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## Comment

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“The Feldstein-Horioka Fact” by Domenico Giannone and Michele Lenza deploys a new methodology to address an old question: how to interpret the Feldstein-Horioka puzzle that national saving and investment rates appear to be highly correlated for industrial countries, especially when looking at averages of annual observations. The authors use a new methodology popular in the business cycle literature, factor-augmented panel regression, to attempt to isolate idiosyncratic sources of fluctuations. The contribution to existing studies is that countries are allowed to react to global shocks with specific sign and magnitude. The paper shows that the homogeneity restriction is rejected by the data and biases the estimation of the saving-retention coefficient. Indeed, allowing for a heterogeneous propagation mechanism of global shocks, the saving-retention coefficient drops significantly from the 1980s on, consistent with the increase in capital mobility across OECD countries.

The structure of the model is given by

$$S_{j,t} = \lambda_{1,j}^S f_{1,t} + \dots + \lambda_{r,j}^S f_{r,t} + S_{j,t}^{id},$$

$$I_{j,t} = \lambda_{1,j}^I f_{1,t} + \dots + \lambda_{r,j}^I f_{r,t} + I_{j,t}^{id},$$

where  $S_{jt}$  is saving in country  $j$  at time  $t$ ,  $I_{jt}$  is investment, and the  $f_{kt}$  are common unobservable macro factors that drive saving and investment across countries. The paper is interested in estimating the following regression:

$$I_{j,t}^{id} = \alpha_j + \beta S_{j,t}^{id} + \varepsilon_{j,t}.$$

But of course to do so, one needs to take into account the common global macro factors. Following the macro factor model literature, these are proxied

via the principal components of a panel data set comprising saving and investment rates in OECD countries. The point is that if you estimate

$$I_{j,t} = \alpha_j + \beta S_{j,t} + \delta_{1,j} f_{1,t} + \dots + \delta_{r,j} f_{r,t} + \varepsilon_{j,t}$$

with a time series, there will be omitted variable bias in the estimate of  $\beta$ . As Frankel (1992) points out in his survey of the Feldstein-Horioka literature, the original authors were aware of this potential bias in a time-series regression of the saving-retention coefficient, which is why they estimated over a cross section of annual averages for the countries in their sample. This paper acknowledges that in the original Feldstein-Horioka regression

$$\frac{1}{T} \sum_{t=1}^T I_{j,t} = \mu + \beta_L \frac{1}{T} \sum_{t=1}^T S_{j,t} + \bar{\eta}_j,$$

temporal aggregation averages out the short- and medium-run fluctuations in the data. Therefore, the long-run regression is able to control for short- and medium-run effects of global shocks on saving and investment. On the other hand, time aggregation does not average out the long-run effects of global factors, and when these effects are different across saving and investment rates in different countries, the country-specific long-run effect of global shocks will not be captured by the constant term and, hence, will be contained in the error. Since observed saving is also affected by global shocks, the estimation is not consistent. Table 1 shows the results for a two-factor model.

A very nice feature of this paper is that the authors seek to relate their global factors to observables. See figures 1 and 2.

**Table 1**  
Including the Unobservable Common Factors Lowers the Estimated Feldstein-Horioka Coefficient from 0.60 to 0.29: Regression Results

Type of Regression	Sample			
	1970–2004	1970–79	1980–89	1990–2004
Long-run regression (eq. [7])	.60 [.11]	.61 [.13]	.62 [.10]	.50 [.11]
Baseline (eq. [8])	.60 [.03]	.60 [.13]	.37 [.08]	.34 [.05]
Time effects (eq. [9])	.42 [.03]	.62 [.06]	.32 [.07]	.29 [.05]
Global investment rate (eq. [10a])	.34 [.03]	.53 [.06]	.28 [.07]	.23 [.05]
Two factors (eq. [10b])	.29 [.04]	.52 [.11]	.14 [.11]	-.03 [.07]

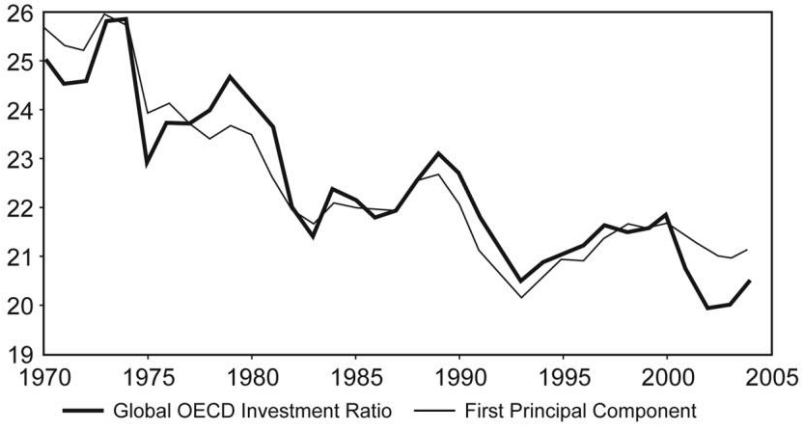


Fig. 1. First principal component

As these examples show, the paper is correct that we want to control for common versus country-specific shocks when interpreting Feldstein-Horioka regressions. I think that the empirical approach of this paper has promise for this application. However, future work should take more seriously that even with perfect capital mobility and country-specific shocks, the regression betas are both country and shock specific *and are not necessarily informative about the degree of capital mobility*. The bottom line is that even if we control for common shocks—as this paper does in a nice way—the betas we estimate are not necessarily indicative of the degree of capital mobility. A similar theme emerges when we allow for productivity

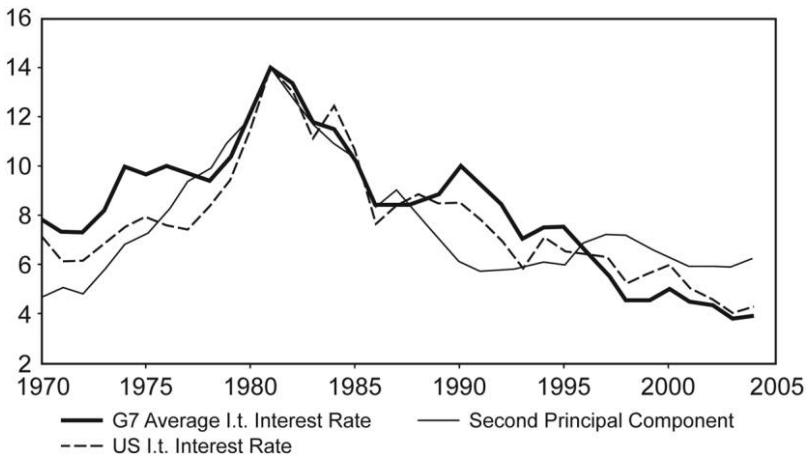


Fig. 2. Second principal component

shocks as in the open economy real business cycle literature of the 1990s as well as the new general equilibrium financial crisis/saving glut models that allow for differences in financial development.

### **Reference**

Frankel, J. 1992. "Measuring International Capital Mobility: A Review." *American Economic Review Papers and Proceedings* 82 (May): 197–202.