



# Equity market integration in the Asia-Pacific region: A smooth transition analysis

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## Abstract

We use a smooth transition logistic function to test for equity market integration in a sample of Asia-Pacific countries. This allows us to gauge the speed at which a market is becoming integrated. Of the countries we examine we find that Thailand has the fastest pace of global integration. When we examine the extent to which local integration is taking place, we find that Singapore is experiencing the fastest rise in market integration.

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## 1. Introduction

It is well documented that there has been a decline in the potential benefits of international diversification. This has been due largely to the increased levels of synchronicity displayed by many national equity markets. See, for example, Campbell and Hamao (1989), Eun and Shim (1989), and Taylor and Tonks (1989). Bekaert and Harvey (1995), Harvey (1995), and Korajczyk (1996) have shown, however, that emerging markets appear to exhibit relatively low correlations with developed equity markets, and can therefore provide diversification opportunities that may be unavailable in the latter. Partly due to diminishing diversification benefits in established markets, investors have recently focused to a greater extent than previously on underutilised and emerging markets. A consequence of this interest has been that many emerging markets have grown to become important sources of capital with a high return record. This is

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shown by [Goetzmann and Jorion \(1999\)](#) who find that the returns of a sample of emerging markets are three times higher than for a sample of developed markets.

In this paper, we study the extent to which a sample of Asia-Pacific countries has become less segmented in recent years. The governments of all four countries that we study (Korea, Singapore, Taiwan, and Thailand) have each designated stock market expansion as a priority, and all have undertaken programmes of financial reforms designed to encourage foreign investment. As a result, we might expect at least some of these countries to experience an increase in market integration. The innovation in this paper is that we use a logistic smooth transition model to test whether the sample stock markets are becoming less segmented. The smooth transition model assumes that the move from one regime to another is not instantaneous. Instead, progress is assumed to be a gradual process. The smooth transition model is therefore quite appealing when applied to the study of stock market integration. We might expect that even when countries embark on a set of wide-ranging reforms likely to reduce market segmentation, it is unlikely that the impact of these changes will be felt immediately. The model we estimate can indicate how quickly a market is becoming integrated, and it will allow us to gauge, in a single coefficient, whether an increase in multilateral integration has taken place.

We find that in the case of the Asia-Pacific countries, there has been a significant movement towards market integration during the late 1990s, both locally and globally. Of the countries in the region that we study, the pace of global integration appears to be greatest in Thailand. When focusing on local integration, we find that the stock market of Singapore is experiencing the fastest rise in market integration. We find no reduction in market segmentation either globally or locally in Taiwan. The remainder of our paper is set out as follows. Section 2 discusses previous work on equity market integration. Section 3 presents the data and looks at the changing patterns of integration in Asia-Pacific countries. Section 4 estimates the smooth transition model and presents the results. Section 5 summarises our paper and draws together the conclusions.

## **2. Financial market linkages**

A number of papers have shown that the potential for international diversification of the sort outlined by [Grubel and Fadner \(1971\)](#), [Lessard \(1973\)](#), [Levy and Sarnat \(1970\)](#), and [Solnik \(1974\)](#) has diminished over time. Research has shown that world equity markets have responded to institutional and economic evolutions by becoming more integrated (see [Kaplanis, 1988](#); [Bekaert and Harvey, 1995](#)). [Eun and Shim \(1989\)](#) have argued that closer stock market comovement is the natural consequence of greater economic integration that has been taking place over time. [Janakiramanan and Lamba \(1998\)](#) agree, but suggest that the world's dominant economy is likely to be the driving force behind stock markets elsewhere. They suggest that the stronger the ties with the dominant economy, the more integrated the stock market will be. This is supported empirically by [Eun and Shim \(1989\)](#), who found that the U.S. market heavily influences most world markets, but no single country has a strong influence on U.S. returns.

During the late 1970s and early 1980s, associated with major developed markets was the widespread liberalisation of financial markets, improvements to market surveillance,

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