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Pricing currency risk in the stock market: Evidence from Finland and Sweden 1970–2009

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ABSTRACT

We investigate the role of currency risk on stock markets in two interlinked Nordic countries exhibiting a gradual move from fixed to floating exchange rates. We apply the [Ding and Engle \(2001\)](#) covariance stationary specification in a multivariate GARCH-M setup to test a conditional international asset pricing model. Using a sample period from 1970 to 2009, we find that the currency risk is priced in both stock markets, and that the price and the risk premium are lower after the floatation of the currencies, especially for Finland. We also find the cross-country exchange rate shock from Finland to affect the price of currency risk in Sweden, but not vice versa. Finally, we discuss some of the potential issues in applying multivariate GARCH-M specifications in tests of asset pricing models.

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1. Introduction

During the past few decades, foreign investments have become easier and more cost efficient to conduct. The general liberalization of administrative and legal restrictions on the financial markets has provided investors a much larger investment opportunity set than ever before. As a part of this development, many developed countries have abandoned fixed exchange rate systems and moved towards market-determined floating rates and abolished foreign-exchange controls. However, there

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are still many emerging countries with currencies that are either fixed, managed or tied to certain target zones (e.g., many Eastern European countries, Russia, and China).

Since the pricing of currency risk in the stock market is still a somewhat controversial issue, many papers explore the role of currency risk in asset pricing. For example, using data from large countries, De Santis and Gérard (1998) conclude that the time variation in the risk premium could explain why the unconditional models are unable to detect highly time-varying currency risk. Antell and Vaihekoski (2007) also find support for the pricing of currency risk in Finland, but they conclude that the basic time-varying price of currency risk approach does not necessarily fit countries with changing currency regimes. Therefore, the choice between different currency regimes should be accounted for more explicitly in the estimation.

In this paper we study the pricing of global and local market risks, and in particular currency risk on the Finnish and Swedish stock markets. This study extends the analysis in Antell and Vaihekoski (2007) in a number of ways. First, we add Sweden into the analysis and extend the sample period by more than four years. Both Finland and Sweden are export oriented countries known to have used competitive devaluations. This gives us a unique chance to study cross-country effects in currency risk. Second, we test for the effect of fixed and floating currency regimes on the pricing of currency risk, as both the Finnish and Swedish currencies were first pegged against a currency index within a pre-specified band but were both forced to let their currencies float almost at the same time in 1992. Finally, we discuss some of the practical caveats in using the Ding and Engle (2001) GARCH specification within the framework of De Santis and Gérard (1998) as it has become popular in tests of asset pricing models (see e.g., De Santis et al., 2003; Barr and Priestley, 2004; Chaieb and Errunza, 2007).

Overall, we believe the institutional features and the particular sample period make the Finnish and Swedish stock markets unique test laboratories for currency risk within the conditional international asset pricing framework. Including two rather similar, yet in many ways different countries allows also for interesting comparison between the countries. Our primary goal is to explore how the currency risk is priced in these stock markets. In particular, we study the role of the exchange rate mechanism. Second, we study how Finland and Sweden differ in their pricing with respect to local sources of risk. The results can shed light on the role of currency risk and local risk on the pricing of stocks in countries that are currently emerging from segmentation and also restricting the free valuation of their currencies.

The remainder of the paper is organized as follows. Section 2 presents the theoretical background and research methodology. Section 3 gives a short introduction to the history of Finnish and Swedish currency policy and presents the data in this study. Section 4 shows the empirical results. Section 5 concludes and offers some suggestions for further research.

2. Research methodology

2.1. Theoretical background

If capital markets are economically fully integrated, the expected return is driven by the same pricing model with a common set of risk factors with common risk premia in all countries. Return differences are exclusively explained by differences in the exposure to the risk factors. Suppose the correct model is given by the one-factor market model or the CAPM. Then, as shown by Adler and Dumas (1983), the expected return is driven by the exposure to the value-weighted global equity benchmark portfolio. In this case the conditional world CAPM is determined by

$$E[r_{i,t+1}|\Omega_t] = \beta_{i,t+1}(\Omega_t)E[r_{m,t+1}|\Omega_t], \quad (1)$$

where $E[r_{i,t+1}|\Omega_t]$ and $E[r_{m,t+1}|\Omega_t]$ are expected excess returns on asset i and the global market portfolio conditional on investors' information set Ω_t available at time t . All returns, including the risk-free rate, are measured in a common numeraire currency. Since the conditional beta is defined as $\text{Cov}(r_{i,t+1}, r_{m,t+1}|\Omega_t) \text{Var}(r_{m,t+1}|\Omega_t)^{-1}$, we can use Eq. (1) to define the ratio $E[r_{m,t+1}|\Omega_t] \text{Var}(r_{m,t+1}|\Omega_t)^{-1}$,

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