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An Analysis: Quantitative Easing Policy Was Effective in Buoying the Japanese Economy

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The Bank of Japan's quantitative easing policy was introduced in March 2001 and terminated in March 2006. Initially, it was not certain whether the unprecedented policy would succeed, and in a sense, its introduction was experimental. Was the quantitative easing policy effective as a new monetary policy measure? Although many observers have negative views about the effects of the policy, we have attempted to examine its effects using a macro-economic model.

In a nutshell, the quantitative easing policy was one in which the operating target of money market operations was shifted from interest rates to a quantitative indicator. The quantitative indicator was the outstanding balance of current accounts held by banks at the Bank of Japan. When this policy was introduced, the central bank also strengthened its commitment by clearly stating that it would continue quantitative easing policy until "the year-on-year rate of change in the consumer price index (CPI) (excluding fresh food) registered zero percent or higher on a sustainable basis."

Quantitative Easing Examined through a Macro-model

The following is an examination of the effects of monetary easing on the real economy using a simple macro-model. We built a New Keynesian model based on Kimura et al (2002). The major differences between our model and that in the Kimura paper are that our period of estimation includes the period of quantitative easing and that we have also taken into consideration such factors as non-performing loans and foreign exchange rates.

The results of our estimation are shown at the end of this paper. Although only one equation is presented there, we did in fact use three equations, one being the equation presented herewith, which expresses the investment-savings (IS) balance, in which the GDP gap is the dependent variable; the second being the Phillips curve, in which the inflation rate is the dependent variable; and the third being an equation expressing monetary policy, in which interest rates are the dependent variable. Since all the variables are interdependent, our estimation used the General Methods of Moment (GMM).

The quantitative easing factor, the non-performing loan factor and the foreign exchange rate factor were added to the equation explaining the GDP gap. The variable, which expresses quantitative easing, is the portion of real monetary base that cannot be

explained by transaction demand or interest rates. For the non-performing loan factor, we have followed the concept of Ohnishi et al (2002), which considered non-performing loans to be the excess debt of firms. Because the foreign exchange rate fluctuated sharply over the duration of the quantitative easing policy, the foreign exchange rate was used as an explanatory variable in order to absorb the impact of the foreign exchange rate fluctuations.

The results of the estimations show that all coefficients, other than the interest rate, were significant. When actual figures were put into the equation to see the effects of quantitative easing on the GDP gap, it was found that it reduced the output gap by 0.59 percent in fiscal 2002, by 0.21 percent in fiscal 2003 and by 0.31 percent in fiscal 2004 (Table). In fiscal 2001, when the quantitative easing policy was adopted, interest rates fell sharply, and since the monetary base did not increase sharply enough to match the decline in interest rates, the quantitative easing factor had a negative impact on the GDP.

Effects of Quantitative Easing on the GDP Gap

FY	2001	2002	2003	2004	2005
%	-0.62	0.59	0.21	0.31	-0.16

Central Bank's Commitment More Pronounced than in the Case of Zero Interest Rates

Then, by what mechanism did the quantitative easing policy have effects on the real economy? To see whether the policy had unique effects, it is essential to examine how it was different from the “zero interest rate policy + commitment.”

The major difference between the two policies is that the operating target of the quantitative easing policy is a visible indicator, namely, “the outstanding balance of current accounts at the Bank of Japan.” In the case of the zero interest rate policy, no matter how much the central bank promised the market it would continue to maintain the policy, this was nothing but a verbal appeal. On the contrary, in the case of the quantitative easing policy, the outstanding balance of current accounts at the Bank of Japan exists as an indicator of the bank's policy stance. Even after the termination of quantitative easing policy, there has remained an enormous outstanding balance of current accounts at the Bank of Japan, and this should give market participants assurance that the zero interest rate policy will not be terminated at least while the balance remains above the normal level. Therefore, the quantitative easing policy gives a greater sense of security to market participants than a mere zero interest rate policy.

The strengthened commitment of the Bank of Japan has manifested itself in the stability of long-term interest rates. It has also helped remove anxiety about the financial system and could have contributed to a pickup in consumption and investment behavior.

It may be assumed that a unique effect of the quantitative easing policy, which is lacking in the zero interest rate policy, is portfolio rebalance effect. The increase in deposits with the Bank of Japan (which involve neither risk nor return) among banks' assets makes it easier for banks to increase risk money. In practice however, this did not increase bank lending or stock investment. It increased banks' purchases of Japanese government bonds.

Nevertheless, if the quantitative easing policy had not been introduced, prolonged instability of the financial system could have rendered banks' lending attitudes even more stringent. Hence, it is possible to assume that the quantitative easing policy moderated the decline in bank lending.

The quantitative easing policy also directly mitigated anxiety about the stability of the financial system. Before the policy was introduced, the ratios of non-performing loans at banks were high, and there was lingering anxiety about the stability of the financial system. Although banks were able to raise funds in the call money market at zero percent interest rates or thereabouts and, following the introduction of the "Lombard lending system," were also able to borrow from the central bank at the official discount rate, they had to be prepared for liquidity risk becoming an actuality from day to day. On the other hand, after the introduction of the quantitative easing policy, their balance of current accounts at the Bank of Japan far exceeded their required reserves, making it possible to smoothly raise funds internally even if there was an urgent demand for funds. Such a sense of security is not possible under a simple zero interest rate policy.

Estimation of the effects of the quantitative easing policy

$$y_t - y_t^n = 0.708(y_{t-1} - y_{t-1}^n) - 0.005(i_t - E_{t-1}[\Delta p_t] - r_{t-1}^n) + 0.056 \Delta q_{t-1} - 0.003 l_{t-1} + 0.0099 \Delta f_{t-1} + \eta_t^{AD}$$

Notes:

1. y_t : Real GDP (logarithmic value), y_t^n : Potential GDP (logarithmic value), i_t : Call rate, Δp_t : Inflation rate, r_t^n : Real equilibrium rate of interest, Δq_t : Quantitative easing factor, l_t : Non-performing loan factor, f_t : Yen rate against the dollar (logarithmic value)

For the quantitative easing factor, the rate of divergence of the monetary base from the equilibrium of the currency demand function was used as a proxy variable. The excess debt ratio of firms was used as the proxy variable for the non-performing loan factor.

2. The estimation period is from the second quarter of 1979 through the third quarter of 2005. The estimation methodology was the General Methods of Moment (GMM) based on three equations, including the Phillips curve and the monetary policy equation. All coefficients other than that of interest rate were significant at the 1-percent level. The coefficient pertaining to the interest rate was not significant.

References

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