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A New (and Old) Macroeconomic Policy Framework

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Abstract: This paper proposes a framework built on the simple Keynesian Cross but recommends a non-Keynesian fiscal monetary policy mix. A fiscal policy conditions index and a monetary conditions index are proposed, to be compared to the full employment compatible fiscal and monetary conditions. Fiscal policy should be inert throughout the different phases of the business cycle while monetary policy should adjust to the changing conditions in order to maintain full employment without overheating. The slightly different policy considerations for bigger and for smaller economies are discussed.

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I. Introduction

Mishkin (1999) discussed four monetary policy regimes, namely exchange rate targeting, monetary targeting, inflation targeting, and finally, "monetary policy with an implicit but not an explicit nominal anchor." *Exchange rate targeting* refers to a monetary system that ties the domestic currency to some anchor currency such as the US dollar. An example would be the Hong Kong dollar since October 17, 1983 and the Argentine peso before it broke away from the US dollar link early 2002. *Monetary targeting* refers to a policy of managing some monetary aggregate such as M2 in an attempt to contain its growth within a target range. As Mishkin pointed out, monetary targeting in practice rarely followed a rigid rule as Friedman recommended in the sixties. Adherents of this approach include Germany before the European monetary union and Switzerland. *Inflation targeting* is a monetary regime that has gained much popularity in recent years. Pioneered by New Zealand in 1990, it has now been espoused by Canada, the United Kingdom, Sweden, Finland, Australia, and Spain. According to Mishkin, Israel and Chile have also adopted some form of inflation targeting. Finally, monetary policy in the US under the leadership of Alan Greenspan has adopted an eclectic approach. There is no explicit target of any sort. But the Fed would look at a range of macroeconomic indicators in the conduct of monetary policy,

while making it clear to the public that containing inflation over the long run remains always an overriding concern.

Of these four approaches, the first three can be said to be predominantly "rule-based." In contrast, the last approach can be said to be predominantly discretionary.[1] With no explicit constraint, a central bank using this approach can respond to the latest developments readily and giving due consideration for the need for both full employment and price stability. The success of this policy in the US under the able chairmanship of Alan Greenspan, however, has led to worries that should he step down there might not be a chairman as skilled as he was.[2]

A meaningful discussion about monetary regimes must take note of the distinction between means and ends. In this regard Mishkin's discussion of the pitfalls of monetary targeting is particularly telling. Monetary aggregate targeting would make

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[1] Some see this eclectic monetary policy as more or less described by the Taylor rule (Taylor, 1993). See Woodford (2001). Also see Carlstrom and Fuerst (2003) for a more recent assessment.

[2] Consider the following passage from a book review about Alan Greenspan. The reviewer had just referred to the first interest rate cut decline in 2 1/2 years, which happened at the peak of the global financial crisis in the fall of 1998. He continued: "Just over a week later, he surprised the markets by cutting interest rates again, this time ording a reduction on his own instead of waiting for the next meeting of Fed's monetary policy committee. Investors cheered. Stock prices zoomed higher. And the crisis passed. It's thanks to that sort of astute monetary management that the 74 year old Greenspan has achieved the status of an economic oracle who holds the fate of the US economy in his hands…." (Businessweek, December 18, 2000)

sense if there is a "strong and reliable relationship between the goal variable (inflation or nominal income) and the targeted aggregate," and if the central bank can effectively control the monetary aggregate. Here monetary targeting is seen to be the means, and price stability is seen to be the ends. But one may sensibly ask: why price stability? Is price stability only the means to something more intrinsically desirable?

It is illuminating to note with Mishkin that "despite the rhetoric about pursuing 'price stability,' in practice all the inflation targeting countries have chosen to target the inflation rate rather than the level of prices *per se*." The inflation target ranges from 1.5% in the case of New Zealand onward to 2.5% in the case of Australia to 8.5% in the case of Israel. Apparently, the variations in the tolerated inflation rates reflect different perceived costs in terms of lost GDP or lost jobs that could result from pursuing inflation targeting. Thus, all policy makers in practice try to avoid the recessionary impacts of an overly aggressive monetary policy aimed at price stability. Perhaps then, inflation targeting is really only a variant of the discretionary approach to monetary policy, whose objective after all must be to create a favorable macroeconomic environment for economic agents in their day-to-day activities.

Stabilizing the price level should not be an end in itself, as changes in the price level may reflect an adjustment that the

economy actually needs. For example, in the face of acute shortage such as resulting from a serious drought or an earthquake that disrupted economic activities, a jump in the price level[3] may be needed to encourage economizing on the scarce resources. It is not realistic to assume that any increase in prices in an economy will be just offset by decreases in other prices, thus maintaining price stability.

