

## **“A Note on Human Capital and the Feldstein-Horioka Puzzle”**

### **Authors’ response to the comments of the second referee**

The referee makes the following useful suggestions regarding our paper, which could be incorporated in a revised version of the paper.

*1. Why the addition of human capital investment does not matter to the FH paradox? How big is investment on human capital,  $I_h$ , compared to investment on capital goods? How much does it vary?*

The referee rightly points out the importance of discussing the data used in our estimation. We think that this point can be addressed by including Table A1 of the Appendix (which has been uploaded in response to John Seater’s comments) in a revised version of the paper. The data suggest that investment in human capital is not negligible compared to the investment in physical capital. In fact, adding human capital investment increases total investment by 25% on average.

Regarding the volatility of the series used, it is true that both human capital expenditure,  $I_h/Y$ , and private spending to education,  $I_{hpr}/Y$ , have a lower standard deviation than the traditional measures of investment,  $I/Y$ , and savings,  $S/Y$ :

Series	$I/Y$ (1)	$I_h/Y$ (2)	$IT/Y=(1)+(2)$ (3)	$S/Y$ (4)	$I_{hpr}/Y$ (5)	$Sbar/Y=(4)+(5)$ (6)
Standard Deviation	3.17	1.02	3.01	5.04	0.68	5.09

Thus, the referee is correct in guessing that incorporating human capital in the saving and investment measures does not matter to the Feldstein-Horioka paradox because the volatility of what gets added to the traditional measures of investment and saving is significantly lower than the volatility of the original variables. It is also worth pointing that the volatility of the new investment series (column 3) does not rise relative to the original series (column 1). This is due to a strong negative correlation between the traditional measure of investment (column 1) and investment in human

capital (column 2). This negative correlation is to be expected since during recessions investment in plant and equipment is low (mainly due to cash-flow constraints on investment) but investment in human capital is larger than usual since the opportunity cost of going to (or staying in) school is small due to worsened employment prospects.

*2. Why the government spending on education is not considered “savings” if private spending is?*

Private expenditure on education,  $I_{hpr}$  is reallocated from consumption,  $C$ , to saving,  $S$ , since we want to treat a household’s decision to spend on acquiring human capital in the same way as, for example, its decision to spend on acquiring a bank deposit – both are savings placed on different assets.

We also want to treat investment in human capital in the same way we treat physical capital investment: Thus, the same way that the government’s decision to spend on building a bridge represents government investment but is not measured (or regarded) as government saving, we treat government spending on education as government investment but we do not measure it as government saving.

*3. The discussion of the WLS technique should be shortened.*

We have no objection to report the WLS results as suggested by the referee. The reason we did not include them in the current version of the paper is that our results indicate that using the WLS would either introduce heteroskedasticity in our model (in the sub-periods in which the assumption of homoskedasticity cannot be rejected) or that it would not correct for existing heteroskedasticity. Table 2 (in the paper) indicates that we cannot reject homoskedasticity at the 10% significance level for the post 1996 sub-samples. However, even for the sub-samples where heteroskedasticity appears to be a problem (1986-1995), the WLS model does not seem a promising way of dealing with heteroskedasticity, since the coefficients of  $w_i$  depicted in the last column of table 2 are insignificant.

*4. The state of the literature regarding the Feldstein-Horioka paradox.*

The referee points out that many studies (including ours) show that the FH finding gets weaker over time. Thus, we agree that the relevant sentence on page 3 should be rephrased.