
**UNIVERSITI PUTRA MALAYSIA**

***THE IMPACT OF LIBERALIZATION ON UNCOVERED INTEREST RATE PARITY***

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# THE IMPACT OF LIBERALIZATION ON UNCOVERED INTEREST RATE PARITY

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## List of Abbreviation

| | |
|---|---|
| ARCH | Autoregression Conditional Heteroscedasticity |
| Δ DEFAULT | Change In The United State Default Premium |
| EMU | European Monetary Union |
| GARCH | Generalized Autoregressive Conditional Heteroscedasticity |
| GDP | Gross Domestic Product |
| IFS | International Financial Statistics |
| RFREE | Risk-Tree Rate |
| TERM | United State Term Premium |
| UIRP | Uncovered Interest Rate Parity |
| US | United State |
| USMKT | United State Market Portfolio |
| QML | Quasi-Maximum Likelihood |

## Abstract

This study make use of the uncovered interest rate parity (UIRP) relationship to examine the extent that the liberalization of emerging financial markets has resulted in the integration of developing countries' currency markets into the international capital market.

Previous tests of the impact of liberalization on the integration of emerging capital markets into world financial markets are confined to equity markets, ignoring currency markets that are arguably more important in determining the success of financial liberalization.

This study finds that deviation from UIRP in the emerging markets is systematic in nature and that a significant part of emerging market currency excess returns is attributable to a time-varying risk premium. This study also finds that these countries' currency deposits provide US (equity) investors with the benefits of international diversification.

The results show that for some markets, liberalization improved (worsened) investors' perception of growth opportunity while reducing (increasing) investors' perception of the probability of financial distress.

Finally, while several countries benefited from liberalization and have become more integrated into the world capital market, the experience is country specific.

# CHAPTER ONE

## Introduction

A large number of studies have examined the impact of liberalization on the integration of emerging markets. Although providing important insights regarding the success or lack thereof of the integration policies of these countries, these studies have in general focused only on integration of equity markets, neglecting other financial markets. This focus on equity markets suggests that researchers are implicitly making the assumption that integration of equity markets implies integration of other financial markets. It is usual for researchers simply to assume that currency markets are integrated.

A fundamental relationship in international finance is interest rate parity. It states that when the domestic interest rate is less than the foreign interest rate, the domestic currency is expected to appreciate by an amount approximately equal to the interest rate differential. An implication of this, known as the uncovered interest rate parity (UIRP), is that the return on an uncovered foreign currency deposit should be equal to the return on an equivalent domestic deposit regardless of the national market within which the foreign deposit is located. A violation of this relationship indicates that capital markets are not integrated.

This study investigates if the liberalization of emerging markets has led to the integration of their currency markets into the world capital market. The perspective of a US investor was take and examine the extent to which the liberalization of emerging financial markets impacted the deviation from UIRP. Many studies of UIRP find that, UIRP does not hold. One of the more prominent explanations for this failure is the existence of a time-varying risk premium as compensation for the speculative position in the foreign currency. If deviation from UIRP is due to a risk premium, then a fortiori, these deviations will exist in the emerging markets in the pre-liberalization period. On the other hand, if financial market liberalization has been successful in integrating developing countries' currency markets into the international capital market, then in the post-liberalization period US investors will not require a risk premium in the returns on currency deposits in the emerging markets. Hence, there should be no systematic component to the deviation from UIRP. This study focus on time varying risk premium explanation of deviations from UIRP and are in general silent about other possible explanations.

This study focus on the integration of emerging currency markets into the world capital market for several reasons. First, Frankel (1992, 1993); Montiel (1998), and others, stress the importance of the integration of currency markets for the integration of emerging financial markets into the world capital market. As noted by Frankel (1992, 1993), only interest rate parity tests can be interpreted unambiguously as tests of integration of a country's financial markets. In other

words, the design of unequivocal tests of capital market integration, based on equity markets, has proven elusive. Thus, given that the impact of capital market liberalization on the degree of integration of emerging currency markets is yet to be determined, claims of financial market integration following capital market liberalization may be premature (e.g. Bekaert et al., 2002). Second, the liberalization of the emerging financial markets was designed to affect areas of the capital markets other than the equity market (e.g. Beim and Calomiris, 2001; Bekaert et al., 2002). Thus examining the impact of liberalization on other financial markets is important to ascertain the success of these policies.

The changes to interest and exchange rate regimes in liberalized emerging country.