From this perspective, while price stability is desirable the main objective of macroeconomic policy is not so much price stability *per se* but sustainable full employment without overheating. In order to do this we need to achieve three conditions: (1) aggregate demand at the full employment output level, (2) fiscal budget balance at full employment, and (3) monetary conditions should be compatible with full employment budget balance.

Section II will lay out the theoretical framework laying out the concepts of fiscal conditions index and monetary conditions index and the principles behind fiscal and monetary policy coordination. Section III will discuss the macroeconomic policy rules under this framework for a bigger economy. Section IV

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[3] It may be thought that in this instance only a relative increase in some prices would take place, not a rise in the price level. In practice, however, a major supply-side shock, such as the oil crises in the seventies, will raise the price level, as a co-ordinated price decline for other goods and services cannot be taken for granted.

will discuss the macroeconomic policy rules for a smaller economy.   Finally Section VI will draw the conclusions from the discussion.

II.   Theoretical Framework

We start with the GDP as income identity:

$$GDP \equiv Yd + T\text{-}B$$

In words, GDP is identically equal to disposable incomes plus net taxes minus government interest payment on government debt.   When aggregate demand is in equilibrium, income must be equal to expenditures, so we have:

$$Yd + T\text{-}B = C + I + G + X\text{-}M$$

This is the Keynesian cross condition for aggregate demand equilibrium, which can be transposed to obtain:

$$T\text{-}G\text{-}B = I\text{-}S\text{-}(M\text{-}X).$$

This says Government Savings (GS) = Private Sector Savings Deficiency (PD).   Any fiscal surplus is government savings.   Any shortfall of private domestic savings (S) and foreigners' savings (M-X) to meet investment requirements is Private Sector Savings Deficiency (GS).   **Figure 1** shows how the intersection of GS and PD determine the level of equilibrium aggregate demand (AD) and the fiscal balance (BB).
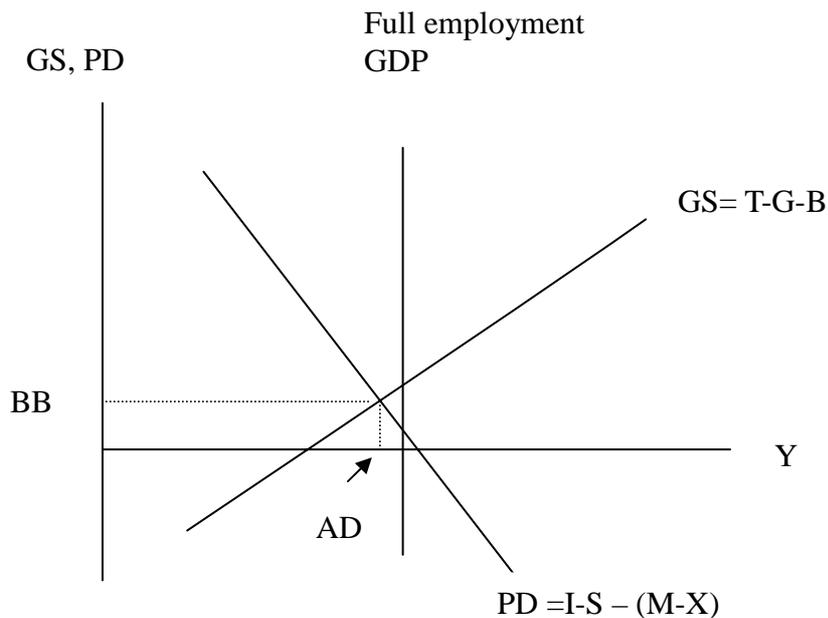
Figure 1: Determination of Equilibrium Aggregate Demand (AD) and Budget Balance (BB) Relative to Full Employment Output

T-G-B, or GS by notation, can be written as a function of effective tax rate, lumpsum tax, government expenditures, and the GDP Y. Setting GS = 0, we can write Y as a function $g(t, t_0, G)$, with the following properties:

