i0}$  is the exchange rate converting one unit of the currency of  $i$  into US\$ in

base year 0.

Valuation over time reflects the forces of exchange rate movements as well as domestic inflation/deflation. If  $Q_{i0}$  in current domestic prices increases because of inflation, and/or if currency  $i$  appreciates against the US dollar, other things being equal, the nominal value of the WCU basket in US dollars will increase, but still represents the same command over real goods. Figure 1 shows the changes in the

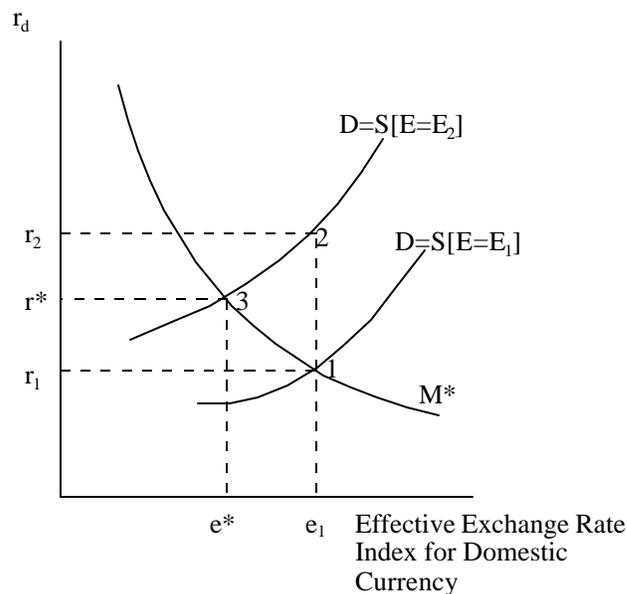
nominal value of the WCU, computed using IMF and OECD statistics, from 1983 to 1999. A caveat must be added though. In revaluing the WCU basket, I use the consumer price indices of the different countries/zones, even though in principle GDP deflators would have been more appropriate. I do this because the GDP deflators are usually available only after a relatively long lag. Since the WCU is intended to be a unit of account ready to be used on a day-to-day basis, for practical reasons CPIs have to be used instead of GDP deflators in deriving the current values of the unit.

**Figure 1: Value of the WCU in U.S \$ 1983-1999**



The nice thing about the WCU thus defined is that it represents the same command over real goods. It is a well defined anchor with full transparency. It is

up to each country to decide how its currency relates to the WCU on moving to a WCU link. This can be seen as adjusting  $a$  such that  $a \cdot \text{WCU} = 1$  unit of the domestic currency. For example, if the Argentine peso is to link to the WCU in year  $t$ , then there exists some link rate  $a_p$  between the Argentine peso and the WCU such that full employment is possible and aggregate private sector investment is equal to private domestic savings plus the current account deficit. Once this condition has been achieved, the fiscal authority can simply aim at budget balance at full employment, and it can be proved that both full employment and balanced budget will indeed be achieved.



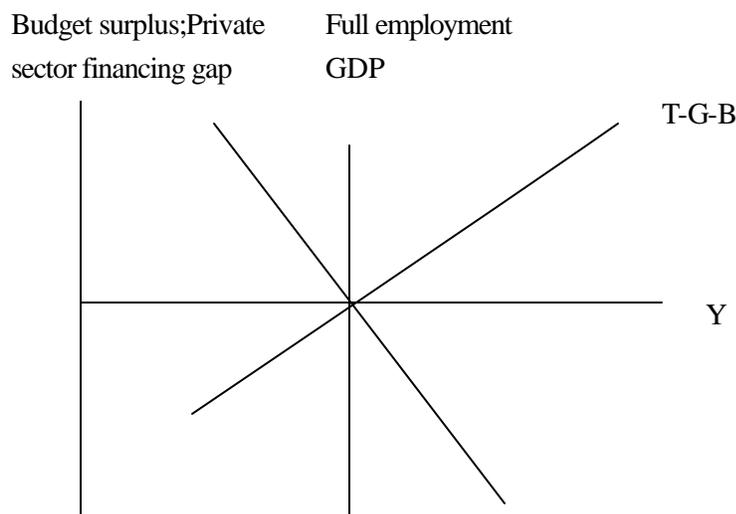
In this Figure  $M^*$  traces the combination of the real exchange rates (in relation to the WCU) and real interest rates such that equilibrium aggregate private sector

demand is compatible with full employment. Mathematically, along  $M^*$ ,

$$e = e(r) \quad I = (Y^d - C) + (M - X) \text{ at full employment}$$

It should be noted that moving down  $M^*$  towards the right would replace foreign demand with domestic demand, so the composition of private sector demand changes without affecting the aggregate level. The two upward sloping curves  $D=S[E = E_i]$  represent equilibrium in the foreign exchange market, where  $E$  is a shift parameter depicting short term capital movement intentions. If capital outflow intentions are high  $D=S$  will be at a higher level, leading to a higher domestic interest rate and a somewhat lower real exchange rate. Increased external demand will then come in to replace the domestic demand that has been suppressed by the higher interest rates.

