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The threshold consumption correlation-based approach to international capital mobility: Evidence from advanced and developing countries

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ABSTRACT

Using the consumption correlation-based criterion, this paper analyzes international capital mobility for both advanced and developing countries. We provide evidence that global capital markets are imperfectly integrated for both advanced and developing countries. However, a clear difference between these groups of countries emerges when their consumption growth has stagnated; in developing countries at such times, the opportunity to smooth their consumption drops dramatically.

1. Introduction

International capital mobility is an important research topic in international finance since most countries are now engaged in exchanges of, not only economic goods and services, but also financial assets. Furthermore, different theoretical assumptions regarding the level of a country's integration to the rest of the world lead to different policy implications. For these reasons, much research has been conducted in this area in the past.

There are broadly two categories of methodology when assessing international capital mobility. One is based on macroeconomic variables; the investment-savings (Feldstein and Horioka, 1980) and consumption correlation (Obstfeld, 1994) criteria. Among them the former approach, which suggests no investment-savings correlation in perfectly integrated markets, dominates the literature. However, there is no definitive conclusion reached in previous studies from this approach. Although international market integration has been advancing over the years and higher integration is observed at the intra-country level rather than in the cross-country context (Atkeson and Bayoumi, 1993), it is not clear as to whether this is appropriate for assessing capital mobility.[2] For

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[2] In his literature survey, Frankel (1992) summarizes several theoretical approaches for measuring international capital mobility; namely, the investment-savings correlation method (Feldstein and Horioka, 1980) and interest parity conditions. Among these quantitative approaches however,

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example, there is still strong evidence against perfect capital mobility even for advanced countries during a period with minimal regulation (Obstfeld and Rogoff, 2000), and furthermore it suggests a higher level of integration for developing countries than advanced countries (Sinha and Sinha, 2004).[3]

International capital mobility can be also examined using interest parity conditions, and it is probably fair to say that in the long-run there is more evidence of global financial market integration using interest parity conditions than from the investment-savings criterion. For example, Camarero et al. (2010) showed that the real interest parity condition holds for a panel of advanced countries in the long-run when structural breaks are considered. Lothian and Wu (2011) instead used the uncovered interest parity (UIP) condition using a long history of data and provided evidence in favor of this condition when the sample period of 1980s is dropped from the analysis. Similarly, Chinn and Meredith (2004) provided support for the UIP for a longer maturity. Furthermore, Taylor (1987) used contemporaneously sampled data to test the covered interest parity (CIP) condition and overwhelmingly supported this condition for advanced countries. In contrast, these interest parity conditions seem to be less supported in the short-run because of the presence of transaction costs, expectations errors, risk premiums, among many other factors (e.g., Sarno, 2005).

Against this background, we study global capital market integration based on the consumption correlation criterion for advanced and developing countries while at the same time considering regime-shifts in the data. This criterion has been argued as having a more solid theoretical foundation than the investment-savings criterion (Obstfeld, 1986; Taylor, 1994) and is viewed as a second best approach since our data set has wide country coverage and includes data from developing countries which often do not possess long historical data on interest rates.[4] Furthermore, the importance of shifts is underlined in our analysis since they have been discussed as one reason for the poor performance of the consumption function (e.g., Koedijk and Smant, 1994; Hall et al., 1997; Dufrenot and Mignon, 2004). Finally, note that our main focus on a cross-country consumption correlation is closely related to the consumption correlation puzzle (Backus et al., 1992) which asserts that consumption should be more highly correlated across countries than with domestic output since country-specific income risks are insured in a perfect world.

2. Theoretical model

Obstfeld (1994) used the consumption correlation-based approach in order to assess international capital mobility. This model indicates that there is an equi-proportional increase in consumption between countries when the market is perfectly integrated, and in contrast no correlation must exist between their consumption if the market is completely closed. In the latter case, this implies that consumers cannot smooth their consumption changes, by using financial resources in other countries, in response to an economic shock to the country. This model has been developed for perfectly competitive and open markets and for simplicity is summarized below in the two-country setting (countries i and j).

An economic agent in country i is assumed to maximize his utility which is a function of future consumption (C_{it}) with a preference shock (ξ_{it}), and with the initial period (i.e., $t=0$), this objective function is:

$$U_0 = E\left[\sum_{t=0}^{\infty} \beta_i^t u(C_{it},\ \xi_{it}) | I_0\right] \tag{1}$$

where E represents expectations of rational consumers and I an information set. Parameter β is the discount factor ($0<\beta_i<1$) and measures the level of patience of consumers, and here this parameter is assumed to be constant over time. The consumers' utility ($u(.)$) is assumed to have a form of a constant relative risk aversion (CRRA) which holds in both countries (i and j). For country i, this can be expressed as:

$$u(C_i,\ \xi_i) = \frac{C_i^{1-\theta}}{1-\theta}\exp(\xi_i) \tag{2}$$

The θ is a risk aversion coefficient ($\theta>0$) and is assumed to be the same over time and country following previous studies (Obstfeld, 1994).[5] Since the same type of the utility function is used in these countries, their dynamic consumption behaviors are also identical in perfectly competitive and open markets. This can be expressed as (3), based on the Euler equation, where the marginal rate of intertemporal substitution becomes identical in these two countries.

$$\frac{E\beta_i^t C_{it}^{-\theta}\exp(\xi_{it})}{C_{i0}^{-\theta}} = \frac{E\beta_j^t C_{jt}^{-\theta}\exp(\xi_{jt})}{C_{j0}^{-\theta}} \tag{3}$$

The C_{i0} and C_{j0} indicate the initial level of consumption for countries i and j. In natural log, Eq. (3) can be written as:[6]

$$\ln C_{it} = \ln C_{jt} + \ln\left(\frac{C_{i0}}{C_{j0}}\right) + \ln\left(\frac{\beta_i}{\beta_j}\right)\left(\frac{t}{\theta}\right) + \left(\frac{1}{\theta}\right)(\xi_{it}-\xi_{jt}) \tag{4}$$

This shows that there are equi-proportional changes in consumption between two countries when the capital markets are perfectly open.

Given that our study deals with more than two countries, Eq. (4) cannot be used directly here. Thus, country j now represents the rest of the countries (i.e., other than

Frankel argues that the covered interest parity condition is probably most appropriate for studying capital mobility since this condition relies less on other economic assumptions.

[3] See Apergis and Tsoumas (2009) for a literature survey on the investment-savings relationship. The presence of a non-tradable sector and a significant amount of international aid lead to an interpretation of higher integration in developing countries.

[4] Furthermore, generally speaking, it is difficult to obtain high quality savings data.

[5] Das and Sarkar (2010) showed the constancy of the relative risk aversion parameter from the stock data of major stock markets.

[6] Expectation errors are ignored in Eq. (3) since they are on average equal to zero based on the assumption of rational expectations.