"Exchange Rates and Asset Prices in a Global Demand System"

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We develop and estimate an empirical framework that uses international holdings data to understand the forces of supply and demand that determine exchange rates, long-term yields, and stock prices across 36 countries. Global investors hold financial assets across many countries and have exchange rate exposure not only through short-term debt but also long-term debt and equity. The portfolio decisions of these investors across countries and asset classes are important for exchange rates, long-term yields, and stock prices. Government policies are also important. Conventional monetary policy determines the short-term rate. Fiscal policy and central bank purchases affect the supply of domestic debt. Central banks hold foreign debt in foreign exchange reserves, affecting the supply of foreign debt. All of these forces determine exchange rates and asset prices through market clearing of global financial markets.

Our empirical framework starts with the asset demand of investor countries and foreign exchange reserves, which depend on asset prices, exchange rates, and macro variables such as gross domestic product (GDP), real GDP per capita, and inflation. Demand also depends on risk measures including equity volatility and sovereign debt ratings. Bilateral variables including exports, imports, and the distance between investor and issuer countries are important for explaining cross-country financial investment. When we estimate the demand system, we find evidence for low demand elasticities, so that even relatively small shocks can lead to large price movements. The estimated demand elasticities are 42 for short-term debt, 4.2 for long-term debt, and 1.9 for equity. That is, equity demand decreases by 1.9 percent per 1 percent price increase.

Based on the estimated demand system and market clearing, we decompose the variance of annual changes in exchange rates and asset prices. Macro variables account for 26 percent, short-term rates account for 8 percent, long-term debt quantities account for 2 percent, and foreign exchange reserves account for 19 percent of the variation in exchange rates. These fundamental sources jointly account for 55 percent of the variation in exchange rates. The importance of latent demand that accounts for the remaining 45 percent is geographically concentrated in large investor countries. In particular, latent demand of US and European countries substituting across asset classes accounts for 16 percent of the variation in exchange rates.

While the macro variables account for 16 percent of the variation in long-term yields, the policy variables are much more important. Short-term rates account for 9 percent, long-term debt quantities account for 20 percent, and foreign exchange reserves account for 11 percent of the variation in long-term yields. These policy variables jointly account for 40 percent of the variation in long-term yields. In contrast, macro variables are the primary determinants of stock prices, accounting for 57 percent of the variation.

The demand system approach is also useful for interpreting major economic events, which we illustrate through a case study of the European sovereign debt crisis. We decompose sovereign yield spreads between Germany and the US as well as the southern euro countries and Germany. On the one hand, the relative timing of monetary easing accounts for almost all of the variation in the long-term yield spread between Germany and the US. Short-term rates account for 53 percent, and long-term debt quantities account for 15 percent of the variation in the long-term yield spread. On the other hand, the relative macro and fiscal experiences account for most of the variation in the long-term yield spreads between the southern euro countries and Germany. Macro variables account for 64 percent, and long-term debt quantities account for 14 percent of the variation in the long-term yield spreads.

US assets enjoy a special status in global financial markets because the US dollar is the most important reserve currency. Based on the estimated demand system and market clearing, we estimate the convenience yield on the US dollar, long-term debt, and equity. We also trace the investor origins of the convenience yield into a sum of special-status demand by investor countries and foreign exchange reserves. In the absence of special status, the expected annual appreciation of the US dollar relative to a value-weighted portfolio of foreign currencies would be 1.28 percentage points higher. The US long-term yield would be 2.15 percentage points higher, of which we attribute 0.48 percent to foreign exchange reserves, 0.51 percent to European investors, and 0.52 percent to Pacific investors. The US annual expected stock return would be 1.70 percentage points higher.

We conclude with three broad lessons. First, the significance of substitution effects across asset classes highlights the need to study exchange rates, long-term yields, and stock prices jointly. Second, central banks play an important role in managing exchange rates and the term structure of interest rates globally. Short-term rates account for 8 percent of the variation in exchange rates and 9 percent of the variation in long-term yields. Long-term debt quantities account for 20 percent of the variation in long-term yields. Foreign exchange reserves account for 19 percent of the variation in exchange rates and 11 percent of the variation in long-term yields. Third, the convenience yield on US assets is large across all asset classes. Because the special demand for US assets is geographically dispersed, the value of US assets is not necessarily vulnerable to investors from particular countries.