General Discussion

The discussion centered on two related themes: general limitations of the methodology and problems involved in its application to the crisis-affected countries in East Asia. On the former theme, Donald Hanna noted that the methodology, by its very nature, does not capture the ripple (second-round) effects of the crisis arising from the reaction of the global banks to liquidity problems in the aftermath of the currency collapse. He contended that the ripple effect of the Asian crisis that spread from Russia to the Netherlands, to Germany, and back to the Asian countries was an important missing part of the "pure" contagion as defined in this paper.

Yung Chul Park argued that the concept of contagion, as used in this paper, was a misnomer, because co-movement of the key macroeconomic variables was a natural phenomenon in a context in which national financial markets were becoming increasingly integrated ("consider, for example, countries in the European Union"). Chalongphob Sussangkarn questioned the use of the term *contagion* and the *cause* (of financial crisis) as synonyms. In the true sense, contagion is simply the trigger of financial crisis, and a country will succumb to financial crisis if and only if it is vulnerable.

On the second theme, Naoyuki Yoshino expressed concern about the appropriateness of the chosen methodology for analyzing the Asian financial crisis. He argued that it is unrealistic to assume financial contagion to be the mechanism that spread the crisis because financial markets are not well developed in these countries. Chia Siow Yue questioned the authors' decision to limit the country coverage of the study to countries that were directly affected by crisis. Meaningful inferences of general policy rele-

vance could be derived, argued Chia, if and only if the other Asian countries that were not directly affected by the crisis (in particular, Singapore) were included in the comparative analysis.

A number of commentators pointed out possible omitted-variable bias involved in model specification. Hanna pointed to the fact that the accuracy of any "residual-based" measurement of contagion depends on the extent to which the model captures the relevant fundamentals adequately. He doubted that the particular model specification in this paper satisfied this important criterion. Park argued that failure to capture the impact of exchange rate movements in measuring correlation among the chosen variables might have significantly biased the results reported in the paper. Yoshino questioned how one could systematically separate fundamental-based contagion from real contagion without incorporating external shocks in the model. Iris Claus suggested the possibility that information asymmetry may account for the difference in co-movements of variables among different financial markets. Finally, Ren Ruoen wanted to know whether the estimation method had taken into account the standard normality assumption relating to the error term; violation of this assumption could have serious implications for the robustness of the results.

Responding to the omitted-variable issue raised in the discussion, Renée Fry explained that the estimation method used in the study automatically controlled for market integration and other relevant variables and corrected possible bias in estimates resulting from the violation of normality and other assumptions relating to the error term. She also noted that contagion operating via bond trading was ignored in the analysis because of the underdeveloped nature of the bond markets in the crisis-affected Asian countries. Fry acknowledged that the number of countries covered in the analysis was dictated by the particular estimation method used.