The Risk of Sudden Depreciation of the Euro in the Sovereign Debt Crisis of 2009-2010

Cho-Hoi Hui
Hong Kong Monetary Authority
Hong Kong Institute for Monetary Research

and

Tsz-Kin Chung
Hong Kong Monetary Authority

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Summary

Economic-political instability of a country, which is tied closely to its credit risk, often leads to sharp depreciation and heightened volatility in its currency. Changes in the credit risk of a sovereign borrower anticipated by financial markets should be reflected in the sovereign CDS spreads. Similarly, anticipated changes in the realised volatility of currency returns are reflected in the prices of currency options. This argument also applies to a monetary union such as the euro area.

The European sovereign debt problems during 2009-2010 have laid bare the dangers of divergent fiscal policies in the euro area, calling into question the grand experiment of pooling 16 countries into a monetary union. Such dangers may induce an economic-political event in the euro area (such as a substantial restructuring of sovereign debt) and thus cause a sudden sharp depreciation of the currency. The market has thus been eager to hedge against the risk of a crash of the euro.

From the dollar-euro currency option prices and the sovereign CDS spreads of the euro-area countries from January 2006 to April 2010, our results show that not only the creditworthiness of the euro-area countries with weaker fiscal positions, but also the creditworthiness of those with more sound fiscal positions was an important determinant of the prices of deep out-of-the-money euro put options, which embedded forward-looking information of the euro crash risk during the sovereign debt crisis.

Using a range of dollar-euro currency options with different strike prices, the probability and size of a crash of the euro that have been anticipated by financial markets can be estimated. The estimation results show that both the probability and size of a sudden depreciation of the euro have increased since the CDS spreads of the euro-area countries began to rise in the last quarter of 2009. The euro's crash probability of 11% in a year with crash size of 14% is estimated at the end of April 2010.

However, the estimation results reflects that the euro crash might not be a concern in the currency option market during the global financial crisis after the Lehman default when the euro fell quite sharply against the US dollar. The estimated positive crash size between March and September 2009 before the debt crisis indicates that the market was concerned with potential sharp devaluation of the US dollar that might result from quantitative easing in the US.