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The "mother of all puzzles" at thirty: A meta-analysis



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ABSTRACT

This paper provides a meta-analysis of 1651 point estimates of Feldstein and Horioka saving retention coefficient from 49 peer-reviewed papers published over three decades. We get two main results. First, correcting for publication bias, we find a consistent underlying coefficient lying between 0.56 and 0.67 for studies using the original paper. Second, heterogeneity reported in the estimates of the Feldstein and Horioka can be explained by a few main factors. In particular, we find evidence that the saving retention coefficient is systematically underestimated with models written in first difference, models using the saving ratio or the current account ratio as the dependent variable instead of the investment ratio, and models including indicators of the public deficit or indicators of the country size as additional explanatory variables.

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1. Introduction

In a pioneering paper, Feldstein and Horioka (1980) investigated the consequences of international financial integration on the correlation between domestic saving and investment. They argued that a low value of the saving retention coefficient should be observed in the case of perfect capital mobility. Testing this assumption over a cross section sample for 16 OECD countries, they found a value of the saving retention coefficient equal to 0.85 and failed to reject the null hypothesis of a one-to-one saving-investment association. They concluded that zero capital mobility was supported by the data, which appeared to be at odds with most theoretical models assuming perfect capital mobility and with the observed increasing financial integration. The Feldstein and Horioka puzzle was thus born.

More than thirty years after the publication of the original paper, the basic finding that national saving and investment are closely related has generated a huge theoretical and empirical literature. As an example, searching on EconLit for keywords related to the seminal publication of Feldstein and Horioka, we find that 994 articles have been published by December 2008, so that the literature on this topic has averaged 3 monthly papers since 1980. The Feldstein and Horioka result still remains more or less a stylized fact of international macroeconomics. It has even been crowned as "the mother of all puzzles" in international finance (Obstfeld and Rogoff, 2001).

This impressive literature that spans over thirty years is heterogeneous on several aspects: the saving investment link has been measured extensively for advanced and developing countries, for nations and regions, through various regression specifications, various estimation methods, and with alternative data frequencies. As a consequence, reported results are hardly comparable with one another on a direct basis. The quantitative evaluation of an underlying consistent value of the saving investment relationship thus requires a more rigorous treatment such as the one provided by meta-analysis techniques.

Meta-analysis provides a set of quantitative methods to evaluate empirical results from different studies with similar characteristics or, alternatively, with different characteristics that can be controlled for. This method is helpful for clarifying controversial issues and has been used in various fields of economics such as international economics, public economics, transport economics, etc. Regarding the field of international macroeconomics, this approach has already been applied to study different questions such as the trade effect of monetary union (Rose and Stanley, 2005), the impact of exchange rate volatility on trade (Ćorić and Pugh, 2010), the correlation of business cycle between countries (Fidrmuc and Korhonen, 2006) or the analysis of capital controls (Magud et al., 2011).

The aim of this paper is to use the statistical tools of meta-analysis to determine the underlying consistent value of the saving-investment coefficient that can be extracted from this literature. This statistical approach is well suited for the question at hand since most papers have an empirical content and report at least one main estimated value. We do not provide a broad survey on the subject and we refer to Apergis and Tsoumas (2009) for a recent overview of this literature. Rather, we concentrate on a quantitative analysis of the underlying value of the saving retention coefficient that emerges from a selection of the published articles. Then we evaluate the factors that may explain discrepancies across estimates.

The conduct of our meta-analysis of the Feldstein and Horioka relationship is in line with the common practices of the field (Stanley et al., 2013, Havranek and Irsova, 2011). In a first step we build a representative sample of the literature – called the meta-sample – that has been published in peerreviewed journals or working paper series, and we evaluate whether the selected studies are subject to publication biases. In a second step we proceed to a meta-regression analysis (MRA) to determine whether the sample delivers a underlying true value for the saving retention coefficient, and to detect the possible factors that could explain the estimate heterogeneities.

In a previous study, Bineau (2010) provides a meta-analysis of the Feldstein and Horioka coefficient. We depart from this study on various aspects. First, we use a different meta sample to provide a complementary analysis of this question. We use a larger data set containing 1651 point estimates (instead of 1349) which proves worthwhile given the great number of papers published on this topic over the last 30 years. Second, his analysis mainly concentrates on the original way of measuring the puzzle that links the ratio of investment over output to the ratio of savings over output. In our paper we enlarge the analysis to alternative approaches provided in the literature (such as the

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