新纪元学院学报
2005年4月，第2期，页117-130

New Era College Academic Journal
Vol.2 (April 2005), pp.117-130

A Note on Dual Demand-Driven Monetary Policy[1]

Wong ChinYoong (Lecturer, Business Studies Department, New Era College)

Abstract

This paper presents a framework of an alternate monetary operation for a small open economy with fixed exchange rate regime and open capital account, and analyzes its application. The consensus in open economy macroeconomics is that internal-oriented monetary policy is impotent when fixed exchange rates and open capital account are adopted. A demand-driven monetary policy that comprises two independent instruments, namely, return on bank reserves and open market operation, however, is able to aim for different problems. On one side, the return on bank reserves becomes the determinant for other interest rates, e.g. lending and deposit rates, important for real economy developments; on the other side, the open market operation cum domestic-credit swap is to ensure financial stability. This so called dual demand-driven monetary policy demonstrates its currency when being applied in practice, e.g. to form a feasible though not necessarily optimal currency, to defend its peg against speculative attack.

Keywords: monetary policy, interest on bank reserves, fixed exchange rates, trilemma, currency crisis

1 The basic idea of this paper was developed during the preparation for unpublished Master's research paper. I am grateful to Tan Eu-Chye, without implication, for his helpful comments. The discussion in this paper draws heavily on Wong C.Y, **Trilemma Revisited with Special Reference to the Return on Bank Reserves,** paper presented to International Borneo Business Conference 2004 on the impact of Contemporary Environment on Economics and Business, Universiti Malaysia Sabah and Universiti Malaysia Sarawak, Dec 9-11, 2004, that presents a formal analysis of the macro economic dynamics of dual demand-driven monetary policy.

关于需求驱动的双重货币政策

黄锦荣（新纪元学院商学系讲师）

摘要

发展中国家在金融自由化的过程中经常处于一种两难的局面：或者选择浮动汇率以掌控货币政策的制定权，或者放弃政策的自主权并采纳固定汇率机制。但显然地，稳定的汇率及独立的货币政策对于一个以出口为经济成长动力的发展中国家而言都是不可或缺的。以史为鉴，我们不难发现错误的政策混合往往将会掀开金融与经济危机的序幕。本文的目的在于针对货币政策的操作提呈一个新的框架，让开放式的小型经济体得以在固定汇率底下，不管制资金流动，也不中和其对货币供应的影响，就可随国内经济状况制定合适的货币政策。其有效性的关键有两点。第一，当中央银行支付银行储备利息，银行储备对商业银行而言就不再构成一种机会成本，反成了投资工具。届时，中央银行就能透过银行储备回酬率直接影响国内其他如银行借贷率等重要相对价格，毋需再像过往一般依赖公开市场操作。换言之，只要中央银行降低银行储备回酬率，银行借贷率就会随着下调。缩减了的银行储备需求，相对于固定的储备供应，也就形成了宽松货币的立场。我们称之为需求驱动货币政策。此政策的一大贡献乃释放了公开市场操作，让后者成为一个独立的工具，用以维持金融稳定。因此，其二，公开市场操作，配以中央银行的信贷工具之交换，有助于消除引发资金波动的根源，维持金融系统的稳定，并强化固定汇率的可行性与可靠性。最后，本文也讨论了此需求驱动的双重货币政策对其他如最优货币区域，抗衡货币阻击的策略等课题所可能带来的突破性发展。

关键词：货币政策、银行储备利息、固定汇率、三难选择货币危机。

1. Revisiting Monetary Strategy In An Open Economy

The standard transmission mechanisms of monetary policy, either the "money" view or the "credit view", all stem from the legally required reserves. The central bank alters the base money through open market operations to impact on the market interest rate and money supply toward the desired targets.

Suppose the central bank announces an increase in the market interest rate. The rate, however, will not respond simply to the "talk". Through open market sale the central bank has to absorb the liquidity with treasury bills, contracting therefore the base money. Given the reserve requirement ratio, banks with fewer reserves will have to reduce the supply of the money as loans and advances to firms and individuals. Hence the credit tightens. To restore their real cash balances, those agents then have to liquidate their other assets for money, which will plunge the price of assets and thus contribute to a higher interest rate.