$g'_1 < 0$, $g'_2 < 0$, and $g'_3 > 0$

g can be called a fiscal conditions index. When g is equal to the full employment GDP, we will have GS* in Figure 2. This will be described as the **"full employment budget balance fiscal conditions line."** Given the tax structure and interest payment commitments, there is a unique level of government expenditures G that will bring about GS*, which is one in a map of "fiscal stance lines."
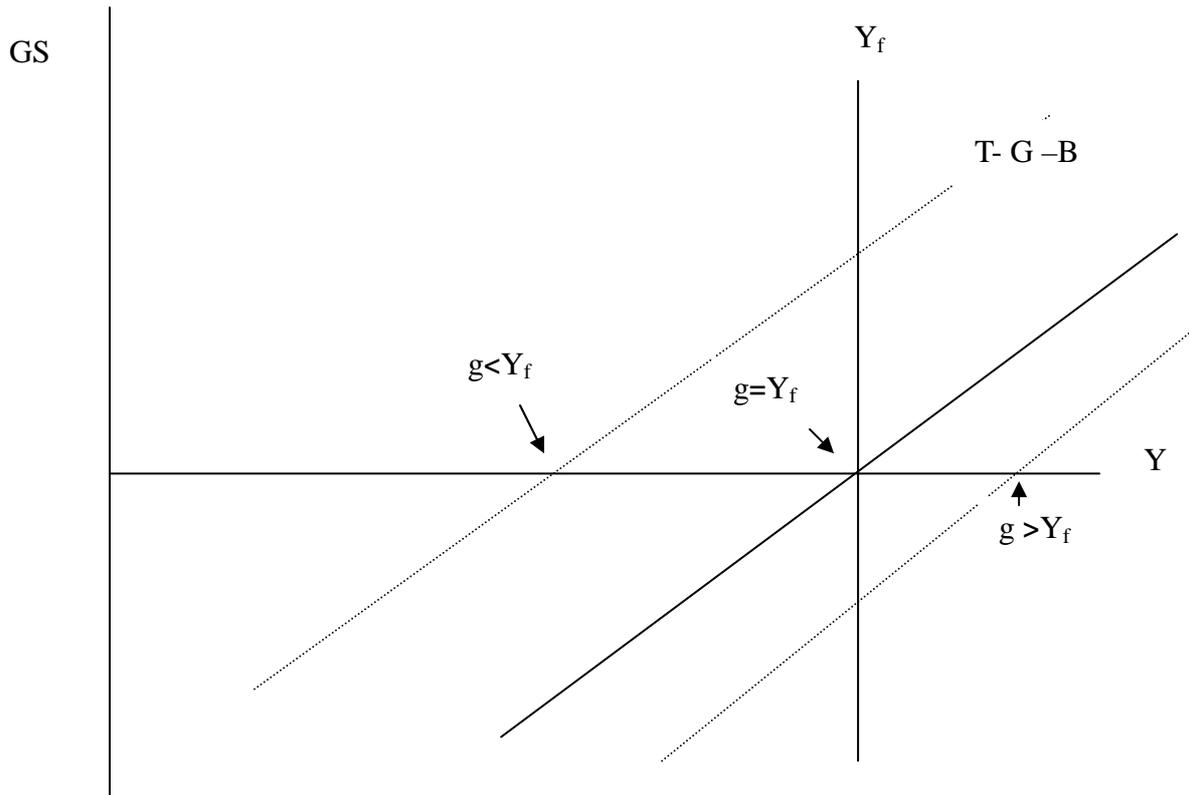
Figure 2: Relationship between GS lines and Fiscal Conditions g

We should note that GS* is not unique because one can have higher taxes and higher government expenditures, or smaller taxes and smaller government expenditures, while keeping the full employment budget balance to 0. That is, a fiscal policy line intersecting the horizontal axis at the full employment level can be compatible with a bigger or a smaller government.

Figure 3 further shows that there is a unique position of the I-S-(M-X) line that will bring about a level of aggregate demand consistent with full employment. To see this, let us express the private savings gap PD as a function of r, e, Y, t, and t_0:

$$PD = I(r,e) - [Y - Y.t - t_0 - C(Y - Y.t - t_0, W)] \ + X(e) - M(r, e) .$$

Here consumption is assumed to be a function of disposable income and assets W. Exogenous factors such as the GDP of trading partners are left out for simplicity. Setting PD = 0, we can write Y as a function $m(r, e, t, t_0, W)$. Diagramatically, setting PD=0 focuses our attention on the horizontal axis. The value of m is the level of Y where a PD line cuts the horizontal axis. m can be described as the monetary conditions index.[4] When m increases monetary conditions are effectively less tight. When m decreases monetary conditions tighten. m* can be described as the "full employment–compatible monetary conditions". It should be noted that the monetary conditions index will rise, other things being equal, when interest rate falls or the exchange rate depreciates. But it may also rise or fall independently of monetary variables. If business confidence or consumer confidence increases the same monetary variables could become overly expansionary, since the former would boost the monetary conditions index. Moreover, fiscal variables such as tax rates will also have an impact on the effective monetary