- Liberalization date for Chile is on January 1992, the minimum holding period for investments dropped to one year, peso revalued 5% in January 1992; change in the reference currency for the peso in July 1992; peso pegged to three currencies.
- Liberalization date for Mexico is on May 1989. It deposit (loan) rates decontrolled 1988– 1989. For it exchange rate, reduction of controls on foreign portfolio flows in 1989; restrictions on foreign direct flows rationalized in 1989; unification of dual exchange rate system in November 1991.
- Liberalization date for Korea is on January 1992, Process of interest rate deregulation started in the 1990s completed by1995. Market average exchange rate system introduced March 1990.

- Liberalization date for Malaysia is on December 1988. Interest rate controls reintroduced in mid 1980s lifted by 1991.Deregulation of foreign direct and portfolio flows by mid 1980s.
- Liberalization date for Pakistan is on February 1991, interest rates freed in 1995 and Rupee made convertible in July 1994.
- Liberalization date for Thailand is on September 1987. Abolished all ceilings on deposit rates in 1990; removed loan rate ceilings in1992.
- Liberalization date for Turkey is on July 1989. Deposit rate ceilings eliminated in 1988. Capital flows liberalized in 1989.

The importance of this study is further supported by the intense debate over the appropriate response of the governing authorities to emerging market currency crises. One frequently advocated response is the reintroduction of capital controls. However, Kaminsky and Schmukler (2001) document the vacillation in policy regarding capital controls in six important emerging markets and raise doubts about their efficacy. An alternative policy tool at the disposal of governments responding to currency crises is the implementation of fixed exchange rates. The scope for a successful "interest rate defense" of a fixed exchange rate depends on the extent of the deviation from interest rate parity (e.g. Flood and Rose, 2001).

From given the investment interest in the emerging markets, this study is investigating the behavior of excess returns on currency deposits provides an

interesting complement to the studies that have focused on the diversification benefits of investing in equities. Malliaropulos (1997) finds that expected excess returns of foreign currency deposits are less volatile than that of equities and that the addition of dollar deposits to an international equity portfolio can provide additional diversification benefits to non-US investors. Similarly, Bansal and Dahlquist (2000) find that adding emerging market currency returns to those from developed markets results in higher Sharpe ratios.

As stated previously, most of the work on interest rate parity has focused on the industrialized markets. However, we believe that deviations from UIRP in emerging markets are likely to be larger and more persistent than in industrialized markets. Recent work by Flood and Rose (2001) and Bansal and Dahlquist (2000) find that UIRP is different across developed and emerging markets. Flood and Rose (2001) do not find support for UIRP and indicate that the foreign exchange premium is larger for emerging markets than for developed markets. In contrast, Bansal and Dahlquist find that although UIRP does not hold for most countries, it tends to hold more frequently in low-income and emerging markets than developed economies.

Interestingly, Bansal and Dahlquist (2001) also find that when there is deviation from UIRP for lower-income industrialized economies it is not caused by the existence of a risk premium. They note that country-specific attributes such as the level and volatility of inflation rate, income level, and country ratings are

important in explaining foreign currency excess returns. Industrialized markets typically have lower and less volatile inflation and interest rates, more stable exchange rates, and higher income levels than emerging economies. Given these differences, this study expect that emerging markets will have significantly larger currency excess returns than industrialized economies, even if these excess returns are not compensation for risk.

Theoretical work by Aliber (1973) finds that deviation from interest rate parity is a function of both currency and political risks. The latter relates to the uncertainty that in the future a foreign government will impose restrictions on capital flows. In the light of a long history of vacillation in the policy towards capital flows (Beim and Calomiris, 2001) and the above-mentioned debate about the appropriate response to recent currency crises, this risk should be greater in the developing economies and should give rise to significant deviations from UIRP, especially in the pre-liberalization period.

This study uses a multifactor conditional asset pricing model to examine the extent to which emerging market currency excess returns can be explained by systematic risk factors and therefore can be attributed to time-varying risk premia. This approach is similar in spirit to several studies that have examined the risk-premium explanation of deviations from interest rate parity (e.g. McCurdy and Morgan, 1991; Korajczyk and Viallet, 1992; Morley and Pentecost, 1998).

In general, deviation from UIRP in emerging markets is systematic in nature and that a significant part of emerging market currency excess returns is attributable to time-varying risk premium. Importantly, this study finds that these countries' currency deposits provide US (equity) investors the benefits of international diversification. Additionally, results show that for some markets, liberalization improved (worsened) investors' perception of growth opportunity while reducing (increasing) investors' perception of the probability of financial distress. Finally, while several countries benefited from liberalization and have become more integrated into the world capital market, the experience is country specific.

## Objective of the study

### General Objective:

The objective of this study is to establish that emerging markets typically experience significant deviations from Uncovered Interest Rate Parity (UIRP).

### Specific Objectives:

The specific objectives of this study are:

1. To investigate the behavior of excess returns on currency deposits.
2. To examine whether deviations from UIRP are characterized by time varying risk premium.
3. To examine the extent to which the liberalization of emerging financial markets impacted the deviation from UIRP.