As long as fiscal budget balance at full employment is achieved, i.e.,  $T - G - B = 0$  at full employment while  $I - [ \text{Disposable Income} - C ] + (M - X) = 0$  at full employment, we will have  $T - G - B = I - (Y^d - C) + X - M$ . This condition is depicted in Figure 2, and implies  $GDP = Y^d + T - B = C + I + G + X - M$  at full employment.



$$I-S + X -M$$

Figure 2

#### **IV. Conclusions**

In the foregoing I presented the case that once a real anchor for a currency to link with has been defined then it is possible to adjust the parameter  $a$  so as to ensure that aggregate private demand is at a level compatible with full employment. The anchor itself is transparent and well defined. A currency board mechanism can be used so that the nominal value of exchange rate *vis-à-vis* the US dollar and for that matter any other currency can be determined automatically given the formula for the anchor. The mechanism is essentially rule-based but incorporates automatic adjustment mechanisms that makes it credible. The currency board sees to it that a unit of the domestic currency be exchangeable for  $a \times$  WCU and based on the valuation of the WCU for  $X$  US dollars. As long as this has been implemented, a meaningful fiscal policy can be implemented in terms of achieving full employment budget balance.

There are two other things that need to be done in this paper. The first is to argue that there is a role for regional or international cooperation to provide a line of

credit to support the  $a \times \text{WCU}$  link. Given that  $a$  is set at a level compatible with full employment the  $a \times \text{WCU}$  link is defensible. This is quite unlike cases where the exchange rate is too high or inflation expectations are unpredictable. There is also no need for fiscal policy to be unduly restrictive, as has been prescribed for some countries by the IMF after the Asian Financial Crisis.

The second thing that needs to be done is to validate the WCU concept by showing that if Hong Kong had tied to the WCU instead of the US dollar its exports and economic growth would have been more stable. Table 1 shows that Hong Kong's exports excluding exports to China is negatively and significantly related to the real exchange rate defined using Hong Kong's domestic price versus the price of the WCU, i.e., 
$$\frac{\text{CPI in Country A} \times \text{Price of A's Currency in US dollars}}{\text{Price of WCU in US dollars}}$$
.  $\text{OCGDPVRY}(-1)$  is the one quarter-lagged value of the GDP of OECD countries.

**Table 1. Dependent Variable: HKTXRY (Hong Kong's Total Exports less Exports to China, year-on-year change) -- 1985 Q1 to 1999 Q3**

Variable	Coefficient	t-ratio
Constant term	3.9564	0.73159
HKRERY	-0.14478	-2.7759***
HKRERY(-1)	-0.23693	-3.2125***
HKRERY(-2)	-0.27646	-3.9580***
HKRERY(-3)	-0.26337	-4.0306***
HKRERY(-4)	-0.19766	-1.7105*
OCGDPVRY(-1)	2.5257	2.0338**

R-bar squared = 0.79876

DW-statistic = 2.3203

Notes: 1) Sum of the "Almon lag" coefficients for: HKRERY

Coefficient : -1.119

t-ratio : -4.320\*\*\*

2) AR(1) procedure was used to adjust for serial correlation.

\*\*\* indicates statistical significance at 1 % level

\*\* indicates statistical significance at 5 % level

\* indicates statistical significance at 10% level

In this equation, Hong Kong's total exports to destinations other than the Mainland are regressed against the rate of change of the real exchange rate and the rate of growth of OECD countries. The real exchange rate effect is subject to lags. It can be seen that all coefficients carry the right sign and are statistically significant. According to the equation a 10 per cent appreciation in the real exchange rate will reduce real exports to countries other than China by up to 11 per cent after 4 quarters.

The simulation is done by using the fitted values of the predicted exports from this Table in an equation explaining private sector domestic demand in Hong Kong.

**Table 2. Dependent Variable: HKPRDOMDR (Hong Kong Private Sector Domestic Demand, year-on-year change) -- 1984 Q1 to 1998 Q4**

Variable	Coefficient	t-ratio
Constant term	2.7434	0.72081
GOVERY(-1)	0.21470	1.2948
GOVERY(-2)	0.24071	1.4776
EXPORTRY	0.27211	2.3065**
EXPORTRY(+1)	0.28825	2.5094**
HKWCURY(-2)	-0.70396	-1.8736*

R-bar squared = 0.70610

DW-statistic = 1.7376

Notes : AR(1) process was used to adjust for serial correlation.