Derived from the above observation, we could make two statements about monetary policy:

1) the policy is supply-driven,

2) the interest-rate determination and open market operation are interlocked.

This association makes monetary policy perform as a policy tool.

But once we come to the open-economy part of any macroeconomics textbook, we are told by the Mundell-Fleming model that supply-driven monetary policy is ineffective for a small open economy adopting fixed exchange rate regime. An economy that fixes its exchange rate with open capital account will have to surrender the say in monetary setting. The intuition is simple: if the economy runs an interest-rate policy leaning against the wind of the anchor country, the subsequent flow of interest-sensitive financial capital will impact upon the supply of the liquidity, which in turn, reverses the policy-generated monetary stance.

This is, of course, not merely of theoretical interest but with non-negligible practical impact. As Obstfeld,[2] Eichengreen,[3] Bordo and Schwartz,[4] among others, have

documented, struggles to use monetary policy as medicine for domestic ill inconsistent to the maintenance of the fixed rate, more often than not, lead to currency and economic crashes. The seminal paper by Krugman[5] was then among the first to explore how monetary policy that subordinates to the fiscal needs may provoke speculative attacks and so the collapse of the fixed exchange rate regime.

This open-economy policy constraint has been dubbed "trilemma" : the inability of policymaker to simultaneously pursue a fixed exchange rate regime, open capital account, and monetary sovereignty.[6] Only two goals can be targeted concurrently at the expense of the third. Given the prevailing environment of financial globalization that renders restricted capital account costly, one is, therefore, left with either fixed exchange rate without monetary autonomy, or power in monetary setting with flexible exchange rate.

As argued by Obstfeld, an increasingly democratic polity implies unaffordable cost to ignore the domestic macroeconomic management. The triviality of monetary policy means that we have fewer weapons to strike against the enemies that may come from different directions. Just consider an economy that faces unemployment and current account deficit. While a fiscal surplus may ameliorate the latter, it will worsen

2 Obstfeld M., Shambaugh, J. C., and Taylor A.M., **Monetary Sovereignty, Exchange Rates and Capital Controls: The Trilemma in the Interwar Period**, NBER Working Paper No. 10393, 2004, and **The Trilemma in History: Tradeoffs among Exchange Rates, Monetary Policies, and Capital Mobility**, NBER Working Paper No. 10396, 2004.

3 Eichengreen, B., **Globalizing Capital: A History of the International Monetary System**, Princeton University Press, 1998.

4 Bordo, M. D. and Schwartz A. J., "Why Clashes between Internal and External Stability Goals End in Currency Crises, 1797-1994", **Open Economies Review**, Vol.7, 1996, pp.437- 468.

5 Krugman, P.R., "A Model of Balance-of-Payments Crises", **Journal of Money, Credit and Banking**, Vol.11, No.3 (Aug), 1979, pp.311-325.

6 As usual in academics, nothing is not without peculiarities. For example, Haussman R., Gavin M., Carmen P., and Stein E., **Financial Turmoil and the Choice of Exchange Rate Regime**, mimeograph, Inter-American Development Bank, 1999, based on the experiences of Latin America countries, finds that flexible exchange rate regimes have not permitted a supposed more stabilizing monetary policy but instead have tended to be more procyclical. Bordo M. and Flandreau, **Core, Periphery, Exchange Rate Regimes, and Globalization**, NBER Working Paper No. 8584, 2001 claims that even under the classical gold standard domestic monetary autonomy was considerable. Dornbusch, R. and Frenkel, J.A., **The Gold Standard and the Bank of England in the Crisis of 1847**, NBER Working Paper No.1039, 1982, in analyzing the operation of gold standard during the crisis of 1847, demon strates a similar argument that changes in reserve-deposit ratio could have affected the money stock independently of gold flows.

the former. Inversely, a fiscal deficit could improve the former at the cost of the latter. In short, the economy is short of bullets to deal with economic problems that require different policy stances.

