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Dynamic linkages between exchange rates and stock prices: Evidence from East Asian markets

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Abstract

This study examines dynamic linkages between exchange rates and stock prices for seven East Asian countries, including Hong Kong, Japan, Korea, Malaysia, Singapore, Taiwan, and Thailand, for the period January 1988 to October 1998. Our empirical results show a significant causal relation from exchange rates to stock prices for Hong Kong, Japan, Malaysia, and Thailand before the 1997 Asian financial crisis. We also find a causal relation from the equity market to the foreign exchange market for Hong Kong, Korea, and Singapore. Further, while no country shows a significant causality from stock prices to exchange rates during the Asian crisis, a causal relation from exchange rates to stock prices is found for all countries except Malaysia. Our findings are robust with respect to various testing methods used, including Granger causality tests, a variance decomposition analysis, and an impulse response analysis. Our findings also indicate that the linkages vary across economies with respect to exchange rate regimes, the trade size, the degree of capital control, and the size of equity market.

JEL classification: F30; G15
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1. Introduction

A strong linkage between stock prices and exchange rates is a popular view in the financial press. For instance, the March 8, 2000 issue of the Wall Street Journal states "the dollar dropped against the yen and fell marginally against major European currencies as U.S. stock markets suffered sharp losses for the second straight day."[1] In retrospect of the literature, a number of hypotheses also suggest a causal relation between stock prices and exchange rates. For instance, the goods market hypothesis (e.g., Dornbusch & Fischer, 1980) suggests that changes in exchange rates affect the competitiveness of multinational firms and hence their earnings and stock prices. A depreciation of the local currency

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[1] See "Dollar Declines against Yen and Euro as U.S. Stock Markets Stage a Retreat," Wall Street Journal, March 8, 2000, p. C19.

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makes exporting goods cheaper and may lead to an increase in foreign demand and sales. Consequently, the value of an exporting firm would benefit from a depreciation of its local currency. On the other hand, because of the decrease in foreign demand of an exporting firm's products when the local currency appreciates, the firm's profit will decline and so does its stock price. In contrast, for importing firms the sensitivity of firm value to exchange rate changes is just the opposite. An appreciation (depreciation) of the local currency leads to an increase (decrease) in the firm value of importing firms. Additionally, variations in exchange rates affect a firm's transaction exposure. That is, exchange rate movements affect a firm's future payables (or receivables) denominated in foreign currency. For an exporter, an appreciation of the local currency reduces profits, while a depreciation of the local currency increases profits.[2] Furthermore, stock prices could be affected by exchange rate movements because such movements will induce equity flows.

Finally, as Adler and Dumas (1984) point out, even domestic firms – firms that have minimal international activities – can face exchange rate exposure if their input prices, output prices, or the demand of their products are affected by exchange-rate movements. Therefore, on a macro basis, the impact of exchange rate fluctuations on stock prices seems to depend on both the importance of a country's international trades in its economy and the degree of the trade imbalance.

Conversely, stock price fluctuations can influence exchange rate movements. For instance, according to the portfolio balance approach, exchange rates, like all commodities, are determined by market mechanism. A blooming stock market would attract capital flows from foreign investors and hence causes an increase in the demand of a country's currency and vice versa. As a result, rising (declining) stock prices are related to an appreciation (depreciation) in exchange rates. Moreover, foreign investment in a country's equity securities could increase over time due to the benefits of international diversification that foreign investors would gain.[3] In addition to returns, capital flows can be induced by less risky investment climate of a country. An improvement in a country's investment climate (e.g., a stable political system, a fair legal system, financial openness and liberalization, etc.) will lead to capital inflows and a currency appreciation.

Furthermore, movements in stock prices may influence exchange rates since investors' wealth and money demand may depend on the performance of the stock market (e.g., Gavin (1989)). For example, during the time of a crisis (e.g., the 1997 Asian financial crisis), a sudden dislocation of asset demands may incur because of the herding behavior of investors or the loss of confidence in economic and political stability. This dislocation usually results in the shift of portfolio preference from domestic assets to assets denominated in other currencies (e.g., the U.S. dollar), implying a decrease in the demand of money. This will lead to a decrease in the domestic interest rate and in turn lead to capital outflows. Consequently, the currency will depreciate.

Although the theoretical literature suggests causal relations between stock prices and exchange rates, empirical evidence is rather weak. Jorion (1990, 1991), Bodnar and Gentry (1993), and Bartov and Bodnar (1994) all fail to find a significant contemporaneous relation between U.S. dollar movements and stock returns for U.S. firms. He and Ng (1998) find that only about 25% of a sample of 171 Japanese multinational corporations has significant exchange rate exposure. Griffin and Stulz's (2001) empirical results show that weekly exchange rate shocks have a negligible impact on the performance of industries for six industrialized countries. However, Chamberlain, Howe, and Popper (1997) find that the U.S. banking stock returns are very sensitive to exchange rate movements. While such findings are quite different from those reported in prior studies, Chamberlain et al. attribute the contrast to their use of daily data. Similarly, Donnelly and Sheehy (1996) document a significant contemporaneous relation between exchange rate and the market value of large U.K. exporters. Donnelly and Sheehy attribute the difference between their findings and those based on U.S. firms to (1) the U.K. is a more open economy than the U.S. and (2) their focus on export-intensive firms.

On a macro level, Ma and Kao (1990) find that a currency appreciation negatively affects the domestic stock market for an export-dominant country and positively affects the domestic stock market for an import-dominant country. Ajayi and Mougoue (1996) find significant interactions between daily exchange rates and stock returns. Abdalla and Murinde

[2] The exchange rate exposure faced by a firm, however, can be reduced using foreign currency derivatives. Allayannis and Weston (2001) find that the use of currency derivatives is positively associated with firm value.

[3] While gains from international diversification are well documented, the finance literature shows the existence of a home bias in that investors tend to invest only in their home country and ignore foreign opportunities. See Kang and Stulz (1997) and references therein for a discussion of the home bias issue.