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## Productivity shocks and the current account: An alternative perspective of capital market integration

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### A B S T R A C T

This paper presents an analysis of capital market integration grounded in the intertemporal model of the current account. The model is extended to encompass liquidity constraints and fitted to data for euro-area countries and Italian and Canadian regions. With respect to capital mobility, regions within countries serve as a natural benchmark for the euro-area currency union. The empirical results are generally consistent with the model with respect to the responses of investment and the current account to productivity shocks, and also suggest that liquidity constraints at the country level do not add significantly to constraints at the regional level.

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## 1. Introduction

Financial market integration is central to facilitating adjustment in response to economic shocks and constitutes a key prerequisite for the successful development of a currency union. At the international level, the degree of capital mobility is generally perceived to be quite high despite some evidence in the empirical literature to the contrary. Much of this negative evidence stems from savings–investment correlations across countries or across regions within countries, as proposed by Feldstein and Horioka (1980). However, it is well known that Feldstein–Horioka-type regressions have several shortcomings that undermine inferences about capital mobility, not least of which is the fact that the tests are not derived from a clear theoretical framework.<sup>1</sup> Indeed, in response to certain types of shocks, it is

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<sup>1</sup> See Coakley et al. (1998) who survey the large literature spurred by Feldstein and Horioka (1980). Blanchard and Giavazzi (2002) and Armstrong et al. (1996) focus on results for countries in the EU. For savings–investment correlations across regions within countries, see Thomas (1993) and Dekle (1996).

entirely possible that savings and investment are positively correlated even though there is perfect capital mobility. Moreover, Obstfeld and Taylor (2004) document the fact that estimates of the savings-retention coefficient on more recent data suggest that international integration among developed countries is increasing under this criterion. Their analysis of a wide range of empirical measures also highlights the inherent difficulty in quantifying the degree of capital mobility, especially in regards to finding an appropriate benchmark with which to draw judgement.

This paper proposes an alternative method to assess capital mobility that is explicitly based on an intertemporal optimizing model, thereby avoiding many of the difficulties inherent in the traditional framework, which is then used to analyze capital market integration of euro-area countries relative to those of regions within a country. In particular, the intertemporal model of the current account set out by Glick and Rogoff (1995) is extended to include Campbell and Mankiw (1991)-type liquidity-constrained agents. The extension helps to explain how the relative responses of the current account and investment depend on the fraction of liquidity-constrained agents, the degree of persistence of productivity shocks, and the extent to which productivity shocks are common or idiosyncratic. Importantly, the relative responses of investment and the current account to productivity shocks provide a meaningful gauge of the degree of capital market integration only if they are derived from productivity shocks that are similar in nature, both in terms of persistence and incidence.<sup>2</sup>

This framework is then applied to data for euro-area countries and Italian and Canadian regions to obtain a comparison of the relative degree of capital mobility across countries and across regions. The main reason for comparing countries and regions is that the latter serve as a natural benchmark for the euro-area currency union. Since international financial market imperfections might reflect both regional (i.e., internal liquidity constraints) and cross-country imperfections (i.e., external liquidity constraints), a measure of regional capital mobility also serves as a benchmark for judging measures of international capital mobility.

The empirical findings generally lend support to the intertemporal model and suggest that capital market imperfections are not significantly stronger at the country level than at the regional level. Specifically, positive productivity shocks generally raise investment, irrespective of their persistence, while the current account improves (higher surplus) in response to temporary shocks but declines (lower surplus) in the face of persistent ones, as predicted by the theoretical model. Comparing the relative responses of the current account and investment to productivity shocks with a similar degree of persistence reveals that capital mobility at the country level is not that dissimilar to that at the regional level. This is consistent with the finding of Obstfeld and Taylor (2004) that international capital mobility from a broad historical perspective has increased steadily since the 1970s.

The rest of the paper is organized as follows. Section 2 presents a new theoretical framework for investigating the degree of capital market integration which is taken to the data in Section 3. Section 4 concludes and some technical details are included in an Appendix.

## 2. A theoretical framework

The theoretical foundation underlying the econometric framework builds on the model developed by Glick and Rogoff (1995) and introduces Campbell and Mankiw (1991)-type liquidity-constrained consumers. The economy is populated by two types of agents, constrained and unconstrained, accounting for  $\lambda$  and  $(1 - \lambda)$  share of the population, respectively. Constrained consumers have no access to capital markets whatsoever and simply consume their current income. Unconstrained agents can borrow and lend freely in world capital markets at the riskless gross world real interest rate of  $r$ .

<sup>2</sup> In a related study, Shibata and Shintani (1998) introduce liquidity-constrained agents in an intertemporal model of the current account and gauge capital mobility by comparing the correlation between consumption and net output growth (total output less investment and government spending) for 11 OECD countries. However, their framework does not consider investment and thus cannot capture the impact of productivity shocks on capital flows. These considerations are important not least because differences in the nature of productivity shocks make it possible for consumption and net output to be highly correlated even though capital market integration is high. In addition, Shibata and Shintani (1998) do not make use of regional data to obtain a benchmark with which to assess cross-country capital mobility.

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