A fast check for facts: the crisis-inflicted East Asian countries before 1995 generally encountered inflationary threat while having huge capital inflow. South Korea, Indonesia, Thailand and Malaysia all experienced fiscal surplus (as a percentage of GDP) in 1995 ranging from 0.5 to 3.0. Because private investment, supplemented by capital inflow, was simply too high, fiscal surplus was evidently insufficient to contain the current account deficit and inflation simultaneously, despite the fact that both equilibria require a similar policy stance.

Worse still, Ortiz and Rodriguez,[7] based on the case of Argentina, have argued that expansive fiscal policy can be contractionary due to the negative impact of a deteriorated fiscal stance on the country risk and the subsequent increase in interest rates. Burnside *et al*[8] have gone even further arguing that, despite the current fiscal surplus, "...large prospective deficits associated with implicit bailout guarantees to failing banking system caused the Asian currency crisis." Simply, to stabilize the currency fiscal tightening becomes inevitable. As a consequence, countries with fixed exchange rate will sacrifice the use of countercyclical policies, and in so doing, will leave the speed and extent of economic recovery totally at the courtesy of market. Some extent of monetary autonomy is, therefore, always advisable.

On the other hand, there is ample research to show that stable exchange rate promotes external trade. No wonder, therefore, developing countries like those of Southeast Asia and Latin America that depend upon international trade as an engine of growth are so eager to maintain a stable, or relatively depreciated, exchange rate level. Excessive exchange rate volatility due to destabilizing capital flow may adversely affect the terms of trade, cause resource misallocation, and disrupt economic stability.

In this vein, economies that seek domestic-oriented monetary policy and stable exchange rate will favor sterilizing the impact of capital flow on the liquidity. This strategy at first sight seems to be practical and relatively feasible particularly during

7 Ortiz J. and Rodriguez C., "Country Risk and the Mundell-Fleming Model Applied to the 1999-2000 Argentine Experience", **Journal of Applied Economics**, Vol. V, No. 2 (Nov), 2002, pp. 327-348.

8 Burnside C., Eichenbaum M., and Rebelo S., **Prospective Deficits and the Asian Currency Crisis**, NBER Working Paper No. 6758, 1998, and **Government Finance in the Wake of Currency**

the period of capital influx. Nonetheless, sterilization involves huge hidden costs that plant their own seeds of destruction. [9]

After all, given the merits and menace, should we fix the exchange rate or other variables (interest rate/money stock/inflation/nominal income)? This paper offers an alternate monetary framework that allows the economy to preserve its influence in monetary setting as well as the credibly fixed exchange rate amid an unrestricted capital account. I call this merit-without-hazard regime *dual demand-driven monetary policy.*

2. The Role of Paying Interest On Bank Reserves to Decouple Interest-rate Determination from Open Market Operation

As pointed out earlier, the contemporary monetary operation, particularly the interest rate setting is supply-driven smoothened by the open market operation. Given its vulnerability to the capital flow, this paper proposes a demand-driven monetary operation.[10]

The story is simple. Just imagine that the central bank is going to write a prescription of expansionary monetary stance. A monetary expansion implies that money supply exceeds the demand for money. To do so, at the *constant* stock of reserves, the central bank shall lower the interest rate paid on the bank reserves.[11] By doing so, it will instantaneously determine the overnight inter-bank rate. Quoting Goodfriend's descriptions

9 Calvo, G. A., "The Perils of Sterilization", **IMF Staff Paper**s, Vol. 38, No. 4 (Dec), 1991, pp.921-926 argues that the high fiscal burden generated by sterilization (due to open market sale of high-yielding treasury bill for low-yielding foreign reserves) will threaten its feasibility. Caballero R.J. and Krishnamurthy A., **International Liquidity Management: Sterilization Policy in Illiquid Financial Markets**, NBER Working Paper No. 7740, 2000, offers an interesting illustration on how sterilization may lead to "liquidity illusion" that unnecessarily feeds the unsustainable boom that acts to drain the system's liquidity in the unproductive non-tradable investment, which, once burst, brings about an external crisis. Christensen J., **Capital Inflows, Sterilization, and Commercial Bank Speculation: The Case of the Czech Republic in the Mid-1990s**, IMF Working Paper, International Monetary Fund, 2004. empirically demonstrates how the commercial banks in Czech Republic exploit the sterilization-generated arbitrage opportunity by borrowing abroad at cheaper price to acquire the higher-yielding treasury bonds, and so inevitably contribute to the mounting foreign debt. The end-game always repeats: financial and economic crises.

