



The determinants of stock returns in a small open economy

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Abstract

This paper examines the determinants of stock returns in a small open economy using an APT framework. We focus on the Swiss stock market whose feature is to include a large proportion of firms that are exposed to foreign economic conditions. Both a statistical and a macroeconomic implementation of the model are performed on industrial sector indices for the period 1986–2002. It is found that statistical factors yield a better representation of the determinants of stock returns than macroeconomic variables. Stock returns are influenced by both global and local economic conditions, suggesting that the Swiss market is an internationally imperfectly integrated market. © 2003 Elsevier Inc. All rights reserved.

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1. Introduction

Identifying the forces that drive stock returns is a major concern for practice and academic research. Financial theory provides several asset pricing models that relate expected returns to one or several variables representing various sources of risk. The identity of these variables depends on the assumptions on which the model is built. The most popular asset pricing models are the Capital Asset Pricing Model (CAPM, one source of risk) and the Arbitrage Pricing Theory (APT, several sources of risk). Such models are used, e.g., to assess the performance of managed funds or measure the cost of capital.

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Early versions of these models were developed under the assumption that investors have access to domestic securities only. This is a reasonable assumption if agents live in a closed economy or if a given country's financial market is totally segmented from other markets. These models have been tested extensively in the financial economics literature, but tests of the CAPM are at best unconvincing, and several anomalies have been reported. As factors are not explicitly specified by theory, two empirical versions of the APT have been implemented: factors are either extracted by means of statistical techniques or are prespecified. In their seminal paper, [Chen, Roll, and Ross \(1986\)](#) consider the influence of a set of six prespecified macroeconomic U.S. variables and find that three such factors are priced for the U.S. stock market. A number of authors have taken the same approach for various stock markets (e.g., [Hamao, 1988](#), for Japan; [Antoniou, Garrett, & Priestley, 1998](#), for UK).

In another class of models, the assumption of investment being solely domestic is relaxed. In such a context, markets are assumed to be perfectly integrated because of the presence of arbitrageurs that trade stocks internationally. Such trading equalizes the price of stocks with the same payoffs across markets. This has led to the extension of domestic pricing models to international models, such as the various versions of the international CAPM or the international APT. Typically, the world market portfolio and the foreign exchange risk are considered as global sources of risk in the international CAPM (e.g., [Korajczyk & Viallet, 1989](#)), whereas various global factors are hypothesized to impact on stock prices in the international APT (e.g., [Ferson & Harvey, 1994](#)). Empirical evidence pertaining to these models is mixed (for surveys, see [Heston, Rouwenhorst, & Wessels, 1995](#); [Karolyi & Stulz, 2003](#)). As such models rely on the joint hypothesis of the validity of the model and of the perfect integration of international stock markets, it is impossible, however, to attribute rejection to any one of the two assumptions.

In an era of increasing globalization, it seems reasonable to assume that most developed markets would be integrated. The empirical international asset pricing literature suggests that this is unlikely to be the case, and that most markets are in fact imperfectly integrated. For instance, country effects have been shown to dominate industry effects ([Heston & Rouwenhorst, 1994](#)). Further, [Griffin and Karolyi \(1998\)](#) find that industries with internationally traded goods are more sensitive to global industry factors than firms that produce goods that are only domestically traded. [Fedorov and Sarkissian \(2000\)](#) and [Griffin and Stulz \(2001\)](#) also conclude that companies or industries with internationally traded goods are more integrated due to the cash flows of such firms being more sensitive to global factors. Finally, there is clear evidence that investors do not diversify their portfolios internationally as much as is suggested by portfolio theory. This phenomenon is known as the home bias and is a well-known anomaly in the international finance literature (for a review, see [Lewis, 1999](#)). This bias is the sign of the existence of market imperfections that prevent investors from diversifying their portfolio in an optimal way. Besides barriers to international investments, there are also additional costs related to such investments. These results constitute evidence against the assumption of perfect international market integration. In this case, pure international asset pricing models may not constitute a good representation of reality.

Given this, theoretical asset pricing models assuming partial integration would appear to be better suited to explain stock returns. Such models provide a pricing equation both for securities that can and for securities that cannot be held by foreign investors ([Cooper & Kaplanis, 2000](#); [Errunza & Losq, 1985](#); [Hietala, 1989](#)). However, these models neither offer any indication on how to measure the level of integration of a specific market, nor do they provide a general equilibrium relationship that can be used

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