Interest Rate Differentials and Spot Exchange Rates: 
Korea and Japan

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Objectives

This paper conducts an empirical test on the relationship between foreign exchange and money markets during the period of 1999-2002 for Korea and Japan. Our central questions are:
1) what is the correlation between spot exchange rate and interest rate differential?
2) Is there any difference between Korea and Japan in the effect of interest rate differential on changes in exchange rate?
3) If interest rate differential is not a significant contributor to the movements of exchange rate, what would be the alternative factors to explain the movements of spot exchange rates?

Model

We use the sample period of 1999-2002 since we want to omit 1998, the year of Korean currency crisis, to separate out the “crisis” effect and include the years of genuine free floating system in Korea. Using the data of Korea and Japan, we expect some comparable empirical results due to the different degree of internationalization of Korean Won and Japanese Yen. To capture the effect of changing interest rate differential on spot exchange rate, we developed two GARCH models, one model with

and the other without the explanatory variable of ‘stock returns’.

Empirical Results

Using GARCH model, we can summarize our findings as follows.

1) The effect of changing differentials of interest rates on spot rates is statistically insignificant and negligible in Korea. This evidence supports our expectation that the influence of interest rate differentials on spot exchange rates is likely to be attenuated by the fact that Korean Won is not internationalized enough to allow any active arbitrage transactions.

2) The results of estimating the interest rate effects on spot rates in Japan are contrary to our expectation. We find the effect of changing differentials of interest rates on spot rates is positive and statistically significant at 1% level for the full sample period.

3) We modify the specification in model by expanding the explanatory variables in the conditional mean equation to include the daily stock return. The estimates are consistent with the earlier findings. The influence of interest rate differentials on spot exchange rate changes is statistically insignificant in Korea and positive and statistically significant
in Japan. A notable result in Korea, which is comparable with that of Japan, is that stock return has a negative and statistically significant effect on spot exchange rate. The effect is strengthened in subperiod cases of year 2000 and 2001. The evidence above confirms the prior observations that higher stock return enlarges the inflowing volume of foreign capitals, which in turn leads to the appreciation of Korean Won. In Japan, stock return has an insignificant effect on spot exchange rate.

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化・国際化が相当程度達成されているケースでは、
報告にあるように米国株式投資ファクターを加える
べきであろう。モデルでは日米間で3ヶ月財務
報効を採用しているが、直物為替レートへの影
響となると、国際間資本移動による資産構成の
外構成比変更と言う側面が強い。そこで代わりに
日米長期金利差（10年債ベース）を採用してはどう
であろう。日本についても、ゴール・レートが使
われているが、長期間国際資本移動を重視すれば、
UIPには不適当であろう。いずれにせよ、変動相
場制の下では、金利の自由化、金融の国際化が大
前提。その上で先物市場の適切で安定した機能が
不可欠である。経済・金融理論の立場からはなか
かなか容認できないが、実現には機転通貨、例えば、
米ドルは、変動相場制の下でも、米国の国家戦略
に大きく左右される面がある。更に市場参加者の
予想が大きなインパクトを与えるため、株価予測
と同様、random walk的な面があることは否定で
できない。