10 The demand-driven monetary operation is inspired by Hall R.E., "Irving Fisher's Self-Stabilizing Money", AEA Papers and Proceedings, Vol.87, No. 2, (May) 1997, pp.436-438, and **Controlling Price Level**, NBER Working Paper No. 6914, 1999, that present detailed discussions on the interaction between interest on bank reserves and price level.

should make the mechanism clear[12]:

> *"the 5 percent interest paid on reserves would put a 5 percent floor under which banks would not lend reserves to each other. The 5 percent floor would also be a ceiling above which banks would not lend to each other. The reason is that there could be no interest opportunity cost spread in equilibrium if the reserve market is satiated so that the marginal liquidity services yield on reserves is zero."*

The overnight inter-bank rate will, in turn, govern the yield on deposits another important domestic source of funds and, at the given cost of intermediation, the cost of capital. In short, the return on bank reserves has steadily established as an anchor for nominal interest rates from inter-bank rate to lending and deposit rates (simply the two most important prices to the firms and households in developing countries that heavily depend upon bank loans and deposits as sources of, respectively, financing and saving).

Most importantly, the open market operation has ceased to support the interest-rate determination. One no longer needs open market purchase to generate a fall in interest rate and inject liquidity into the system. Open market operation is therefore decoupled from interest rate setting to become an *independent* policy instrument to undertake other macroeconomic goal. As a result, monetary policy comprises two independent policy tools.

3. Swapping of Treasury Bills for Central Bank Deposits to Cope with Capital Flow

Informative readers may wonder about the impact on the rate of treasury-bill interest, the most discussed market interest rate that affects the flow of financial capital. Changes in the return on bank reserves trigger assets portfolio adjustments by banks and investors to take the arbitrage advantages as the former accumulates higher-yielding treasury bills at the expense to bank reserves while the latter substitutes treasury bills for deposits. What follows on will be a higher price of, and so a lower yield on bills, which, in turn, becomes a driving factor of capital withdrawal.

---

11 To date, the legally required bank reserves in most of the countries are non-interest bearing. To implement the suggested monetary operation, the prerequisite is, of course, to compensate the holding of bank reserves so that the demand for reserves becomes policy induced, instead of legally enforced. The yield could then be used as a policy instrument.

12 Goodfriend, M., "Interest on Reserves and Monetary Policy", **Federal Reserve Bank of New York Economic Policy Review** (May), 2002, pp.77-84.

The upshot of capital withdrawal is well known: it reduces the money stocks in tandem with the depletion of foreign reserves, invalidating the desired expansionary monetary stance. Be reminded, however, that this is the story of supply-driven monetary operation. Is there any hope for the demand-driven monetary operation? The answer is: yes!

There is no secret that to forestall any changes in the price one needs equilibrium in supply and demand. In other words, once the central bank can increase the supply of treasury bills to equilibrate the market, the market interest rate will be stabilized, burying the reasons for capital efflux. Financial stability is therefore secured.

But we know that open market sale is restrictive; it contracts the liquidity available in the system for business activities. To preserve the "grease" on the wheel, we need just a swap in the central bank's domestic credit composition, namely, *the proceeds of the sales of treasury bills are to be deposited in the banking system*. Private deposits are simply replaced by the central bank deposits. The deposits base, and thus the system's liquidity, is therefore sustained.

Consider next the situation of carry trade. Providing that the cheap money due to lower borrowing cost available in the money market can be invested in the higher-yielding treasury bills, financial capital will be induced to flow in augmenting the stock of foreign reserves. The strategy of swap in domestic credits, nonetheless, is flexible enough to confront the hot money if it is thought to be too much: stop the open market sale. The excess demand over the supply shall contribute to a fall in market interest rate, cooling down the speculative activities. Financial stability, again, is sheltered, and the system's liquidity is further enhanced due to the capital inflow.

