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Comovement in international equity markets: A sectoral view

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Abstract

We investigate shifts in correlation patterns among international equity returns at the market level as well as the industry level. We develop a novel bivariate GARCH model for equity returns with a smoothly time-varying correlation and then derive a Lagrange Multiplier statistic to test the constant correlation hypothesis directly. Applying the test to weekly data from Germany, Japan, the UK and the US in the period 1980–2000, we find that correlations among the German, UK and US stock markets have doubled, whereas Japanese correlations have remained the same. Both dates of change and speeds of adjustment vary widely across countries and sectors.

JEL classification: C22; G15

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1. Introduction

Over the past twenty years, the importance of the domestic stock market in many industrialized economies has grown sharply, while at the same time the degree of

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comovement among international equity markets seems to have increased. As a result, national economies are more frequently affected by disturbances originating in foreign stock markets, and these disturbances also tend to have more far-reaching consequences. This is a widely held view among financial market participants, the media, academics and policy makers. It is argued that financial integration has been spurred by improved electronic communications, the worldwide liberalization of capital controls and financial innovation, as well as growing political and economic integration. However, it is unclear whether correlations among equity returns across countries really have increased. It is conceivable that this idea stems from a biased reading of the data. Discussions of stock market developments in the media may exaggerate the importance of infrequent, large, but simultaneously occurring changes in international stock returns. While such dramatic changes may seem to offer strong anecdotal evidence for greater comovement, a careful empirical investigation into this issue would need to take into account the behavior of returns during the entire sample period.

An accurate assessment of the degree of comovement among international equity markets is important for several reasons. For investors, the design of a well-diversified portfolio crucially depends on a correct understanding of how closely international stock market returns are correlated. Changes in international correlation patterns call for an adjustment of portfolios. Policy makers are interested in correlations among equity markets because of their implications for the stability of the global financial system. The preparation of monetary policy is also affected by international stock market developments, due to the international propagation of shocks via equity markets, the wealth channel and confidence effects. The global trend towards a greater role of the stock market in the economy has made this kind of spillover more important.

The academic literature on comovement among international equity markets is voluminous. Although there seems to be general agreement that correlations between equity markets are not constant over time, it is less clear whether correlations are actually trending upward.[1] For instance, Roll (1989), surveying a number of papers published in the 1980s, concludes that the increase in international stock return correlations in the 1980s compared to the 1970s is only of a small magnitude. Similarly, King et al. (1994) find little support for a trend increase in correlations among stock markets for the 1970–1990 period. They conclude that authors who argue that markets have become increasingly integrated on the basis of data immediately around the crash in 1987 might confuse a transitory (i.e., around the crash) with a permanent increase in correlations.[2] In contrast, Longin and Solnik (1995), who explicitly model the conditional multivariate distribution of international equity returns, are able to show that, for the period 1960–1990, correlations

[1] For a comprehensive survey of the literature on comovement among international equity markets, see Karolyi and Stulz (2001).

[2] Corsetti et al. (2001) argue that the correlation between stock market returns is not necessarily larger during crisis periods than during tranquil periods. Longin and Solnik (2001) investigate the relationship between equity market correlations and volatility.