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[4] The concept of Monetary Conditions Index was originated by the Bank of Canada. According to Freedman (1995) empirically 1 percentage point change in interest rates has about the same effect on aggregate demand as 3 per cent change in the exchange rate. The MCI is therefore an index based on short-term interest rate and the multilateral exchange rate movements properly weighted.

conditions by shifting PD through its effects on savings and investment.
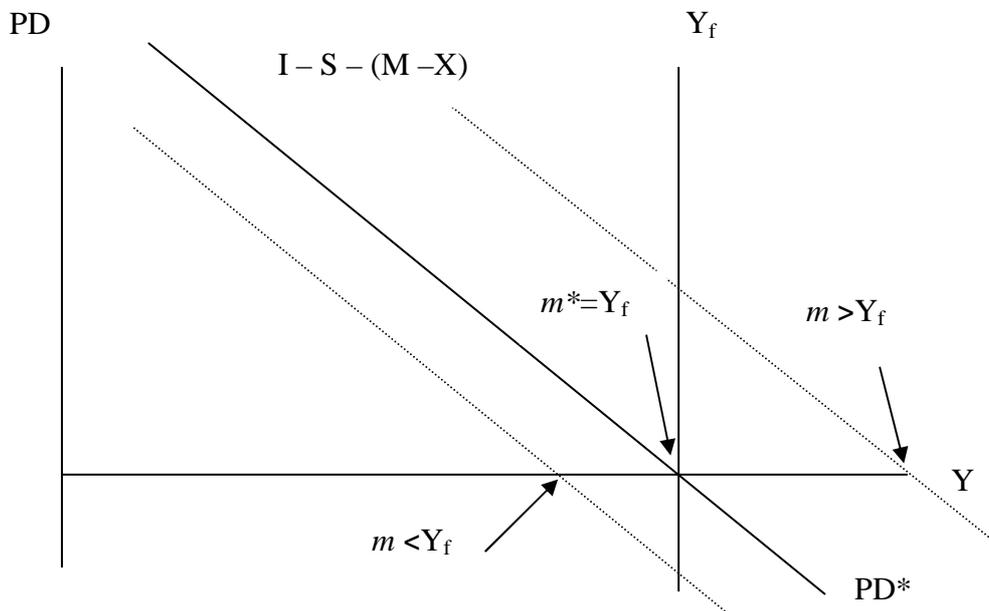
Figure 3: Relationship between PD lines and Monetary Conditions *m*

III. Policy Rules

For both big and small economies, the above framework indicates that an ideal macroeconomic policy mix would be such as depicted in Figure 4. There is a need to maintain the fiscal policy conditions at g* and to maintain the monetary conditions at m*. Once the parameters for the equations g and m are estimated, we can compare the actual level of fiscal conditions index g with the ideal g* and similarly the actual level of monetary conditions index m with the ideal m* and decide if we need to expand or tighten policies.

GS, PD

Y_f

GS* = T-G-B

Y

PD*=I-S+X-M
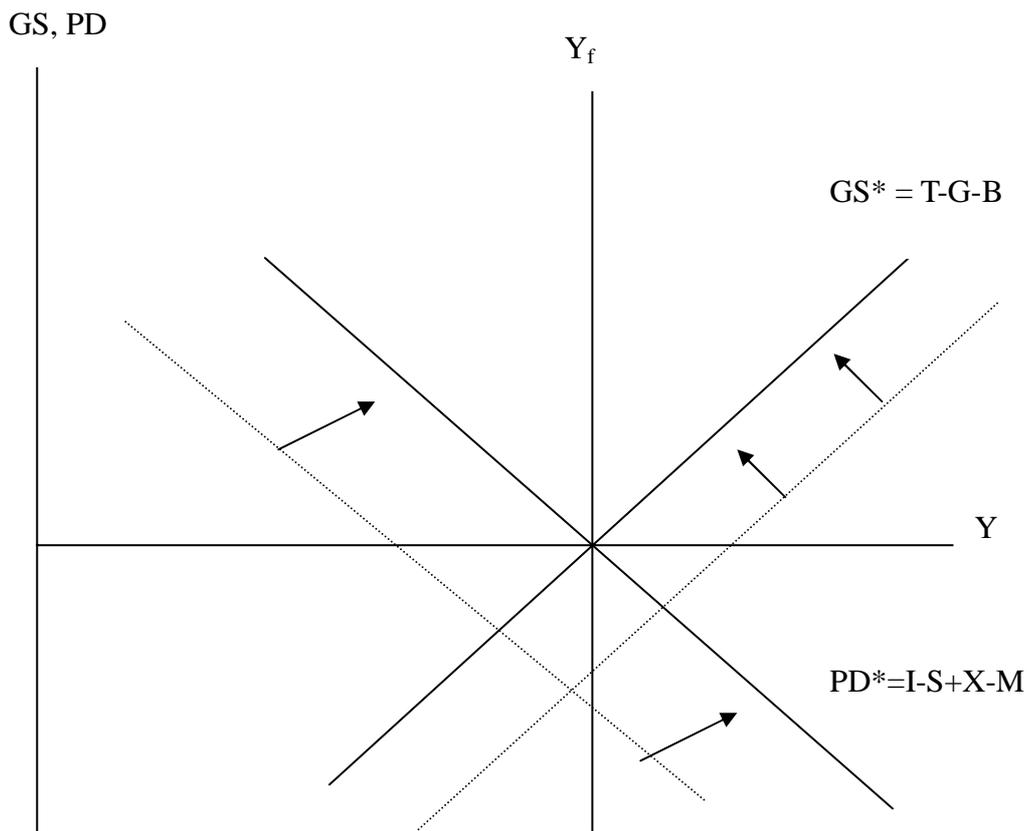
**Figure 4: Ideal Macroeconomic Policy Coordination Represented by
Solid GS* and PD* lines**