4. Fiscal Implications

Open market operation is often regarded as part of public debt management. Open market purchase that retires the public debt helps trim down the fiscal debt servicing burden as open market sale increases the treasury's debt obligations. The expansionary open market purchase is to ease the pain of capital outflow while the restrictive open market sale is to moderate the influence of capital inflow. Both were broadly considered untenable due to the fact that they respectively impair the fixed rate's credibility and fiscal sustainability.

The mindset, however, is completely different in this new strategy of monetary

operation. Consider again the expansionary monetary stance. The increases in the public debt via open market sale are self-financed by the revenue earned from the central bank's deposits at the banking system. The swap strategy then will not undermine fiscal sustainability. Equally important, with the constant stock of money in circulation, the expansionary stance is achieved at no expense to the external convertibility (the ratio of foreign reserves and base money).[13] The stock of foreign reserves, at best, will accumulate, as discussed above and shown elsewhere (see Wong (2004)), or at worst remains stable, validating the fixed exchange rate's credibility.

5. Some Potential Applications

5.1. Optimal currency area[14]

The standard optimum currency areas theory initiated by Mundell,[15] as highlighted above, illustrates the critical characteristics of an effective currency and monetary union: a single monetary policy with political solidarity in the domain defined by perfect labor mobility. Put it differently, an area facing asynchronous macroeconomic shocks without internal labor mobility is, therefore, inappropriate to adopt one-size-fits-all monetary policy. Following this vein, it is unambiguous that ASEAN, or ASEAN + 3, with significantly diverse economic and financial development, and regional labor immobility, is not a candidate for currency and monetary union.

Though ASEAN+3 may fulfill the condition of trade openness suggested by Mckinnon,[16] we cannot afford to dispel the possibility that division of labor and so production specialization due to the intensified trade openness will prompt the region to adopt flexible exchange rate among each other. Another classic criterion - interregional fiscal transfer - proposed by Kenen,[17] at best, can merely play the supplementary role.

A recent paper by Eichengreen[18] has reemphasized the impracticability of Asian

13 Given the unchanged amount of bank reserves, the stock of money in circulation will initially remain constant. The expansionary effect is attained through the lower interest rates that accelerate the velocity of circulation. The stock of money will only expand in accordance to the capital inflow.

14 This section draws heavily on Wong Chin-Yoong, **The Theory of Currency Areas after Forty Years**: **A New Paradigm?** work in progress, New Era College.

15 Mundell R.A., "A Theory of Optimum Currency Areas", **American Economic Review**, Vol. LI, No.4, 1961, pp.657-665.

16 Mckinnon R. I., "Optimum Currency Areas", **American Economic Review**, Vol. LIII, No. 4, 1963, pp.717-725.

monetary unification at any time soon because of the lack of political solidarity and preconvergence of economic, monetary and financial structure to set up the platform for single monetary policy. Despite the endogeneity of optimum currency areas as proclaimed by the often-cited Frankel and Rose[19] in the long run, any incompatibility between external peg and domestic circumstances, as shown in the collapse of ERM, during the transitional period - a very likely situation due to the great divergence of Asian economies - may bury forever the dream of unification. To borrow Keynes's famous remark: in the long run, "Asians"are all dead.

Let us go through a thought experiment about the shock of expenditure-switching from nation A's goods to nation B's goods in a traditional two-country Keynesian framework in which the price is downwardly rigid. Assume that both economies are initially at internal (full employment with moderate inflation) and trade balances, and that labor is mobile only between sectors in each region. As a consequence of the shock, nation A suffers excess supply of labor and trade deficits, leading to economic downturn and depletion in the stock of foreign reserves. Meanwhile, nation B experiences excess demand for labor and trade surplus, feeding an economic boom and inflationary pressure. Apparently, nation A needs expansionary monetary policy while nation B requires contractionary monetary policy.

It then becomes interesting and challenging to seek the reconciliation of these dilemmas by allowing both countries to satisfactorily deal with the respective unemployment and inflation situations without sacrificing the balance of payments adjustment mechanism so as to sustain the currency peg.

Here we have an option of dual demand-driven monetary policy. Observably, nation A will lower, and nation B increases, the return on bank reserves. The resultant lower (higher) level of lending rate then helps bolster (decelerate) the investment activity, improve the unemployment (inflation) conditions, simultaneously.

