This paper examines to what extent the build-up of "global imbalances" since the mid-1990s can be explained in a purely real open-economy DSGE model in which agents' perceptions of long-run growth are based on filtering observed changes in productivity. We show that long-run growth estimates based on filtering U.S. productivity data comove strongly with long-horizon survey expectations. By simulating the model in which agents filter data on U.S. productivity growth, we closely match the U.S. current account evolution. Moreover, with household preferences that control the wealth effect on labor supply, we can generate output movements in line with the data.