The fiscal policy rule can be described as maintaining full
employment budget balance.   Monetary policy will generally not
affect the GS line, except in the longer run through the effects on
interest payments on government debt.

Assuming a stable fiscal policy regime, PD may deviate
from PD* on account of changes in business and consumption
sentiments, or movements in the effective real exchange rate.
The monetary policy rule would be to raise or lower interest rates
to offset these tendencies so as to bring PD back to PD* whenever
PD deviates from it.

Corresponding to $m = Y_f$ or $PD = PD*$ we can draw an M* curve in the (e, r) space **(Figure 5)**. M* is one curve in a family of "monetary conditions curves" shaped like an indifference curve. The equilibrium exchange rate compatible with full employment is determined by imposing the equilibrium condition in the foreign exchange market D=S.

Given M*, suppose there is a capital flight away from the country for some reason. D=S line shifts up. There will be no need to change fiscal policy, and M* has not moved. But there will be a need to reduce the effective exchange rate to e* and to raise domestic interest rates from r_1 to r*. Raising interest rates excessively to r_2 to maintain external balance will lead to an unnecessary contraction of the economy resulting in a fiscal deficit and unemployment.

Given the position of M* and assuming that fiscal policy provides for full employment budget balance, and assuming that maintaining full employment is a priority, the central bank will have no alternative under a capital flight scenario (E1 changes to E2 in Figure 5) but to allow the currency to depreciate a bit and to raise interest rates a bit (point 3 in Figure 5). The more serious the capital flight, the greater will be the depreciation required and the higher will be the interest rates required. But interest rates must not be too high as to deviate from M*.

r_d

D=S[E=E$_2$]

r_2 ⟶ 2

D=S[E=E$_1$]

r^* ⟶ 3

r_1 ⟶ 1

M*

e* $\quad$ e$_1$ $\quad$ Effective Exchange Rate
Index for Domestic
Currency
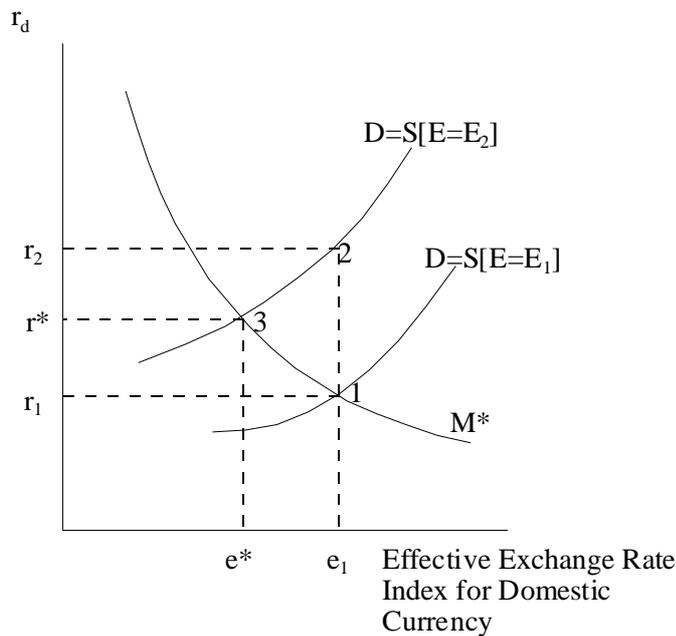
**Figure 5: Alternative (e,r) combinations compatible with
full employment along M***

IV. Policy Rules for a Small Open Economy

A small open economy has relatively little capacity on fixing its interest rates. With capital highly mobile small open economies normally have to take interest rates as given. Floating the exchange rate and adopting discretionary monetary policy may lead to unacceptably large fluctuations in exchange rates, as market traders speculate on the next monetary policy change.