On the financial side, lower (higher) return on bank reserves induces the portfolio rebalancing in favor of higher-yielding treasury bonds (bank reserves). The price, and

17 Kenen P. B., "The Theory of Optimum Currency Areas: An Eclectic View", in: R.A. Mundell and A.K. Swodoba, eds., **Monetary problems of the international economy**, Chicago: University of Chicago Press, 1969, pp.41-60.

18 Eichengreen, B., **Real and Pseudo Preconditions for an Asian Monetary Union**, mimeo, University of California, Berkeley, 2004.

19 Frankel J. and Rose A., "The Endogeneity of the Optimum Currency Area Criteria", **Economic Journal** 108, 1998, pp.1009-1025.

thus the yield, of treasury bonds are to be stabilized by the domestic-credit swap. Given the arbitrage opportunities (lower cost of liquidity for higher-return investment), financial capital will flow from nation B to nation A. Foreign reserves will respectively replenish and deplete in nation A and B, endorsing their own monetary operations.

Interestingly, both countries are able to design, operate, and sustain its monetary policy according to the respective internal needs. Most important, this revival of monetary autonomy that breaks the conventional thinking about the operation of monetary policy in which only a single policy stance is compatible with the currency and monetary union has not compromised at all on the adjustment mechanism of balance of payments, and thus the sustainability of the fixed exchange rate regime.

In short, an "optimum" currency area in this sense can be a domain where asymmetric countries may bilaterally or multilaterally fix their currencies while preserving the size-that-fits-each monetary policy without violating the balance of payment adjustment mechanism. Unlike the Mundellian optimum currency area that defines the domain in terms of labor mobility, perfect labor mobility between peg countries, though sufficient, is not a necessary condition to resolve the intractable dilemmas posed by the expenditure-switching shocks.

5.2 Interest rate defense against speculation[20]

An open-ended issue in the aftermath of East Asian financial crisis is that of the strategy to sky-rock the interest rate to defend against capital flight and speculative attack: the former because it enhances the attractiveness of holding domestic currency; the latter because it raises the cost of attack.

Doubt is mounting, however, on their effectiveness. The often-cited Radelet and Sachs,[21] for instance, has forcefully argued that the fundamental weaknesses of Asian economies per se are not sufficient to wreak havoc, which indeed, was the unnecessary consequence of poor policy response, particularly the high interest rate policy.

This understanding is by no means new to the profession. Cairnes[22] observed that any excessive tightening of the money market is fast in,

20 See Wong Chin-Yoong, **Managing Currency Crises: The Case for Dual Demand Driven Monetary Policy**, mimeo, New Era College, Jan 2005, for formal analysis.

21 Radelet S. and Sachs J., "The East Asian Financial Crisis: Diagnosis, Remedies, Prospects", **Brooking Paper on Economic Activity**, Vol.28, No.1, 1998, pp.1-74.

"...deranging all the operations of industry, and sapping those resources of returning wealth on which the country ultimately must rely for restoring its balance of trade, and thereby securing the metallic basis of its currency."

Kindleberger,[23] in his classics, had also made such an argument that,

"...with elastic expectations of change - of falling prices, bankruptcies, or depreciation - raising the discount rate may suggest to foreigners the need to take more funds out rather than bring new funds in."

These are not purely theoretical conjectures. Yoshitomi and Ohno[24] warn that tightening liquidity is more likely to keep potential investors away if their confidence was initially undermined by domestic bad debt and financial disintermediation.

Conditional on the stockpiled foreign currency denominated debt, whether to float or to defend the exchange rate with recession-inducing level of interest rate is really a choice of the bearer of misfortune. As discussed, sky-high interest rate, sustained to an uncertain period of time, contributes to negative net worth, a credit crunch, de-investments, debt default, and a banking crisis. A let-go strategy will unquestionably deflate the foreign debt, leading those liability-dollarized firms to bankruptcies. Worst, at the end, it will turn out to be no option at all: banking crisis often provokes currency crisis; the negative externalities of defaulted liability-dollarized firms could easily transmit into domestic firms and banking system. In this vein, what matters is a strategy that could, while maintaining a reasonable level of interest rate, eliminate the expected depreciation.

