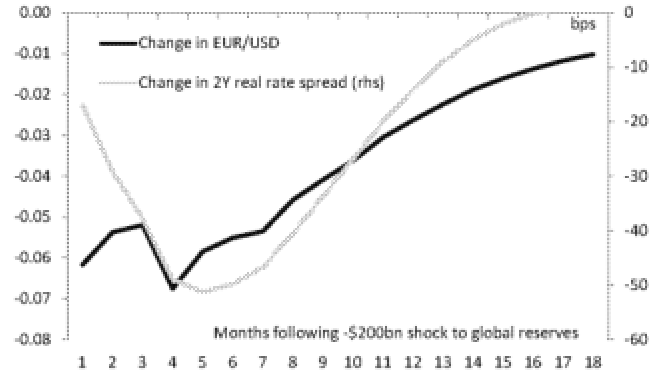
central banks. Regressing EUR/USD on the 2Y real rate spread and global reserves in first differences—the latter entering with a two-month lag to ensure strict exogeneity—indicates that the above shock would be worth a depreciation of 6 cents.

This first estimate proved surprisingly robust when using dynamic vector-autoregressive models again to deal with endogeneity and lags more properly: the likely impact on EUR/USD amounts to almost 7 cents in the first three months before petering out. Our models also include the rate spread, ordered above the exchange rate. The much greater positive impact on US than Eurozone yields raises the 2Y real rate spread in favour of the US, consistent with the negative impact on the exchange rate (Figure 26). A rough beta therefore associates an exogenous shock to global reserves—that is one not triggered by valuation effects—worth $100bn with EUR/USD by weakening by 3 cents. For other reserve currencies, however, our models yielded insignificant results.

Figure 25: Changes in global reserves are tightly correlated with fluctuations in EUR/USD; less so with USD/JPY

Source: Deutsche Bank

Figure 26: A negative $200bn shock to global reserves lowers EUR/USD by ~6 cents



Source: Deutsche Bank

Moving to the impact on fixed income, declining FX reserves should place upward pressure on developed market yields given that the bulk of reserves are allocated to fixed income. In a number of seminal speeches, Ben Bernanke argued that it was the EM "savings glut" and the reserve accumulation that accompanied it that contributed to unusually low bond yields in the 2000s known at the Greenspan "bond conundrum".[5] A large literature has been generated since. A recent working paper by ECB staff shows that the increase in foreign holdings of euro area bonds from 2000 to mid-2006 – Greenspan's "bond conundrum" period – is associated with a reduction of euro area long-term interest rates by about 1.55 percentage points, in line with the estimated impact on US Treasury yields by other studies.[6] On the short-term impact, one recent paper estimates that "if foreign official inflows into U.S. Treasuries were to decrease in a given month by $100 billion, 5-year Treasury rates would rise by about 40–60 basis points in the short run", consistent with our estimates above.[7] China and oil exporting countries played an important role in these flows.

[5] See Bernanke, B. "The Global Savings Glut and the US Current Account Deficit", April 14, 2005. & Bernanke, B. et. Al. "International Capital Flows and the Returns to Safe Assets", Federal Reserve Finance Discussion Papers 1014, February 2011.

[6] See Carvalho, D. and M Fidora (June 2015),"Capital inflows and euro area long-term interest rates", ECB working paper 1798

[7] Beltran et al (2013), "Foreign holdings of US Treasuries and US Treasury yields", *Journal of International Money and Finance*