

# CURRENCY CONUNDRUM

## *Why Are Exchange Rates Out of Sync With Other Economic Indicators?*

BY DOUG CAMPBELL

**F**lip to the section on exchange rates in almost any economics textbook and you will find one of the profession's most widely accepted notions on the workings of global trade. Gregory Mankiw's *Macroeconomics* puts it as plainly as any: "If the real exchange rate is high, foreign goods are relatively cheap, and domestic goods are relatively expensive. If the real exchange rate is low, foreign goods are relatively expensive, and domestic goods are relatively cheap."

It sounds so simple. An appreciating dollar, you would expect, would lead Americans to consume more foreign products relative to domestic products. But, in fact, this often turns out not to be the case, at least in the short run.

Consider the real exchange rate of the dollar since 2001 — it has depreciated fairly sharply. But during the same period imports grew — even though the dollar's performance should have sent them in the other direction. (The difference between "real" and "nominal" exchange rates is important. Real rates take into account the diverging inflation rates of the two nations whose money is being exchanged. So when, say, an American travels to England, he needs to consider not only how many pounds he can buy with a dollar — the nominal exchange rate — but also which goods he can buy in England with those pounds.)

Exchange rates have long been one of the most difficult macroeconomic variables to model. As an important "price" in an economy — particularly "open" economies dependent on trade

— an exchange rate would seem likely to have a wide impact on any number of economic transactions, and thus have a strong connection with the underlying economy. In many economic models, monetary stimulus is supposed to raise domestic GDP while lowering the value of the home currency — an implied correlation between depreciations and business-cycle expansions.

The problem is that real-life data don't clearly show this relationship. This problem even has a name: the exchange rate disconnect puzzle.

### **Early Work**

Credit for the discovery of the puzzle goes to economists Kenneth Rogoff and Richard Meese. In 1983, they demonstrated the complete lack of correlation between real exchange rates and other economic variables in developed countries. At the time, they were staff economists at the Federal Reserve Board of Governors charged with figuring out not only *why* exchange rates moved but also finding a way to forecast their movements. As Rogoff, now at Harvard, recounted in a 2002 essay, they produced a model aimed at answering this simple question: "We will tell you what money supplies, interest rates, and outputs are going to be one year hence. You have to predict the exchange rate."

They failed. But in failing, they sort of succeeded. What Rogoff and Meese had done was to make vividly clear that existing exchange rate models were largely useless. They discovered that a simple random-walk model — where

future rate movements have no relation to past movements — was as good or even a better predictor of exchange rates than the day's standard forecasting models. Rogoff and Meese concluded that there was no stable set of variables to explain exchange rates in any coherent way over 12- to 18-month horizons. And their conclusion has stood up over two decades and literally hundreds of studies. "Basically, the problem is not simply that it is virtually impossible to predict exchange rates," Rogoff wrote in an e-mail exchange for this story. "No variable, or set of variables, seems to explain them after the fact."

In the late 1980s, economists Alan Stockman and Marianne Baxter showed how the disconnect runs both ways. Just as Rogoff and Meese couldn't use macro-variables to explain exchange rate swings, Stockman and Baxter demonstrated that exchange rate volatility seems to have no major, systematic impact on macro-variables. Together with the Rogoff-Meese innovation, these remain the most important advances in understanding the exchange rate disconnect puzzle.

The puzzle can pose problems for policymakers. Without a clear understanding of how exchange rates relate to the economy, how are they to respond to currency volatility? In less-developed countries with immature capital markets, exchange rate volatility can cause significant harm to the economy. It can trigger the shifting of resources in a very dramatic way across sectors of the country in question.

But the case is different for well-developed countries: Should policymakers there worry about the wobbling values of their currencies? Or, looking at the disconnect data, should they simply conclude that getting overly exercised about exchange rates is a waste of time, given their lack of impact on the underlying economy? In particular, policymakers who worry about exchange rate movements have to weigh the relative merits of the two leading ways to manage their currencies — through fixed or floating systems.