What can the dual demand-driven monetary policy do? We may conjecture that, first, to preclude the banking crisis the return on bank reserves is to be lowered for the benefit of both supply and demand sides of credits. A lower cost of capital improves the discounted value of the firm's net worth, and so, strengthens its ability to service the debt and to carry on the prevailing profitable investment activity. This, in turn, reinforces its net worth. As in Stiglitz and Greenwald,[25] due to the consideration of asymmetric

22 Cairnes, J.E., **An Examination into the Principles of Currency Involved in the Bank Charter Act of 1844**, London: Ridgeway, Piccadily, 1854.

23 Kindleberger C.P., Manias, Panics, and Crashes: A History of Financial Crises, John Wiley & Sons, Inc., 1996.

24 Yoshitomi M. and Ohno K., Capital Account Crisis and Credit Contraction: The New Nature of Crisis Requires New Policy Responses, ADB Institute Working Paper 2 (May), 1999.

information, high interest rate indeed undermines banks' willingness to lend. Combined with the better net worth as collateral, low interest rate environment puts banks in a more resilient position for banking disruptions.

The major caveat of this low-interest-rate strategy is that it further fuels the speculative attacks that borrow cheap domestic currency from the money market in expectation for future exchange rate depreciation in order to reap profits. The strategy supplementing the low interest rate policy, therefore, needs to contract the liquidity available for speculation and remove the expectation for future depreciation.

Garber[26] reveals the mechanics of speculative attack that operates through the exchange forward contracts. A forward sale of weak currency by speculators immediately generates a spot sale by the bank. The central bank has to intervene directly in the spot markets to defend the peg by selling the foreign reserves. But this conventional strategy is often unsustainable particularly when the stocks of reserves are limited. Garber, therefore, suggests that,

> *"if the central bank's forward purchase of its currency matches a forward sale of some other customer of the banking system, all the swap and spot transactions of the banking system will balance will absorb the spot sales of its currency without the central bank's having to intervene directly in the spot marketthe short seller is obligated to deliver the weak currency to central bank on the value date of the forward contract..."*

Putting this in our context, it implies that a swap of central bank's deposits for exchange forward contract offers a foolproof way to contain the speculation. The central bank can effortlessly purchase its currency's forward contracts through open market operation[27]. Further, any purchase of treasury bills from the liquidity-seeking banks with payments debited in the central bank's deposits at banks makes two contributions: first, the retirement of public debt consolidates the treasury's budget, and thereby, alongside the more robust banking system and economic recovery, removes the expectation for future depreciation. Second, the contraction of the bank's deposits available for the

25 Stiglitz J.E. and Greenwald B., **Towards a New Paradigm in Monetary Economics**, the Raffaele Mattioli Lectures, Cambridge University Press, 2003.

26 Garber P.M., **Derivatives in International Capital Flows**, NBER Working Paper No.6623, 1998, of deposits run. Combined with the forward purchase of currency, these policy efforts calm both of the financial and foreign exchange markets.

speculators to deliver its promise in the future prompts the latter to pay a higher price. The combined effects of increasing cost and disappearing benefits shall be able to re-define the winner and loser of speculation.

6. Final Words

This paper explains how a different monetary operation may have rewritten the fate of monetary policy in a small open economy with fixed exchange rate regime and open capital account. A policy that comprises two instruments that are able to aim for different problems demonstrates its currency when being applied in practice, e.g. to form a feasible though not necessarily optimal currency, to defend its peg against the speculative attack. Clearly a lot more research is needed to explore its mechanics and application before we can think of the two-stage demand-driven monetary operation as a set of concrete policy prescriptions.

27 Wong (2005) shows that the banks need to cash in the limited liquid assets to compensate for the run in deposits. In order to avoid costly cutback in lending, the central bank could forward purchase the bank reserves that match the forward sales of the banks. By entering such a forward contract, the central bank implicitly supplies domestic currency credits to the banks that help to cushion the impact of deposits run. Combined with the forward purchase of currency, these policy efforts calm both of the financial and foreign exchange markets.