

Research Digest

Volatility and foreign assets

Increased saving due to economic uncertainty helps explain international debt patterns

When people are uncertain about the future, they save more: Precautionary savings is the term economists use for this phenomenon, and it's been used to explain lifetime saving patterns and financial booms and busts. Might it also be a factor in how much countries owe one another? That is, could people's saving behavior, surging when times are tough and shrinking when paychecks seem secure, explain the net foreign asset position of a country—the extent to which it is a creditor or debtor nation?

Minneapolis Fed economists Alessandra Fogli and Fabrizio Perri examine the relationship in a recent staff report, “Macroeconomic Volatility and External Imbalances” (SR 512, online at minneapolisfed.org), and determine that economic volatility “is an important determinant of the medium/long run evolution of external imbalances in developed countries.” The key mechanism leading from one to the other is caution about the future.

“The intuition is simple,” write Fogli and Perri. “In response to increases in domestic uncertainty agents increase their precautionary saving balances. Decreasing returns [and] increasing risk of domestic capital (arising from the increase in uncertainty) ... imply that the bulk of the additional precautionary saving will go into foreign assets.” Put briefly: Uncertain about their economic future, businesses and households spend less and save more; those higher savings flow, in part, into foreign assets.

The empirical picture

The report begins with a deep empirical analysis of the relationship between macro volatility and foreign asset positions in 20 OECD countries from 1970 to 2012. A cursory look at the 20 national graphs comparing net foreign assets and volatility hints at a strong positive link between the two. Japan and Belgium, for instance, have experienced substantial volatility over the past 40 years and become creditor nations as their net foreign assets (gross foreign assets minus gross foreign liabilities) have increased. Australia and the United Kingdom, in contrast, have experienced declining economic volatility and their net foreign assets have also declined. They are now international debtors.

The economists use regression analysis to study the relationship more carefully, accounting for factors other than uncertainty that have an effect on both volatil-

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PHOTOGRAPH BY STEVE NIEDORF

Fabrizio Perri and Alessandra Fogli

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ity and foreign asset positions. “Country fixed effects” and “time fixed effects,” for instance, measure national characteristics and global economic events, respectively, that might impact volatility and/or foreign asset positions. GDP growth is another factor they consider. If high growth periods coincide with low volatility periods, and quickly growing nations borrow internationally to finance further investment, that too would result in a correlation between volatility and net foreign assets. The economists include these and other factors in their regressions and find that “even after controlling for a very wide range of factors, the volatility of GDP growth is always significantly ... associated with the net foreign asset position of a country.”

Might the seeming relationship between the volatility and net foreign assets simply be an artifact of how the economists measure volatility or the specific sample they selected? Fogli and Perri investigate how robust their results are to a variety of volatility measures and several subsamples from their 20-country, four-decade data set. The association between volatility and net foreign assets remains strong. “The main take-away,” conclude the economists, “is that for OECD countries there is a robust, economically and statistically significant positive association, over the medium/long run,

between changes in country specific volatility and changes in net foreign asset position.”

A model to test the mechanism

The next steps are to develop a model economy that includes the consumption, saving and investment behavior they hypothesize is the central mechanism linking volatility and foreign debt, and to then use that model to assess whether it generates quantitative results that are consistent with their real world data.

They use a standard one-good, two-country business cycle model. But, crucially, they extend it to allow for holding of foreign stocks and for business cycle volatility that varies over time. Thus modified, the model provides for a precautionary saving motive: As volatility shocks change, the desire to save also changes. “This naturally generates ... external imbalances, with the more volatile country accumulating a net positive external position vis-à-vis the less volatile one,” write Fogli and Perri. The model, therefore, “is a good laboratory to check whether precautionary saving motive can account for the observed association between volatility and imbalances.”

Using their model, they focus first on how a volatility shock affects a country’s net foreign asset position and find that, indeed, their model does replicate the hypothesized relation—that is to say, volatility does

link to international imbalances via precautionary savings responses.

But can it do so faithfully? Can it generate the *quantitative* association they’ve documented empirically across four decades and 20 developed nations? And, perhaps more importantly, they use the model to assess the relative contribution of volatility shocks to net foreign asset positions compared to other applicable factors.

Their analysis shows, on the one hand, that the model with the precautionary savings motive as a key element generates results that are comparable to those seen in data. But “the coefficients in the model are lower than the ones estimated in the data, suggesting that some of the association between NFA [net foreign assets] and volatility in the data might be driven by factors not captured in our simple model.” On the other hand, if volatility shocks are shut down in the model, the association seen in the data virtually disappears. “The main conclusion from this is that country specific shocks to volatility/uncertainty are quantitatively important determinants of the evolution of global imbalances among developed countries.”

Summing up and extending

The analysis convinces Fogli and Perri that their central notion is valid: Volatility affects net foreign

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assets via the precautionary savings motive. “More macro risk translates into more saving and more saving leads to accumulation of foreign assets,” they write. “Macro uncertainty, as well as features shaping the precautionary motive, should be a major factor to consider when discussing the causes, the sustainability and desirability of observed global imbalances.”

The authors offer several directions for future research. First, they suggest exploring the causes of changes in aggregate uncertainty; one “leading candidate,” they note, is uncertainty about policy. Another direction: Modify the model so that uncertainty has a detrimental effect on growth as much literature suggests; such a change may well improve the model’s explanatory power, they suspect. A third avenue of future research: Extend the empirical analysis from OECD countries to emerging markets, where high uncertainty may explain the now classic conundrum of low capital inflows despite high returns. The final extension they mention is consideration of “idiosyncratic” risk—that is, risk faced by an economy’s individual actors—in addition to economywide, or aggregate, risk. “In the presence of large idiosyncratic risk,” they observe, “even small increases in aggregate risk can have a large impact.”

—Douglas Clement



Luigi Bocola

Risky business

How the threat of government default makes banks leery of lending, now and in the future

When governments roll the dice with debt, a shudder goes through financial markets—and the broader economy. In 2010-12, on the heels of the Great Recession, several eurozone countries with large fiscal deficits and/or debt suffered sovereign debt crises characterized by soaring interest rates on government debt, higher borrowing costs for households and firms, falling stock indexes and other asset prices, and faltering economic activity. (In Greece, a long-running debt crisis culminated last summer in a missed payment to the International Monetary Fund and nationwide bank closures.)

A standard explanation for these financial disruptions is that exposure to devalued government bonds