The risk adjusted uncovered equity parity

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ABSTRACT

This paper explores the risk adjusted uncovered equity parity model to investigate a degree of market integration for four Asian emerging markets relative to the U.S., Japan and the U.K. from January 1994 to July 2008. The uncovered equity parity is revised to take into account of market risk in a framework of a portfolio rebalancing model. Evidence was found to strongly support our hypotheses; Market risk is significant in international capital flows between the Asian emerging markets and the developed economies, and it can help explain the failure of a traditional uncovered equity (or interest) parity model. The relationship between returns and an appreciation of the exchange rate are divided between the Asian emerging markets and the developed economies, depending on the direction of capital flows.

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1. Introduction

Uncovered interest parity (UIP), in essence, states that capital flows should equalize effective returns on assets with equal maturity. The UIP is considered an arbitrage condition and the parity conditions can be stated as risk neutrality of investors, rationality expectation, negligible transaction costs, perfect capital mobility, identical maturity, and default risk. Departure from the UIP implies that at least one of these parity conditions does not hold. Earlier empirical literature on UIP focused mostly on developed economies rather than on emerging markets. The evidence presented in these studies is generally unfavorable, and robust to the estimation techniques and data sets as explored in the surveys

of Froot and Thaler (1990). Lewis (1995) and Engel (1996) documented the forward discount anomaly and highlighted the existence of a time-varying premium as a source of the forward premium puzzle. Sarno (2005) pointed out the importance of risk premia, expectations, and the use of survey data, while Chinn (2006) analyzed the robustness of the results with respect to the time horizon.

A broad survey of the empirical studies on the UIP condition for emerging markets was provided by Alper et al. (2009). Bansal and Dalquist (2000) and Flood and Rose (2002) reported less unfavorable results for emerging market economies with lower per capita income and high inflation. Ferreira and Leon-Ledesma (2007) indicated that long-run mean deviations from the real interest parity were positive for emerging markets, but equaled zero for developed economies, suggesting a large risk premium for the emerging markets in the long-run. Although these studies come up with different results, one result is common to all; there is too much heterogeneity among the two groups of countries and hence, the developed economies and the emerging markets should be treated separately.

The existence of relatively frequent structural breaks constitutes an econometric challenge in testing the UIP for emerging markets. In this regard, Bekaert et al. (2002) and Goh et al. (2006) recognized the importance of determining the regime switch date endogenously and incorporated this in the UIP estimation. The second econometric problem with testing the UIP for emerging markets is a peso problem, which was dealt with by Flood and Rose (1996) and Sachsida et al. (2001). The central bank's interventions may also distort the UIP. Chinn and Meredith (2004) and Poghosyan et al. (2008) showed that the reaction by monetary authorities to exchange rate movements through policy rates leads to the joint determination of the expected depreciation and returns. This implies a simultaneity bias causing the failure of the UIP for emerging markets.

In testing the UIP, it is possible to consider the existence of an additional premium for the risks of an emerging market if investors are risk averse. These risks are attributable to market or country risks, which can be justified by incomplete institutional reforms, weaker macroeconomic fundamentals, more volatile economic conditions, shallow financial markets, and imperfect market integration. Recent increases in the portfolio investment flows emphasize the importance of market risks as an alternative explanation for the failure of the UIP for emerging markets. Portfolio models developed by Kim (in press), Portes and Rey (2005), Martin and Rey (2004), and Hau and Rey (2004, 2006) suggest that, as determinants of the international portfolio investment flows, there are several important market risks such as the degree of market integration, transaction costs, the distance between capital markets, and the size of the market. Intuitively, the market risk after the liberalization of financial markets is expected to decrease gradually along the path of market integration.

This paper explores a risk adjusted uncovered equity parity (RUEP) model to investigate the degree of market integration for four Asian emerging markets relative to the U.S., Japan, and the U.K. from January 1994 to July 2008. Those four emerging markets were Korea, Singapore, Malaysia, and Thailand, of which the capital markets have been vulnerable to external market risks and experienced a severe currency crisis in 1997 and a recent financial crisis in 2008 after market liberalization. In addition, this study examined how the degree of integration of the Asian capital markets evolved over time, specifically after structural changes in the capital markets since 2001. The market risk was explicitly measured and tested as a driving force for a deviation from the uncovered equity parity (UEP). Such an effect has not been examined previously in earlier studies on Asian financial integration.

The model we developed has testable implications regarding the relationships between stock returns and exchange rate returns, the *so called* "uncovered equity parity (UEP)" (See Hau and Rey (2006) and Kim (in press) for the uncovered equity parity). This UEP is revised to take into account portfolio equity flows and market risk within a framework of a portfolio rebalancing model. The main intuition behind the UEP condition is one of portfolio rebalancing. Whenever foreign equity holdings outperform domestic holdings, domestic investors are exposed to higher relative exchange rate exposure. They repatriate some of the foreign equity to decrease the exchange rate risk. By doing so, they sell the foreign currency, and this leads to foreign currency depreciation. Therefore, portfolio rebalancing creates a positive correlation between equity market return differentials and exchange rate return. Higher returns in the home equity market (in local currency) relative to the foreign equity market are associated with a home currency depreciation: the model predicts what amounts to an uncovered equity parity. Market incompleteness in combination with low price elasticity of foreign exchange liquidity supply generates exchange rates which are almost as volatile as equity prices.