Investor wealth, the IMF, and the Asian crisis ☆

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A B S T R A C T

This study further investigates the impact of IMF actions on stock markets during the Asian crisis. Extending two earlier studies by Kho and Stulz (2000) and Evrensel and Kutan (2007), we investigate the long-term shareholder wealth impact of IMF actions and programs on both financial and real sector returns in the stock markets of Thailand, Indonesia, and Korea. We perform a series of tests employed in Cornett and Tehranian (1989, 1990) that incorporate heteroscedasticity across sectors and contemporaneous dependence of the disturbances. The findings indicate that IMF actions regarding liquidity disbursement or liquidity concerns in markets are the most important events affecting abnormal returns and hence investor wealth in both real and financial sectors. However, the response of the financial sector to IMF actions is much stronger than that of the real sector. In addition, the results suggest moral hazard effects during the Asian crisis in all the three countries.

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1. Introduction

During financial crises, many countries turn to the International Monetary Fund (IMF) for policy advice and financial help. In turn, IMF imposes some conditionality on its programs and rescue packages.[3] In this paper, we examine investor wealth implications of IMF actions during a significant financial crisis. In particular, we focus on the 1997 Asian crisis. Many Asian countries suffered significantly from the crisis. For example, in 1998 the real GDP of the Korean economy declined by 5.8% and this decline was even bigger in Thailand (about 9%) and Indonesia (13.7%) (Berg, 1999). The IMF had a significant role in managing the Asian crisis. At the beginning of the crisis, the governments of these three countries signed several agreements with the IMF and the advice continued after the first agreements. As a result, focusing on the Asian crisis helps us to better understand the significance of IMF actions on

private financial markets during significant financial crises and provides a yardstick for future studies to compare their findings against ours.

This study extends two related studies focusing on the Asian crisis, namely, Kho and Stulz (2000) and Evrensel and Kutan (2007). Using an event-study methodology, Kho and Stulz (2000) investigate the impact of IMF actions and programs on bank returns during the Asian crisis. They conclude that the IMF programs had a positive but small effect on international bank values, while the effect on the banks of crisis countries was insignificant. We extend this study in significant directions. Besides the bank sector, we first provide broader evidence of the impact of the IMF-related news on stock returns at sector level. Does IMF news have similar effects on all sectors, or do some sectors gain more than others? To shed some lights on these questions, we use daily financial and real sector returns for Thailand, Indonesia, and Korea during the Asian crisis. Kho and Stulz (2000) use an event-study methodology while we use a Multivariate Regression Model (MVRM) as in Cornett and Tehranian (1989, 1990)[4] to illustrate the wealth effects of IMF actions in both financial and real sectors while taking into account the possibility of contemporaneous correlations among the different sectors during the crisis period.

We also extend the study by Evrensel and Kutan (2007) who investigate the influence of IMF news on daily financial and real sector stock returns in Indonesia, Korea, and Thailand during the Asian crisis.

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[3] Lane et al. (1999) and the IMF Independent Evaluation Office Report (2003) investigate financial crises and IMF's response to them. Dreher and Vaubel (2004), Erbas (2004), and Evrensel (2004) discuss IMF conditionality.

[4] We would like to thank an anonymous referee for motivating this approach.

However, there are significant differences between their and our study. First, Evrensel and Kutan (2007) consider only two sets of news items, namely IMF program negotiations and their approval. In this paper, following Kho and Stulz (2000), we include a richer set of news, better capturing the impact of IMF actions on sector returns. Second, Evrensel and Kutan (2007) use GARCH estimations in each sector. Following Cornett and Tehranian (1989, 1990) we provide estimates using MVRM that takes into account heteroscedasticity across sectors and contemporaneous correlations during the crisis period. Overall, our study complement and unite these two studies by providing more comprehensive evidence on the wealth effects of IMF actions in private financial markets during the Asian crisis, using a rich set of IMF-related news.

There are limited studies on the effects of IMF events on stock prices.[5] Dong, Kho, and Stulz (2000) investigate the impact of the announcement of IMF support programs on the abnormal returns of the U.S. banks during crises in Mexico, Brazil, Korea, and Russia, and find that these banks tend to earn high abnormal returns. Zhang (2001) investigate the impact of the IMF announcements during the Asian crisis on international bank equities in Korea and finds evidence in line with those reported in Kho and Stulz (2000) and Dong, Kho, and Stulz (2000). Overall, these studies found that IMF news has a significant positive influence on international bank returns, but the impact on banks of the crisis countries is either not studied or only briefly mentioned as insignificant.

Brealey and Kaplanis (2004) examine a broad sample of IMF programs and report a substantial decline in a variety of asset prices in the weeks leading up to the announcement of the IMF programs. Hayo and Kutan (2005) investigate the reaction of composite stock market returns and volatility in a diverse group of six emerging markets to a different set of IMF events, such as delay of loans, IMF visits and program approvals. They find that IMF actions primarily have an effect on investor wealth, but not on investment risk.

Another related study to ours is the recent work by Kutan, Muradoglu, and Sudjana (2012). They investigate the impact of IMF news on daily financial and real sector stock returns in Indonesia using an event study. Besides studying the impact of news regarding IMF policy actions on stock returns, they also examine the reaction of investors to the government's reaction to IMF actions, willingness to implement such policies, the public sentiment about the implemented IMF programs and government policies. However, they examine only one country, namely, Indonesia, while we provide evidence from Indonesia, Korea, and Thailand and use a methodology that takes into consideration possible contemporaneous correlations and heteroscedasticity across the different sectors for the duration of the crisis for a period of about a year and a half. Overall, our study extends the previous studies in several new directions, yielding additional insights on the importance of IMF-related news in private financial markets.