The attraction of a currency board arrangement is that it imposes a stricter rule for monetary and fiscal discipline and provides greater transparency than most alternative monetary arrangements that come to mind. The drawback of a traditional currency board, however, is that it could mean too much inflexibility. If the host currency becomes very strong, life can become very difficult as the country will face a loss of competitiveness and even deflationary pressures. Using the GS-PD framework above, a traditional currency board would mean allowing the PD line to be dictated by the monetary policy of the country of the host currency.

To bring in greater flexibility without compromising credibility, we propose substituting the host currency with the "world currency unit"—an indexed unit of account [5] that represents stable real purchasing power, as discussed in Ho (2000). This can be briefly explained as follows.

Let Q_{i0} be the GDP of country/zone i in base year 0, measured in the domestic currency. We then define *the WCU basket* as a tiny fraction λ of the basket of GDPs of five major market economies with fully convertible currencies:

1 $WCU_0 = \lambda\{ Q_{10}, Q_{20}, Q_{30}, Q_{40}, Q_{50} \}$ [1]

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[5] See McCallum (2004) and Shiller (1998) for detailed discussions of the concept of indexed units of account.

The five countries/zones are the United States, the Euro zone, Japan, Canada, and Australia. Together they encompass some 80 per cent of world total output.

Valuation of this basket in the base year, $V_{0US\$0}$, is obtained by defining λ such that:

$$\lambda \Sigma \ Q_{i0} \ . \ e_{i0} = \text{US\$ 100} \qquad\qquad [2]$$

where λ is a scaling factor that defines the size of the basket and thus the real value of the unit;

i is any of the five major economies;

e_{i0} is the exchange rate converting 1 unit of the currency of i into US\$ in year 0.

Valuation over time reflects the forces of exchange rate movements as well as domestic inflation/deflation. Denoting the nominal value of one WCU_0 at t in US dollars as $V_{0US\$t}$, we can write:

$$V_{0US\$t} = \ \lambda \Sigma \ Q_{i0} \ . \ P_{it}/P_{i0} \ .e_{it.}$$

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 6 shows the changes in the nominal value of one WCU$_{1990US\$t}$, computed using IMF and OECD statistics, from 1983 to 1999. A caveat must be added though. In revaluing the WCU basket, we use the consumer price indices of the different countries/zones, even though in principle GDP deflators would have been more appropriate. We 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.
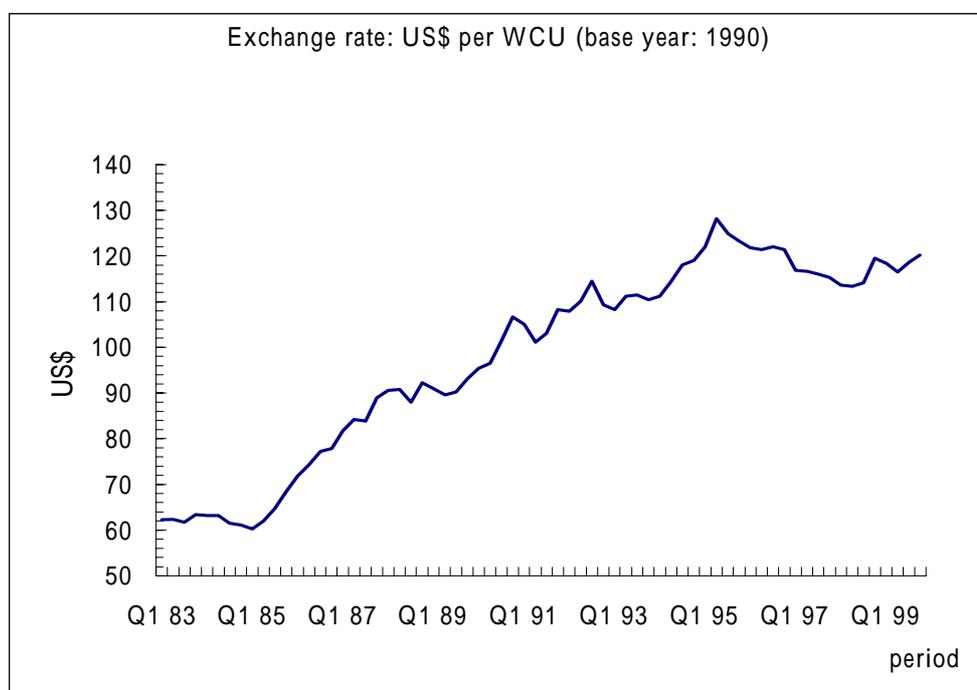
Exchange rate: US$ per WCU (base year: 1990)