## References


Adler, M., Dumas, B., (1983). "International portfolio choice and corporation finance: a synthesis." *Journal of Finance* 38, 925–985.

Aliber, R., (1973). "The interest-rate parity theorem: a reinterpretation." *Journal of Political Economy* 81,1451–1459.

Anker, P. (1999). "Uncovered Interest Parity, Monetary Policy and Time-Varying Risk Premia." *Journal of International Money and Finance.* Vol.18 (6), pp.835-851.

Baillie, R.T. and T. Bollerslev. (2000). "The forward premium anomaly is not as bad as you think." *Journal of International Money and Finance.* Vol.19 (4), pp.471- 488.

Bailey, W., Chung, Y.P., (1995). "Exchange rate fluctuations, political risk, and stock returns: some evidence from an emerging market." *Journal of Financial and Quantitative Analysis* 30, 541–561.

Basak, S., (1996). "An intertemporal model of international capital market segmentation." *Journal of Financial and Quantitative Analysis* 31, 161–188.

Beim, D.O., Calomiris, C.W., (2001). "Emerging Financial Markets." McGraw Hill Irwin, NY.

Bekaert, G., (1995). "Market integration and investment barriers in emerging equity markets." *World Bank Economic Review* 9, 75–108.

Bekaert, G., Harvey, C.R., (1995). "Time-varying world market integration." Journal of Finance 50, 403–444.

Bekaert, G., Harvey, C. (1998). "Capital flows and the behavior of emerging market equity returns." *NBER working paper* No. 6669.

Bekaert, G., Harvey, C.R., (2000). "Foreign speculators in emerging equity markets." *Journal of Finance* 55, 565–613.

Bekaert, G., Harvey, C.R., Lumsdaine, R., (2002). "Dating the integration of world equity markets." *Forth-coming Journal of Financial Economics.*

Bekaert, G., Harvey, C.R., and Lundblad, C., (2002). "Emerging equity markets and economic development." *Forthcoming Journal of Economic Development.*

Berk, J.M. and K.H.W. Knot. (2001). "Testing for Long Horizon UIP Using PPP-Based Exchange Rate Expectations." *Journal of Banking and Finance.* Vol.25 (2), pp. 377-391.

Blundell-Wignall,A., Browne,F. (1991) " Increasing Financial Market Integration, Real Exchange Rates and Macroeconomic Adjustment." *OECD Economics Department Working Paper 96.*

Bollerslev, T., Chou, R.Y., Kroner, K.F., (1992). "ARCH modeling in finance: a review of theory and empirical evidence." *Journal of Econometrics* 52, 5–59.

Bollerslev, T., Wooldridge, J.M., (1992). "Quasi-maximum likelihood estimation and inference in dynamic models with time-varying covariances." *Econometric Reviews* 11, 143–179.

Brennan, M., Wang, A., Xia, Y., (2001). "Intertemporal capital asset pricing and the Fama-French three-factor Model." *UCLA working paper.*

Chari, A., Henry, P., (2001). "Stock market liberalizations and the repricing of systematic risk." *Stanford University working paper.*

Christensen, M. (2000)."Uncovered Interest Parity and Policy Behavior New Evidence." *Economics Letters.* Vol.69 (1), pp.81-87.

Cumby, R. (1988)."Is It Risk? Explaining Deviations from Uncovered Interest Parity." *Journal of Monetary Economics.* Vol. 22, pp. 279-299.

De Santis, G., Gerard, B., (1998). "How big is the premium for currency risk?" *Journal of Financial Economics* 49, 375–412.

Dooley, M., Isard, P., (1980). "Capital controls, political risk, and deviations from interest-rate parity." *Journal of Political Economy* 88, 370–384.

Dumas, D., Solnik, M., (1995). "The world price of foreign exchange risk." *Journal of Finance* 50, 445–479.

Engel, C., (1996). "The forward discount anomaly and the risk premium: a survey of recent evidence." *Journal of Empirical Finance* 3, 123–192.

Engle, R.F., Kroner, K.F., (1995). "Multivariate simultaneous generalized ARCH." *Econometric Theory* 11, 122–150.

Fama, E., French, K., (1993). "Common risk factors in the returns on stocks and bonds." *Journal of Financial Economics* 33, 3–56.

Faust, Jon and J.H. Rogers. (1999). "Monetary Policy's Role In Exchange Rate Behavior." *International Finance Discussion Paper.* No. 652.