\*\* indicates 5 % significant level

\* indicates 10% significant level

The results of the simulated exports and private sector demand are shown in the following two figures.

Figure 2: HK's Total Exports less Exports to China (HKTXRY):  
Linking to WCU(under alternative inflation rates) vs Linking to the US\$  
(per cent change year-on-year)

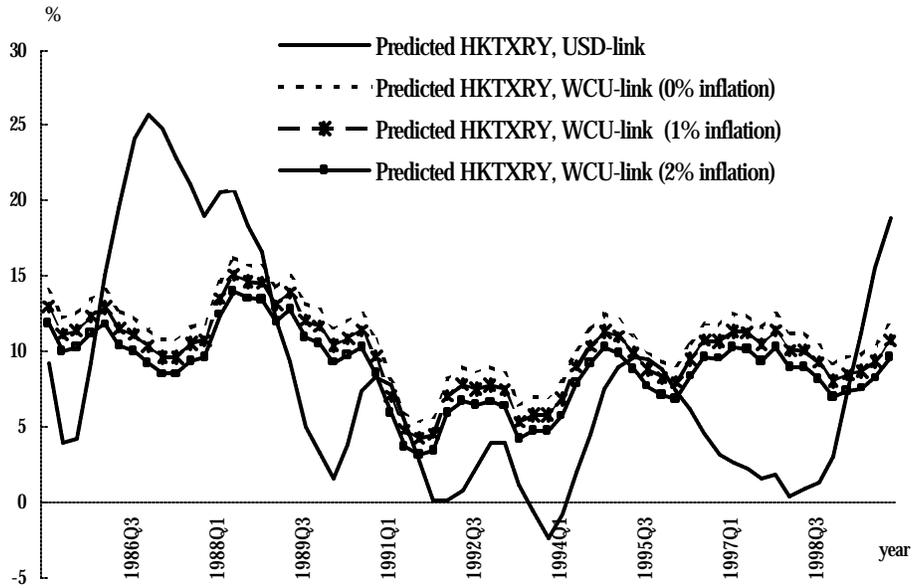
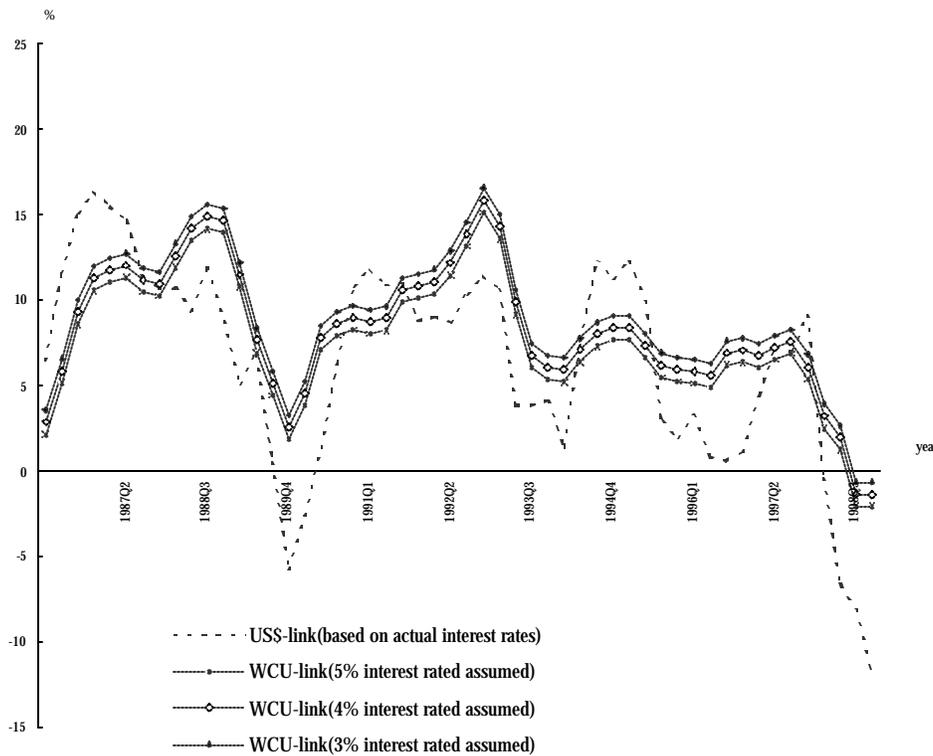


Figure 3. HK's Predicted Private Sector Domestic Demand under US-Dollar Link versus under WCU-link (year on year change)



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