### Fixed Or Flexible?

The world's leading industrial nations began a movement to floating exchange rate regimes in the 1970s. It was at that time that the U.S. economic woes led to the devaluation of the dollar. Since so many other countries' currencies were pegged to the dollar under the Bretton Woods agreement of 1944, the dollar devaluation led to waning confidence in the system, and countries began to exit it wholesale.

Today, there is no clear consensus among economists on which is the best exchange rate regime. Flexible exchange rate systems are those in which governments do not intervene in foreign exchange markets to try to influence their currencies. This kind of system carries the virtue of letting the market determine currency values, which makes it more likely that a country's exchange rate bears close relation to underlying economic conditions. Additionally, a flexible regime allows monetary policy to be used on economic objectives other than influencing exchange rates — most importantly, price stability.

By contrast, countries that peg their exchange rate must concentrate "monetary policy" on manipulating the exchange rate. However, some economists believe that fixed rate systems — in which a government buys and sells its currency at the necessary amounts to keep its exchange rate pegged to some other currency — are more convenient, reduce information costs, and foster international trade by reducing volatility. Fixed systems are also more immediately

useful in controlling inflation. In fact, theoretically, fixed-exchange rate nations should have the same long-run inflation rates as the country they are pegging to, thanks to something called the "purchasing power parity theory." This theory, according to Stockman's *Introduction to Economics*, says that exchange rates change to equalize the prices of products in all countries over the long run.

The trade-offs inherent in each system are evident in the currency crisis that struck Argentina in 2002. Argentina had adopted a currency board regime — in which its peso was pegged to the dollar — in 1991 as a means, in part, to fight hyperinflation. It worked in that regard, immediately tamping down consumer prices. But in the mid-1990s, some of its South American neighbors and then several Asian countries saw their currencies decline rapidly. That made the peso, linked to the dollar, overvalued and in turn made Argentine exports more expensive. So in early 2002, Argentina abandoned the currency peg and let the peso devalue so that Argentine products would be cheaper. This led to another round of inflation and also had the negative side effect of hurting the investments of multinational firms that did business in Argentina.

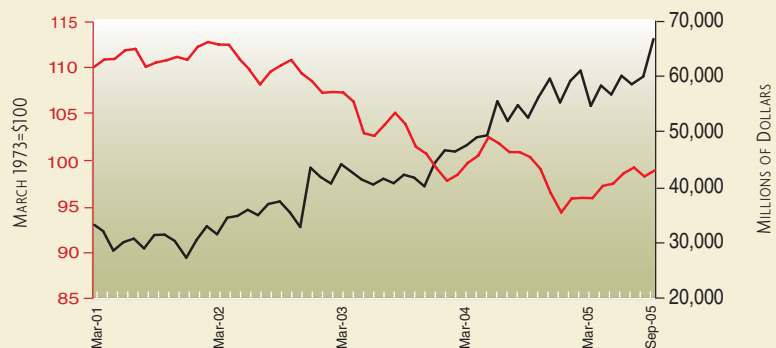
The Argentine experience is emblematic of the kinds of choices policymakers face in trying to handle

exchange rate movements. If their currencies are managed, should they intervene heavily in foreign exchange markets to keep them stable? If they are allowed to float, should the central bank — like the Fed in the United States — sometimes try to influence them through the use of monetary policy? The answers are elusive in large part because of the exchange rate disconnect puzzle and the inability of economists to produce models which would suggest clear paths for policymakers.

Over the years, scores of economists have tried to tackle the exchange rate disconnect puzzle. Some of the biggest progress came from the puzzle's pioneer, Rogoff himself. Just a few years ago, he teamed with economist Maurice Obstfeld in trying to explain why macroeconomic fundamentals are so out of whack with exchange rate movements. Their answer, in a 2000 paper, was basically that the economies of big, industrialized nations tend to be complicated. This means that markets are not fully integrated, so that price changes in one segment don't affect those in others. Together with sticky prices, this market segmentation can largely insulate consumers from exchange-rate swings. "Only gradually will the responses of importers and exporters feed through to the retail level," Obstfeld and Rogoff wrote.

