Analysis of How the Effects of Changes in Interest Rates and Foreign Exchange Rates Vary Depending on Economic Situations

Interest rates and foreign exchange rates, as core price variables of the macroeconomy, play a significant role in policy implementation and economic forecasting, since they reflect expectations of economic agents, including households and enterprises, about the future economic situation, and at the same time, they in turn influence the process of decision-making by these economic agents. For this reason, the Bank of Korea and other major research institutes use various models in order to analyze the effects of changes in interest rates and foreign exchange rates on the domestic economy. However, since they assume a linear adjustment mechanism, a majority of the models are only of limited use, given that, irrespective of the economic situation, their impulse responses are symmetric and close to the previous average level. In the real economy, however, each economic agent can make different choices in accordance with changes in the situations they face, and therefore the effects of changes in interest rates and foreign exchange rates on economic growth and inflation may vary depending on the particular economic situation.

This study estimates a TVP-SSM model by adding time-varying parameter equations to a Keynesian-style small simultaneous equation model, divides the period for analysis into pre and post-foreign currency crisis periods, by business phase, by financial situation, or by expected inflation phase, and conducts an analysis of how differently changes in interest rates and foreign exchange rates affect economic growth and inflation depending on the economic situation.

An empirical analysis shows that changes in interest rates exert a greater influence on economic growth since the foreign currency crisis, while their effect on inflation remains almost unchanged from the pre-crisis period. In contrast, changes in foreign exchange rates seem to have a decreasing influence on economic growth and inflation since the crisis, and their influence on inflation, in particular, has declined dramatically.

According to the outcome of the analysis of how changes in interest rates and foreign exchange rates differ in each business phase, interest rates have a greater influence on economic growth and inflation during a period of economic recovery than during one of economic contraction. The effects of foreign exchange rates on economic growth, meanwhile, are of little difference in all business phases, but their influence on inflation is greater at peaks in the business cycle than at troughs.

Meanwhile, the effects of interest rates and foreign exchange rates are asymmetric in terms of movement direction; interest rates have a greater effect when they are on a downward path, while foreign exchange rates do so when on the rise. In other words, interest rates and foreign exchange rates are seen to have greater influence when managed under an expansionary policy stance (interest rate reduction, domestic currency depreciation) than under a restrictive policy stance.

Lastly, according to the analysis in terms of financial situation and of expected inflation phase, interest rates have a significant influence when expected inflation stabilizes and the financial situation is benign. Meanwhile, the effect of foreign exchange rates on economic growth is of little difference in each situation, but their influence on inflation is very large when inflation expectations are unstable.

Putting all these analytical results together, the following policy implications may be drawn: first, since monetary policy has quite a limited effect when financing is tight for reasons as a credit crunch, more aggressive policy measures are needed to achieve policy goals such as boosting the economy. In addition, monetary policies tend to have a stimulating effect during a period when the economy has bottomed out and entered a recovery phrase, and therefore it is important to make a timely shift from an expansionary to a neutral policy stance. Meanwhile, in regard to exchange rate policies, attention needs to be paid to the strong possibility that inflation may accelerate due to a rise in the exchange rate (depreciation of the currency) when inflation expectations are already widespread and the business cycle is near a peak.

In the present desperate situation where the spreading of the global financial crisis around the world has led to financial turmoil and a full-scale economic recession, considering the point that the effects of policy are limited, initially, a response by way of an aggressively accommodative monetary policy is needed. However, in view of the concerns that a drastic expansion of liquidity beyond an appropriate level is very likely to bring about severely negative effects on the economy as a whole in forms such as widespread inflation expectations, once the business cycle has shifted into an upward phrase, policy should be operated prudently keeping a vigilant watch on the extent to which the economy is getting back on track.