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Information flows between non-deliverable forward (NDF) and spot markets: Evidence from Korean currency

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Abstract

This paper investigates the interrelation and information flows between the Won–Dollar spot and offshore forward, i.e., NDF markets. In particular, this paper focuses on the impact of the reform in the Korean exchange rate systems, which occurred in December 1997 in response to the currency crisis, on the relation between the two markets. Using the augmented GARCH formulation, this paper finds that during the pre-reform period a mean spillover effect exists from the spot to the NDF market but not vice versa, and a volatility spillover effect exists in both directions. After the reform, however, the results are reversed and a mean spillover effect exists from the NDF to the spot market. Also, the volatility spillover effect exists only in the same direction. These findings suggest that there are information flows between the two markets, and the reform has changed the direction of the dynamic relation. © 2001 Elsevier Science B.V. All rights reserved.

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1. Introduction

Interrelation and information flows across markets have long been an issue in financial economics. Recent research in this area has placed more attention to the

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short-term dynamics of price changes and the transmission mechanism of information. Many studies find an interdependence of price changes and volatility across international stock markets (see King and Wadhwani, 1990; Hamao et al., 1990; Eun and Shim, 1989; Park and Fatemi, 1993; Wei et al., 1995), between futures and spot markets (see Chan et al., 1991; Hung and Zhang, 1995), and between domestic and offshore money markets (see Fung and Isberg, 1992; Lo et al., 1995). These studies investigate not only whether price changes in one market can help predict price changes in other markets but also whether changes in price volatility in one market are positively related to price volatility observed in other markets. Exploring price volatility is reasonable in view of the fact that Clark (1973), Tauchen and Pitts (1983) and Ross (1989) that show that the volatility of an asset's price, not the asset's simple price change, is related to the rate of flow of information to the market.

This paper examines the interrelation and information flows between the Korean Won–Dollar spot and its offshore forward, namely NDF (Non-Deliverable Forward), markets. NDF is a currency forward contract in which cash settlement occurs instead of physical delivery. In 1996, the Asian NDF market emerged in Hong Kong and Singapore for currencies such as the Indian Rupee, Korean Won, Taiwanese Dollar, Philippine Peso, Chinese Renminbi, and Vietnamese Dong. The NDF market has attracted investors who need to either hedge currency exposure or take speculative currency positions but are hindered by restrictions and/or illiquidity in the local forward market. Among these currencies, the Korean Won–Dollar NDF is the biggest one with daily transaction values up to US$ 500 million. Despite the growing interest in the Asian NDF market, few so far have studied the newly emerged offshore market and its relation with the domestic currency market.

A fundamental question often asked in finance is whether the same asset trading in two different markets sells at the same price at each point in time. In a perfect market, where currency forward and spot prices simultaneously reflect the same aggregate information, price discrepancies would be instantly arbitraged away. However, various market frictions and investment restrictions may affect the relation between the offshore NDF and domestic currency markets. In particular, the Asian NDF market has developed for currencies of countries where the government controls the currency market and restricts foreign capital movements. Market segmentation arises because of impediments to international investment. Thus, knowledge of the interrelation and information flows between the offshore NDF and domestic currency markets is important to an understanding of financial market integration.

Such an understanding has important implications. First, the stronger the relation between the offshore NDF and domestic currency markets, the more difficult it becomes for governments to pursue independent economic policies designed to achieve their intended result. Second, for investors who need to hedge currency exposure or take speculative positions using the NDF market instead of

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