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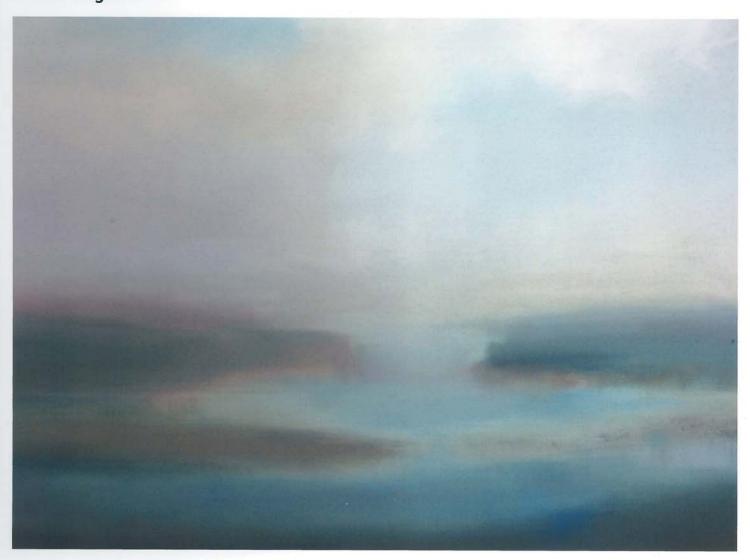
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## **Greeks tragedy**

Dark days for Black-Scholes as deep hedging rises

## Defusing the Target2 time bomb

Widening risk imbalances between eurozone member states threaten monetary union, argues Consob's Marcello Minenna

he dissolution of the single interest rate curve for all member states is among the most important legacies of the eurozone crisis. In fact, for the past 10 years – about half the life of European economic and monetary union – within the common currency area there are as many rate curves as the number of participating countries. Today there are 19 different yield curves, and the differences between these curves give rise to the well-known phenomenon of yield spreads.

All this is in clear contrast with the paradigm of monetary union, as

stated (among others) by the former European Central Bank president, Jean-Claude Trichet, in 2008, shortly after the Lehman Brothers collapse: "It is absolutely clear that in the euro area we have a single money market, by definition, a single currency and a single interest rate."

Today's situation is the result of a series of policies prompted by the segregation of risks within individual member states. One indicator of this risk divergence is the sovereign yield spread over the German Bund. Indeed, since Germany's default risk is basically zero, the differential between the nominal yield on the government bonds of a given member country and the one on the Bund is a good proxy for the default risk, or premium, of that country as assessed by the financial markets and therefore for the trust of international investors.

To isolate the insolvency risk of a given eurozone state, it is more accurate to consider the spread over the Bund in real terms, that is after adjusting for the inflation gap between the two countries. Due to the prohibition on monetary financing – which prevents the central bank from taking actions which would directly finance government spending – member countries are exposed to enhanced insolvency risk.

Looking at the real yield spread of Italian government bonds, it appears that since the 2011–2012 eurozone debt crisis, the excess yield paid by these bonds over their German equivalent has never returned to its pre-crisis levels. Today, its values hover around the same range (340–400 basis points) as at the peak of the crisis period.

Another indicator of risk segregation in the eurozone is the Target2 balances of national central banks participating in the Eurosystem. Target2 is the settlement system for cross-border interbank transactions in

the euro area. Until the outbreak of the crisis, Target2 balances were relatively small, thanks to the widespread belief in a low and homogenous risk level between member countries.

Since the crisis, there has been a massive deleveraging of exposure to peripheral countries by international investors and a related nationalisation of sovereign risk by domestic investors. This phenomenon is partly explained by a justified increase in risk aversion, and partly by the lack of a credible endorsement by the European institutions towards member states in difficulty, which has favoured speculation against peripheral

governments' debt.

In the evolved fixed exchange rate system that the eurozone increasingly resembles, the Target2 balances of national central banks are the new version of foreign exchange reserves. Target2 does not set limits on the size of the balances of various countries; indeed it allows for an unlimited overdraft by national central banks. However, the global financial crisis has pushed the markets to put this arrangement to the test, leading to a significant – and synchronised – widening of both the Target2 imbalances and of sovereign spreads over the German Bund.

Within the euro area, the existence of yield spreads between countries sharing the same currency certifies that they face a different cost of money, with all the consequences that this has both on the financial and the real side of the economy. Thus, from a practical point of view, sovereign spreads can be seen as exchange rates between the national 'shadow' currencies of eurozone members (euro/lira, euro/mark, euro/peseta, euro/drachma, euro/franc, and so on).

In turn, Target2 dynamics resemble those exhibited by foreign exchange reserves when a fixed exchange rate agreement comes under pressure.

The above considerations suggest there is an important relationship between the behaviour of Target2 balances and that of sovereign spreads. In macroeconomics, the Mundell-Fleming trilemma

states that a fixed exchange rate regime, independent monetary policy and absence of capital controls are incompatible.

In the euro area, cross-border capital movements between member states are completely free and the absence of exchange rate risk makes these movements less risky than those between countries belonging to different currency areas.