Flood, R., Rose, A., (2001). "Uncovered interest parity in crisis: the interest rate defense in 1990s." *University of California Berkeley working paper.*

Flood, R.P. and A.K. Rose. (2000). "Uncovered Interest Parity in Crisis." *IMF Staff Papers.* Vol.49 No.2

Francesco Caramazza, (September 1993). "French-German Interest Rate Differentials and Time-Varying Realignment Risk." *IMF Staff Papers.* Vol. 40 No. 3.

Frankel, J., (1992). "Measuring international capital mobility: a review." *American Economic Association Papers and Proceedings* 82, 197–202.

Goldfajn, I. and Baig, T (1998). "Monetary Policy in the Aftermath of Currency Crisis: The Case of Asia" *IMF Working Paper, 98/170,* International Monetary Fund.

Harvey, C.R., (1995). "The risk exposure of emerging equity markets." *World Bank Econ. Rev* 9, 19–50.

Henry, P., (2000). "Do stock market liberalizations cause investment booms?" *Journal of Financial Economics* 58, 301–334.

Huisman, Koedijk, Kool, Nissen. (1997). "Extreme Support for Uncovered Interest Parity." *Journal of International Money and Finance.* Vol.17 (1).

Ikeda, S., (1991). "Arbitrage asset pricing under exchange risk." *Journal of Finance* 46, 447–455.

Juttner, D.J. (1989). "International Finance and Global Financial Markets." pp.53-58.

Kaminsky, G., Schmukler, S., (2001). "Short- and long-run integration: do capital controls matter?" *World Bank working paper.*

Katarina Juselius, (1995)."Do Purchasing Power Parity and Uncovered Interest Rate Parity Hold In The Long Run? An Examble of Likelihood Inference In A Multivariate Time-Series Model." *Journal of Econometrics.* Vol. 69, pp. 211-240.

Khor, H.E., and Rojas-Suarez, L., (December 1991). "Interest Rates in Mexico." *IMF Staff Papers.* Vol. 38, No. 4.

Kia, A. (1996). "Overnight Covered Interest Parity: Theory and Practice." International Economic Journal. Vol. 10, Number 1.

Kim, E., Singal, V., (2000). "Stock market openings: experience of emerging economies." *Journal of Business* 73, 25–66.

Korajczyk, R.A., Viallet, C.J., (1992). "Equity risk premia and the pricing of foreign exchange risk." *Journal of International Economics* 33, 199–219.

Liew, J., Vassalou, M., (2002). "Can book-to-market, size, and momentum be risk factors that predict economic growth?" *Journal of Financial Economics, forthcoming.*

Ligeralde, A.V. (1997). "Covariance Matrix Estimators and Tests of Market Efficiency." *Journal of International Money and Finance.* Vol.16 (2), pp. 323-343.

M. Hashem Pesaran, Yongcheol Shin, Richard j. Smith, (2000). "Structural Analysis of Vector Error orrection Models With Exogenous I (1) Variables." *Journal of Econometrics.* Vol. 97, pp. 293-343.

Malliaropulos, D., (1997). "A multivariate GARCH model of risk premia in foreign exchange markets."

Mark, N.C. and Y. Wu, (1998)."Rethinking Deviations From Uncovered Interest Parity: The Role of Covariance Risk and Noise." *The Economic Journal.* Vol.108, pp. 1686-1706.

Mayfield, E.S. and R.G. Murphy. (1992). "Interest Rate Parity and Exchange Rate Premium: Evidence From Panel Data." *Economics Letter.* Vol.40 (3), pp. 319-324.

McCallum, B. T. (1994). "A Reconsideration of The Uncovered Interest Parity Relationship." *Journal of Monetary Economics.* Vol. 33, pp. 105-132.

McCurdy, T.H., Morgan, I.G., (1991). "Tests for a systematic risk component in deviations from uncovered interest rate parity." *Review of Economic Studies* 58, 587–602.

Meredith, G and M.D. Chinn November (1998)."Long Horizon Uncovered Interest Rate Parity." *NBER Working Paper no.6797.*

Montiel, P., (1998). "The long-run equilibrium exchange rate: conceptual issues and empirical research." *World Bank, Washington, DC.*

Morley, B., Pentecost, E.J., (1998). "Asset pricing and foreign exchange risk: econometric evidence for the G-7." *Journal of International Money and Finance* 17, 317–329.

Popper, H. (1993), "Long-Term Covered Interest Parity: Evidence from Currency Swaps," *Journal of International Money and Finance*, 12, pp. 439-448.

Resnick, E. (2000). "International Financial Management." pp.111 and 132.

Thomas C. Chiang, (1997). "Risk and International Parity Conditions: A Synthesis From Consumption-Based Models." *International Economic Journal.* Vol. 11, Number 1.

Zhang, Y. (1989). "Does UIP Hold Better in the Long Run?" *University of Virginia*, May (2000).