### The Exchange Rate and Foreign Trade

Despite the dollar's decline, the trade deficit has continued to rise.



NOTE: The red line represents the weighted average of the real foreign exchange values of the U.S. dollar against the currencies of a large group of major U.S. trading partners, and is plotted against the left Y-axis. The black line represents monthly data on the trade deficit, and is plotted against the right Y-axis. SOURCES: Federal Reserve Board of Governors and Bureau of Economic Analysis

## Richmond Research

Margarida Duarte, an economist with the Richmond Fed and a former student of Stockman's at the University of Rochester, has focused much of her research on the exchange rate disconnect puzzle. In one recent paper, Duarte examines what happens when nations move from fixed to flexible exchange rate regimes, hoping therein to learn more about why exchange rates can be so volatile compared with other macroeconomic variables. In a second paper, she develops a model in which the complicated workings of financial markets play a significant role in explaining the exchange rate disconnect puzzle. In both cases, she builds on a sticky price model developed by Obstfeld and Rogoff in 1995.

In a paper published in the *Journal of Monetary Economics*, she presented a model that successfully replicated real-world results. It showed that "moving from pegged to floating rates generates a substantial increase in the volatility of the real exchange rate," but not in other variables. This was in keeping with the vexing data that the only distinction across exchange rate regimes is dramatic change in exchange rate volatility. The model, Duarte says, usefully explores the merits of different exchange rate regimes. It also advances the literature on why exchange rates are more unstable than other variables. But it doesn't get to the other side of the "disconnect" puzzle — what are the sources of uncertainty that generate substantial exchange rate instability (and which is not transmitted to other variables) but

no substantial instability in other macro-variables?

In a 2005 paper with Stockman, who is also a former visiting scholar at the Richmond Fed, the two aimed to answer that question more directly. Like past models, theirs sought to tie the determination of exchange rates to consumer decisions. The twist was to leave a role for the "asset-price" nature of exchange rates. By this, they intended to add a feature wherein exchange rates are a) affected by shocks to the financial markets and b) these shocks only show up in the financial markets, not in the underlying economy. The results looked much more like what happens in the real world. "Now I can generate a much higher volatility of nominal exchange rates without that implying high volatility of consumption allocations or high comovement across these two sets of variables," Duarte says.

Rogoff himself continues to study the problem and says that Duarte's and Stockman's joint efforts are "very promising for understanding some aspects of the disconnect puzzle." But all this still leaves plenty of room for improvement. Quantitatively, the Duarte-Stockman model is not an answer to why exchange rates are more volatile than other macro-variables. Having identified asset prices as one of the key variables in exchange rate movements, economists still haven't figured out a good way to model asset prices in keeping with their behavior in the real economy. A lot of it comes down to the complexities of drawing up coherent, consistent models that accurately resemble real-world data. It is difficult to write down

models that account for such things as idiosyncratic risk, for example. And the way foreign exchange markets are typically modeled may be too simplified.

A counter-explanation for the exchange rate disconnect puzzle: That some currency traders are inexperienced and thus behaving irrationally. It's true, Duarte says, that the model with "noise traders" of economists Michael Devereux and Charles Engel generates exchange rate swings that seem to have no correlation to economic fundamentals. But proving that there is a connection between irrational speculation and the exchange rate disconnect puzzle remains another matter. "Either model may 'explain' the data," Duarte and Stockman argue, "if only in the sense of labeling our ignorance, or might promote better understanding of the issues. But these kinds of success have limits: They do not imply that a model is appropriate for analyzing welfare, or policies."

Duarte says, "There's progress but it's slow. We need to model these economies in a more realistic way so that idiosyncratic risk matters more. That's where we are now."

Rogoff agrees that progress is being made. But he tends to think that his work of more than 20 years ago continues to hold important lessons for policymakers who "fret endlessly about exchange rate volatility."

He says: "The exchange rate disconnect puzzle suggests that, at least for countries with well-developed capital markets, perhaps they should take a more relaxed attitude." **RF**

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