

〔研究ノート〕

## **The Balance Sheets of Central Banks : The Effects of Expansion**

**Yutaka Kurihara**

This paper presents a theoretical and empirical analysis of the effects of balance sheet expansion of central banks. Bank of Japan, for example, has expanded its balance sheet greatly. On the surface, there seem to be no problems with balance sheet expansion ; however, on closer examination, there may be some serious problems. Central banks should adhere strictly to their roles and missions. Under severe economic conditions in developed countries, central banks should take part in formulating economic policy, but, this can confer problems on the financial institutions. Structural reform is needed to improve financial and monetary systems. For Japanese banks, a common problem that should be given priority for developing solutions is bad loans. JEL : F3.

### **1. Introduction**

Central banks always see their balance sheet. Most economists agree that it is critical to maintain the credibility of banks' balance sheets. This credibility is related to the stability of the financial system and the effectiveness of macroeconomic policy.

For some of the central banks in developed countries, the scales of balance sheets have increased gradually. Bank of Japan in particular has rapidly increased the scale of its balance sheet such that it is now almost six times greater than it was 20 years ago. The reasons for this increase, as regards liability, are that checking account volumes increase

following the increase of the money supply under severe economic conditions, and the increase of bank notes during periods of low interest rates. From the view of assets, national bonds and bills of the Bank of Japan have increased due to the money supply's increase. These increases have prompted the Bank of Japan to buy a lot of stocks. Economists need to consider carefully the consequences of such trends and decisions.

This paper analyzes problems associated with this situation. The following section provides an analysis considerations regarding balance sheet for central banks. New trends that impact balance sheets are discussed and the conclusion that follows addresses both of these arenas.

## **2. What shall central banks do?**

The roles of central banks vary from country to country. There are, however, some common characteristics : soundness, neutrality, and liquidity. The relation of these to balance sheets is discussed below.

### **Soundness**

Assets of central banks should be highly credible. Deterioration of the soundness of central banks' assets may result in significant direct losses, with the further indirect effect of losses of revenues of nations.

### **Neutrality**

Central banks should not engage in activities that may cause fluctuation in the prices of each asset. If central banks are heavily invested in specific assets, it can affect the balance of resource allocation, for example through price changes.

### **Liquidity**

Central banks have to respond to economic conditions adequately and speedily. To accomplish this, the assets of central banks should be highly liquid. Central banks, because of their capacity to create domestic liquidity, are generally deemed reliable

obligators in their own currency and hence do not appear to need capital as a guarantee for borrowing. In fact, in most cases, payment finality is defined as receipt of central bank money either as bank notes or as deposits.

This is not to deny that there is a limit to the real resources that can be obtained by central banks. The implicit limit is expressed by the possibility of the market indirectly constraining the central bank, in the extreme by refusing to transact in and demand domestic monetary base. Liquidity is a vital characteristic of central banks.

### 3. New Trends of Central Banks

#### Theoretical Analysis

Recently, central banks' balance sheets have undergone rapid change. The scale has expanded rapidly, and worry about capital deterioration has resulted. What problems are associated with these changes? Do central banks need capital?

Surely, some people say that central banks need not have capital because they are inherently profitable. The United States and Canada are typical examples. Capital injection is possible and increases government interest revenue. Also, with increased interest rates, central banks gain profit from issuing money.

However, great problems can result from implementation of these approaches. Long-term interest rate increases as a result of issuing of government bonds causes capital loss. Because yields on government bonds are currently so low, these holdings expose the central banks' balance sheets to considerable interest-rate risk and thereby weaken the institutional positions of the central banks. <sup>(1)</sup>

Central banks losses become a problem when they interfere with the conduct of monetary policy (Folkerts-Landau & Garber, 1996). The decrease of capital makes it impossible for central banks to subscribe to prudent policy. Strengthening of the central banks' capital base is needed to allow them to pursue more aggressive easing of monetary

policy. <sup>(2)</sup>

Losses may lead either to an injection of reserve money, if in cash, or ported future cash injections if they are unrealized. Such losses may either impact domestic liquidity or influence expectations about future monetary growth (Sargent and Wallace, 1981). The reserve injection is consistent with the monetary program, however, many problems are associated with this approach. The central bank will need to offer the market assets from its own portfolio bearing market returns in exchange for reserve money. However, this produces further operational expenses or loss of reserve. The second method is to issue the central bank's own liabilities. This, however, creates the risk of the central bank accumulating an unsustainable debt burden. The third problem is related to the government. If the governments cover losses through transfers from the treasury of government debt, those could be used to sterilize the monetary injection. The treasury should be flexible so that it can provide or issue an indefinite amount of securities to the central bank.

