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Co-movements of U.S. and Latin American equity markets before and after the 1987 crash

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Abstract

We examine the stability of correlations and the benefits of international portfolio diversification through investment in Argentina, Brazil, Chile and Mexico, the four largest Latin American markets, from the point of view of a U.S. investor. Three 44-month periods are examined characterized by closed markets (February 1984–September 1987, Period I), opening initiatives (November 1987–June 1991, Period II), and open markets with large portfolio inflows (July 1991–February 1995, Period III). The 1987 market crash is used as a break point because it was the only event before 1995 to have affected many emerging markets simultaneously. Our findings indicate that correlations are rising in time and that there are no significant gains to a domestically well diversified U.S. investor from holding a well diversified portfolio of Latin stocks in the most recent sample periods. Investment in Latin America probably should be made through a careful selection of countries and securities instead of the purchasing of a broad index of Latin American stocks. © 2001 Elsevier Science Inc. All rights reserved.

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1. Introduction

Low correlations between the world's equity markets indicate that investors may gain from international diversification (see, e.g., Lessard, 1976; Levy & Sarnat, 1970; Meric & Meric, 1989; Solnik, 1974; Watson, 1978). Several recent studies (e.g., Arshanapalli & Doukas, 1993; Lee & Kim, 1993; McInish & Lau, 1993; Meric & Meric, 1997, 1998) show that the correlations between the world's equity markets have increased substantially and that the benefits of international diversification may have considerably decreased since the 1987 crash. However, gains from international portfolio diversification do not depend solely on correlations. Although increasing worldwide correlations would diminish the benefits of international diversification, regime changes (such as financial liberalization) may reduce market risk and increase expected returns, potentially offsetting the effects of greater correlations.

Emerging equity markets have received considerable attention in recent years because of their high returns and their low correlation with developed equity markets (see, e.g., Aggarwal, Inclán, & Leal, 1999; Aggarwal & Leal, 1997; DeFusco, Geppert, & Tsetsekos, 1996; Divecha, Drach, & Stefek, 1992; Harvey, 1995; Meric, Leal, Ratner, &, Meric, 2001; Meric, Meric, & Ratner, 2000; Meric, Ratner, Leal, & Meric, 1998; Mullin, 1993; Ratner & Leal, 1996). Goodhart (1988), Hamao, Masulis, and Ng (1990), King and Wadhwani (1990), Malliaris and Urrutia (1992), and Roll (1988) document a significant increase in the correlation between national equity market movements during the 1987 international equity market crash. Although the effects of the October 1987 international equity market crash on the developed national equity markets has been studied extensively, its effect on the correlations between the emerging markets and between the emerging markets and the developed equity markets has not been studied sufficiently.

The objective of this paper is to study the equity market co-movements of the U.S., Argentina, Brazil, Chile, and Mexico before and after the 1987 international equity market crash and examine the impact on the gains of international portfolio diversification in Latin America. The reason to use the crash of 1987 as a watershed is that it is the only worldwide event identified by Aggarwal et al. (1999) affecting many different emerging stock markets. We verify that correlations between these five equity markets increased and the benefits of diversification decreased after the crash. If correlations have increased, the weights of Latin American stock markets in U.S. investors portfolios may decrease unless their estimate of market risk is lower and their expected returns are attractive.

The paper is organized as follows: Section 2 describes our data and methodology. Section 3 studies the correlation coefficients of the five equity markets before and after the 1987 crash. In Section 4, principal components analysis (PCA) is used to study the changes in the co-movement patterns of the five equity markets from the precrash period to the postcrash period and during the postcrash period. In Section 5, Box's M statistic is used to study the intertemporal stability of the variance–covariance matrix of the equity market index returns. Section 6 presents our analysis of the portfolio weights of the Latin American stock markets in the three subperiods studied. Our findings are summarized and conclusions are presented in Section 7.