2. Methodological issues

In order to test for stock price reactions to IMF programs in each sector, we perform a series of tests employing a Multivariate Regression Model (MVRM) similar to that used in Cornett and Tehranian (1989, 1990). For every country we have a set of IMF related events and we analyze their impact on six different sectors. MVRM incorporates heteroscedasticity across sectors and contemporaneous dependence of the disturbances into the hypothesis tests. The magnitude of unsystematic risk can be different in different sectors and the variance of abnormal returns can vary across them (Fama, 1976). It is also possible that returns in different sectors are contemporaneously correlated because investors in different sectors react to the IMF announcements in a

similar manner and residuals may not be identically and independently distributed. MVRM uses a system of seemingly unrelated equations that condition the abnormal returns on the occurrence and non-occurrence of IMF events and assumes that residuals are independent and identically distributed within each sector when we estimate the system of equations defined in Eq. (3) below. We use a dummy variable for each event that takes the value one on the day of the event and zero otherwise. The coefficients of each event dummy measure the impact of the event on stock returns in each sector. The model uses a system of sector returns in each country as below

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\begin{aligned}
R_{1,t} &= \alpha_1 + \beta_{1,j}\sum_{j=-3}^{+3} Market + \sum_{e=1}^{E}\beta_{1,e}D_{e,t} + \varepsilon_{1,t} \\
R_{2,t} &= \alpha_2 + \beta_{1,j}\sum_{j=-3}^{+3} Market + \sum_{e=1}^{E}\beta_{2,e}D_{e,t} + \varepsilon_{2,t} \\
R_{3,t} &= \alpha_3 + \beta_{1,j}\sum_{j=-3}^{+3} Market + \sum_{e=1}^{E}\beta_{3,e}D_{e,t} + \varepsilon_{3,t} \\
R_{4,t} &= \alpha_4 + \beta_{1,j}\sum_{j=-3}^{+3} Market + \sum_{e=1}^{E}\beta_{4,e}D_{e,t} + \varepsilon_{4,t} \\
R_{5,t} &= \alpha_5 + \beta_{1,j}\sum_{j=-3}^{+3} Market + \sum_{e=1}^{E}\beta_{5,e}D_{e,t} + \varepsilon_{5,t} \\
R_{6,t} &= \alpha_6 + \beta_{6,j}\sum_{j=-3}^{+3} Market + \sum_{e=1}^{E}\beta_{6,e}D_{e,t} + \varepsilon_{6,t}
\end{aligned}
\quad (3)
$$

where $R_{i,t}$ is the return in sector i ($=1,…6$) on day t, α_i is the intercept coefficient for sector i ($=1,…5$), $\beta_{i,j}$ is the coefficient estimate for the Market return whereby we use 3 leads and 3 lags as well as the contemporaneous values where j ($=-3,… +3$),[6] $\beta_{i,e}$ is the coefficient estimate that indicates the effect of the event e ($=1…E$) on sector i ($=1,…5$) and $D_{e,t}$ is the event dummy for event e ($=1,…E$) on day t. In order to isolate the effect of the IMF related event on each sector we estimate the above equations and the coefficient estimate of the event dummy $D_{e,t}$ shows the impact of the announcement on that sector.

We estimate the above system using Seemingly Unrelated Regressions and White heteroscedasticity corrections. This system of equations allows us to conduct joint hypothesis tests. We conduct joint hypothesis tests following Cornett and Tehranian (1990) and use Wald statistics. For each crisis country we test (1) if all abnormal returns for all events are jointly equal to zero and (2) if the economic impact of each event e ($=1,…E$) is the same and equal to zero for all sectors i ($=1,…6$). Heteroscedasticity across equations and contemporaneous dependence of the disturbance terms are incorporated into these tests. The joint hypothesis tests we conduct enable us to investigate if there are IMF announcements which have significant impact on stock returns extant among all announcements we investigate and if the economic impact of a specific IMF announcement is the same across the different sectors of the economy.

3. Data and descriptive statistics

Data on the stock prices is derived from DataStream. Both the country indexes and the sector indexes we used are local-currency based and are from the International Finance Corporation (IFC) that focuses on large and relatively liquid securities in which foreign investors are more likely to invest. These indices have certain advantages over more comprehensive local indices (Kang & Stulz, 1997). These indices are calculated for all markets in a similar fashion, which makes international comparisons of returns possible. Furthermore the country indices attempt to cover 70% of market capitalization (Bekaert & Harvey, 1997). The sample period starts on January 15, 1997 and ends on July 15, 1998[7] which covers all IMF-related events during the Asian crisis.

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[5] Most studies analyze the effects of IMF-related news with respect to the bond markets. Evrensel and Kutan (2008a) and Eichengreen, Kletzer, and Mody (2006) review previous studies on the effects of IMF-related news in the bond markets.

[6] We also employed the constant return model where the specification does not include the Market returns, the CAPM where the specification includes only the contemporaneous value of the Market return and the Market return with one and two leads and lags. Conclusions do not change. Results are available from authors upon request. We use daily data in estimations from different sectors and this approach also used in Cornett and Tehranian (1990) helps overcome the possibility of nonsynchronous trading.

[7] Kho and Stulz (2000) use the same sample period to investigate bank returns over the crisis period. We use their sample period for comparison purposes.