The weakness of financial conditions in central banks may influence the independence of government. Central banks in developed countries have the independence of government (Stella, 1997). If the income of central banks is too low to support their current expenditure budget, central banks might be forced to ask the Ministry of Finance for supplemental funds, which the central banks might fear would put their independence at risk.

Inflation may occur under bad financial conditions. Some counter-arguments, of course, are possible. The debtor countries are not always in inflationary cycles. Inflation has a lot of causes. The relationship between inflation and balance sheet expansion is not clear. Over-debt or balance sheet expansion is not the only reason for inflation. Some developing countries, such as Chile and Indonesia, have not suffered not high inflation in spite of the fact that their central banks are over-debt. <sup>(3)</sup> However, in countries with over-debt conditions, central banks cannot engage in buying operations needed to avoid

inflation (Eichengreen and Garber, 1999).

### One Empirical Analysis

Deterioration of the balance sheet can be associated with serious problems. This section uses using empirical methods to analyze the scale of balance sheets of central banks in Japan and the U. S. The method is simple OLS. The scale/GDP is regressed by constant term and inflation rate. Central banks in developed countries have made stable prices a priority goal. Along with independence from government, this movement has become the world trend. The result is as follows.

Table  
Regression Analysis for Scale of Balance Sheet

	Japan		United States	
	1980-1989	1990-2002	1980-1989	1990-2002
Constant	12.84 (19.51)	18.08 (7.00)	7.17 (18.87)	8.45 (19.82)
Inflation rate	-0.54* (-1.41)	-3.32** (-1.65)	-0.51*** (-3.84)	-0.89*** (-5.23)
Adj. R <sup>2</sup>	0.17	0.20	0.73	0.67
F-statistic	2.00	2.71	14.76	27.33
D.W.	2.00	0.90	2.51	1.24

( ) is the value of t statistics. \*\*\* is significant at 1%, \*\* is 5%, and \* is 10%.

The results are interesting and clear. First, both monetary authorities took counter-cyclical measures in the 1980s and since that period. Second, Bank of Japan has expanded balance sheet greatly and the rate of balance sheet versus GDP is high compared to that of other countries. <sup>(4)</sup>

## 4. Conclusion

Balance sheets of central banks are and should be important as reliable indicators of

the financial condition of the countries.<sup>(5)</sup> Central banks may operate well without capital as conventionally defined. However, a large negative net worth, for example, is likely to interfere with banks' abilities to attain their objectives. This is the most important point.

The central banks' holding weight of national bond and stock are important. Of course, if deflation continues, stock holdings would cause loss; and if deflation does not continue, national bond holdings would not cause loss. However, excess holding is dangerous. In Japan, fears that the bank might shift its financial firepower from buying government bonds to purchasing stocks triggered a minor panic in spite of the fact that it fueled rising stock prices of banks. The idea of shoring up the banks' balance sheets so they can focus on cleaning up their bad loans is much more important. This is an essential way to ensure a sound financial and economic system.

## Notes

- (1) Any losses would be partly offset by unrealized capital gains on earlier acquisitions of bonds. The Bank of Japan has reserves for possible losses on securities and foreign exchange transactions and is permitted by the Article 53 of the Bank of Japan law to retain 5% of the surplus from the settlement of profits and losses as a reserve fund. Bernanke (2003) proposed that the Ministry of Finance convert the fixed interest rates of the Japanese government bonds held by the Bank of Japan into floating interest rates. This would protect the capital position of the Bank of Japan from increases in long-term interest rates and remove much of the balance sheet risk that is associated with open-market operations in government securities.
- (2) The Federal Reserve, the Bank of Canada, and the Bundesbank could well operate with zero capital without any material impact on their policies or profitability. However, again, central banks cannot operate effectively with arbitrarily large negative net worth or under conflicting constraints.
- (3) However, there is high probability that fiscal policy or IMF's program made it possible for them to avoid inflation.
- (4) At the end of 2002, the balance sheet rate against nominal GDP in each country was Bank of Japan,

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25.0% ; ECB, 10.6% ; FRB, 6.2% ; Bank of England, 4.7% ; and Bank of Canada, 3.9%.

- (5) Proper accounting practice in determining central bank profit or loss and rules governing the transfer of the central bank's status to the treasury are also important.

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