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By definition, Target2 balances are deeply affected by these capital movements, which include the capital flows associated with the deleveraging of peripheral exposures by core countries' investors as well as with the capital flight from the periphery by domestic private investors. The latter phenomenon is the natural response to a higher perceived risk of capital losses either due to the forthcoming introduction of capital controls or to the exit of their country from the monetary union or both.

By the Mundell-Fleming trilemma, when a

fixed exchange rate agreement comes close to break-up, the country under pressure is forced to impose capital controls, and even so, it could be forced to breach the arrangement sooner or later. In a certain sense, the euro area is also consistent with this trilemma.

In peripheral countries, the rising Target2 imbalances over the last decade are mainly attributable to financial flows generated by risk segregation, public debt nationalisation and capital flight by private domestic investors.

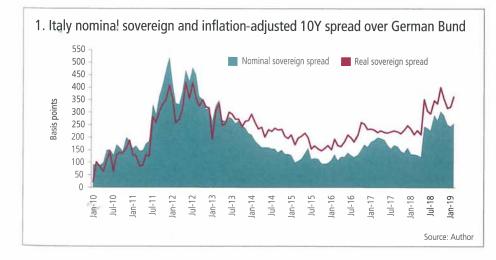
In the case of Italy, the main causes of the

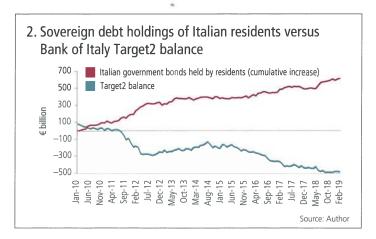
two historical phases of the greatest widening of the Target2 deficit are the collapse of interbank funding and the selloff of government bonds by foreign investors (first widening) and the capital flight by private domestic subjects (second widening), as recent research explores. The other side of the coin of these phenomena has been public debt nationalisation, with a growing quantity of government bonds held by domestic subjects (see figure 2).

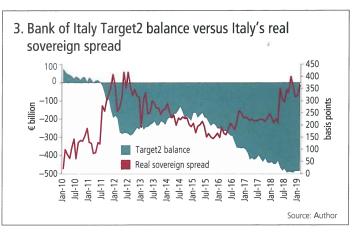
The link between the two main risk segregation indicators discussed so far – real sovereign spreads and Target2 imbalances – are visible in a simple graphical comparison. The link shows strong similarities with that between the exchange rate of the Italian lira and foreign exchange reserves of the Bank of Italy at the time of the crisis in the European monetary system during the 1990s (see figures 3 and 4).

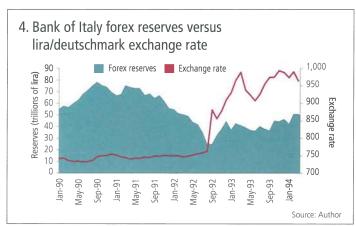
To quantify the relationship between Target2 imbalances and real sovereign spreads, it is useful to explore how much of the spread variability is explained by Target2 dynamics through ordinary least squares (OLS) techniques, after controlling for other variables that may have significantly affected real spread dynamics.

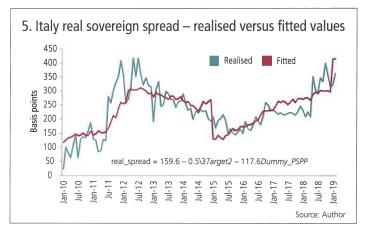
Between January 2010 and February 2019,











the most significant event in terms of downward pressure on interest rates in the eurozone and, therefore, also on the level of spreads, was the huge public bond-buying programme (PSPP) announced by the ECB in January 2015 and ended last December. I have

regression is 62.1% and all estimated coefficients are significant at the 1% level, confirming the strong (inverse) connection between Target2 and real spread movements. On average (and after controlling for the bond-buying programme), an increase of €100 billion in the Target2 deficit

Target2 architecture be reformed in order to introduce a floor on the size of admissible overdrafts or other limitations such as periodic settlements or collateralisation duties instead of thinking about automatic adjustment mechanisms of financial imbalances.

In the current context of the eurozone, a possible solution to the issue of large Target2 imbalances could comprise an interest outlay charged to surplus countries and an interest income granted to countries in deficit. Such a mechanism would, of course, be an implicit measure of risk-sharing among the countries of the European monetary union.

After all, recent developments in Europe and overseas indicate the need to shift towards concrete risk-sharing solutions within the euro area and, more generally, a worldwide rethinking of the rules governing economics and finance.

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estimated a linear OLS model by regressing the real 10-year spread of Italian versus German Treasuries on the Target2 balance (in billions of euros) of the Bank of Italy and on a dummy variable which is equal to 1 in the period from January 2015 to December 2018 and zero otherwise (the model also encloses an intercept).

Figure 5 compares the observed real spread with its fitted values according to the estimated coefficients of the linear model. The R2 of the

of the Bank of Italy results in an increase in the real spread of around 53 basis points.

To reverse these damaging trends, the eurozone should implement policy measures to defuse the risk segregation evident above. Otherwise, it will increasingly approach an evolved version of a fixed exchange rate regime and it will have to face the difficulties highlighted by the Mundell-Fleming trilemma, including a concrete danger to its own survival. A danger that would clearly increase should the

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