Figure 6: Value of the WCU with base year 1990 in U.S $ 1983-1999

Whereas under a traditional currency board, such as the Hong Kong Monetary Authority, there is an undertaking to convert these Hong Kong dollar notes back to US dollars at the same rate, under a WCU-based link, convertibility is guaranteed not at a fixed rate against the US dollar, but at a fixed rate in terms of real purchasing power ("real money," not "nominal money"). This means that the US dollar amount into which a given amount of the local currency may be converted is variable. Indeed, if US dollar buys fewer goods and services, the local currency will convert for more US dollars; if US dollars buys more goods and services, the local currency will convert for less US dollars.

Specifically, the Monetary Authority may announce at time that α times $V_{0US\$}$ must be deposited for banks to issue one unit of the local currency (called *peso* here for illustrative purposes), until further notice. Clearly, by adopting a suitable α the local currency can fix the value of the domestic currency at any rate in relation to the US dollar, and any traditional currency board, such as the Hong Kong dollar[6], can, therefore, momentarily move onto the WCU link unnoticeably and smoothly.

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[6] One could debate if the Hong Kong dollar is on a "traditional currency board" arrangement. We abstract from this debate and refer to all currencies linked to a host currency with 100% backing as "traditional currency boards."

- These pesos are then called *pesos of vintage* . The monetary authority undertakes that these pesos issued are fully convertible into α times $V_{0US\$t}$ at any time t, redeemable in US dollars (or any other major currency according to prevailing exchange rates).

- At some time t_k in the future, if there is a need to devalue, such as arising from a downward shift in PD (in which case M* shifts lower), or a capital flight (in which case there is a deviation from M* such as described in Figure 5), the monetary authority can announce a devaluation in the sense of a downward adjustment in α. This devaluation will not trigger a panic as existing currency holders are protected.

So we can see that the fiscal policy rule is still to maintain GS at GS* and thus to keep fiscal conditions at g*. The monetary policy rule is also to maintain PD at PD*. The benefit of the proposed arrangement is that PD will not be shifted by a nominal appreciation or depreciation of the host currency. When there is some structural change that needs to be redressed and a real appreciation or depreciation is called for, we can adjust α without causing a panic.

The proposed monetary standard can be called a Real Monetary Unit Standard (RMUS). Transition to a RMUS can be made so smooth as to be unnoticeable. A country on moving to

a WCU_0 link will determine   such that $.V_t = 1$ unit of the domestic currency. Thus some   can be found such that 7.8 Hong Kong dollars continue to exchange for one US dollar momentarily after the transition, when 7.8 Hong Kong dollars exchange for one US dollar before the transition.

A further word about sustainability should be added. It is that a currency regime, in order to be sustainable, needs to be adaptable and compatible with full employment.   If the currency regime produces an exchange rate that is not compatible with full employment and has no effective mechanism to adapt towards such a rate it cannot be sustainable.   In contrast, the system herein proposed allows adaptation towards what is necessary to bring about full employment.

One may well ask if this system is sustainable in the face of shattered confidence.   Given the Argentine experience in 2001-2002 and the Asian experience in 1997-98, it does appear that if people firmly believe that the currency will collapse, nothing can be done.   If we look at the Thai and the Indonesian experience carefully, however, we can only conclude that the collapse of confidence was a result of ineffective and misguided policies in the first place.   Even in the case of Argentina, high interest rates and a lack of the necessary institutions to protect the interest of people who have legitimate claims to be protected played a key role in the melt down of the economy.

If we look at the Thai experience, we find first that the financial markets actually cheered the initial devaluation of the Thai baht. The Thai stock market jumped noticeably at first. But when interest rates were raised sharply higher around the region (The Philippine central bank raises the overnight lending rate to 24 percent from 15 percent on July 3, 1997) and the austerity measures announced on August 5 impressed upon investors that the region is headed for a dramatic economic slowdown confidence began to crumble.

Under the proposal of a WCU link, full employment and economic stability are the explicit objectives of the central bank, and no attempt is made to defend an unrealistically high exchange rate. Interest rates will not be raised to defend the currency and will only be raised to cool the economy. Holders of the domestic currency as well as bank deposits know that while the currency may devalue, their interests will be protected as the vintage of their assets are specified and fully recognized. The valuation of the currency will not be allowed to take on unrealistic values in the first place, unlike what may happen under a nominal tie to the US dollar. For all these reasons, and for the reason that the WCU itself represents purchasing power over a diversified portfolio of multiple currency denominated output, risks for holding the local currency and assets of the local currency are reduced considerably. Because perceived risks are smaller, a collapse of confidence is less likely.

The WCU should be a globally used unit of account in order to serve its purpose. In order that the unit be accepted as a standard, it will be necessary for an international organization, such as the IMF, to take the lead and to set the standard. Clearly there is no reason why the GDPs of other countries cannot be added to the basket of GDPs underlying the WCU. I would expect, for example, that China's GDP may be included some day. The key points are that the currencies of the countries represented in the basket must be fully convertible and that the countries are predominantly free market economies, so that the prices of these countries are true market prices. Once the basket of GDPs are chosen, the revaluation of the WCU unit can be taken over by a computer using a transparent formula. It is expected that the composition of the basket may need to be updated at some point. When this becomes necessary continuity of the series can be maintained by reconciling the valuation in the last period under the old basket and the valuation in the first period under the new basket. This procedure is routinely done with regard to the consumer price index and should be both transparent and automatic.

While the definition of the WCU_0 needs to be done with authority by an international organization and the revaluation automatically updated continuously as data becomes available, the monetary policy of countries opting for a WCU_0 link should

be entirely independent.   Each central bank should choose an appropriate α and make appropriate adjustments as necessary.

V.   Dynamics

It is not the intention of this paper to investigate the dynamic properties of this framework, but I need to point out that while the framework may be thought to be static in nature, there are interesting dynamics involved.

First is income-expenditure dynamics.   As is well known, while the Keynesian cross diagram appears static, the multiplier is actually a dynamic process.   Our discussion of GS-PD is only an alternative representation of the familiar Keynesian cross relationship and requires exactly the same conditions for stability in the income-expenditure dynamics, i.e., the marginal propensity to spend on domestic goods has to be smaller than unity.

Second is debt accumulation dynamics.   Debt at the end of the year has to be equal to debt at the beginning of the year plus any deficit generated during the year.   Thus the time path of government debt is governed by the relation:

$$(G_{t,t+1} + B_{t,t+1} - T_{t,t+1}) + D_t = D_{t+1}$$

which can be detailed further by spelling out $B_{t,t+1} = B(D_t, r_h)$, i.e., the interest payment on government debt in the period from t to

t+1 is a function of the amount of outstanding debt at time t, and the historical interest rates r_h at which the debt was issued.

In the foreign exchange market, we have:

$$\frac{\partial e}{\partial t} = f\,(X - M,\; r_d - r_f)$$

which says that the exchange rate change is a function of the current account surplus and the difference between domestic and foreign interest rates. f_1 and f_2 are both positive.

Finally, it is acknowledged that the discussion thus far has ignore price level change dynamics resulting from the interaction between aggregate demand and aggregate supply. If aggregate demand exceeds or falls short of aggregate supply, the price level may change and this may lead to changes in the foreign exchange market as well as secondary effects on both PD and GS. These considerations will complicate the model but will not affect the general conclusions about the appropriateness of setting PD at PD* and GS at GS* as illustrated in Figure 4.

VI. Conclusions

In this paper I have proposed a simple framework that is based on the simple Keynesian cross condition for aggregate demand determination. Two measures for macroeconomic policies have been derived: a fiscal conditions index and a monetary conditions index. We have proposed an inactive fiscal

policy: keeping fiscal conditions at g* and the GS curve at the GS* position regardless of the phase of the business cycle, along with a more active monetary policy aimed at reestablishing m at m* whenever it deviates from it for whatever reasons. While the analytical framework can be said to be Keynesian this policy recommendation is certainly not Keynesian.

While I made a case for keeping monetary conditions at the full employment compatible level, in practice this would dictate moving *both* interest rate and exchange rates at times for the bigger economies. For the smaller economies, I propose adopting an innovative currency board based on an indexed unit of account representing constant purchasing power. Such a currency board is shown to have built-in flexibility compared to traditional currency boards. Our analytical framework indicates that even with such built-in flexibility, it is possible that an occasional devaluation or revaluation may be necessary. By designating currency issues and bank deposits with a vintage and guaranteeing convertibility into the basket of constant purchasing power at the given rate, it is possible to avoid panic, and provide for smooth transition to the necessary monetary conditions required for full employment.

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