

## How much inevitable US-euro area interdependence is there in monetary policy?<sup>1</sup>

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### *Executive Summary*

- The monetary policy of the United States is an external shock for the euro area. In the absence of a euro-area monetary response, an expansionary US monetary policy has a long-run negative impact on the euro- area price level and, because of nominal rigidities, it has a short-run contractionary effect on the real euro-area economy as well. This is a nuisance, however, it is not a major problem for euro-area policy makers.
- The central banks of the United States and the euro area rarely coordinate their policies and they do not share as much information as they might. They do not play a cooperative game; there is no leader-follower relationship. Each policy maker takes the current and future contingent actions of the other as given.
- During the financial crisis that arose on 9 August 2007, the actions of the Eurosystem have appeared to have had significant consequences for the rest of the world. The Eurosystem has acted as lender of last resort for subsidiaries of US, UK and Nordic banks.

In this note I argue that there is considerable *structural* interdependence between US and euro area monetary policy. US monetary policy affects the euro-area economy and thus the constraints faced by the ECB in its pursuit of monetary policy. There is, however, little *strategic* interdependence between the ECB and the Fed. In their pursuit of macroeconomic stability, the ECB and the Fed have separate and possibly distinct objectives. When it comes to financial stability, there is also significant interdependence: as seen in the past 12 months, there is considerable 'leakage' of liquidity between the United States and the euro area and between the United States and the euro area and other monetary jurisdictions, such as the United Kingdom, Switzerland and the Scandinavian countries.

### *Structural Independence of Monetary Policy*

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<sup>1</sup> Briefing paper for the Committee on Economic and Monetary Affairs (ECON) of the European Parliament for the Quarterly Dialogue with the President of the European Central Bank.

The United States and the euro area have a floating exchange rate and a degree of financial integration that approximates the textbook model of perfect capital mobility. In addition, there are significant nominal rigidities in both economic areas.<sup>2</sup> Monetary policy in a world with floating exchange rates, perfect capital mobility and nominal stickiness affects global aggregate demand and external aggregate demand through two channels: an interest rate channel and an exchange rate channel. In the short run, an expansionary monetary policy in a large open economy lowers global nominal interest rates and weakens the currency of the economy running the expansionary policy.

With sticky nominal wages and prices, short-term real interest rates move in the same way as short-term nominal interest rates and the real exchange rate moves in the same way as the nominal exchange rate. For the country that follows an expansionary monetary policy (that is, the country that cuts its short-term policy rate), short-term nominal and real interest rates decline and its nominal and real exchange rates depreciate. Thus, demand in that country rises and output, employment and inflation all rise. In the rest of the world, however, if there is no monetary policy response, the domestic currency appreciates against the currency that followed the expansionary policy. This dampens demand in the rest of the world. This can be beneficial if inflation in the rest of the world is threatening to rise above target but is not welcome when inflation is close to target and there is already unused capacity and unemployment.

As an illustration, the Fed aggressively cut its official policy rate by 325 basis points between August 2007 and August 2008. At the time, inflation in the euro area was above target and rising. The strengthening of the euro in response to US policy – it

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<sup>2</sup> There is a long and vast literature documenting the significance of nominal wage and price rigidities. Recent examples include Dessy (2005), Dickens et al (2006) and Druant et al (2008).

peaked at over 1.60 \$/euro – was beneficial from an inflation-fighting point of view. The loss of external competitiveness caused by the appreciation of the euro did, however, squeeze the profitability of the euro area's exporting and importing industries.

Nominal rigidities vary widely across euro-area member countries and are generally believed to be greater in the United States than the euro area (see, for example Dickens et al (2006)). Thus, monetary policy spillovers from the United States will have a smaller average impact on the real economy of the euro area than spillovers from the euro area have on the US real economy, but the size of the effects of US spillovers on the real euro economy will vary significantly from country to country.

The strength of the cross-border effects of one economic area's monetary policy on another area depends upon the size of the area implementing the policy and the strength of the economic links between the two areas. Both the euro area and the United States are large, continental-size entities. They have similar populations: the euro area had a population of 320 million in 2007 and the United States had a population of 302. They have roughly similar GDPs, although the US GDP is slightly larger than the euro area's. At market exchange rates, in 2007 the US GDP was 25.4 percent of the world GDP and the euro area GDP was 22 percent.<sup>3</sup> While together accounting for nearly a half of world GDP, both areas – and especially the United States -- are relatively closed to trade. The sum of exports and imports of goods and services amounted to 43.6 percent of euro-area GDP in 2007 and 28.9 percent of US GDP.

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<sup>3</sup> *World Development Indicators* database, World Bank, 1 July 2008. Using estimated PPP exchange rates, the US GDP was 22.8 percent of the world's total in 2007; the euro area GDP was 17.1 percent.

The United States is a significant, but not overwhelmingly important, trading partner of the euro area. In 2007, both the United States and the euro area each accounted for only a bit less than 14 percent of each other's trade.<sup>4</sup> This does not imply that trade linkages between the United States and the euro area are weak, however. Direct trade links are reinforced by indirect trade links. The United States accounts for about a quarter of world GDP. When US imports grow, for example, the half of the world economy that is outside the United States and the euro area is stimulated along with the euro area and this rest of the world increases its demand for euro area goods and services.

### *Strategic Interdependence*

The Fed and the ECB have different objectives and face different constraints. The Fed has a dual mandate that puts equal weight on price stability and sustainable growth and employment. The ECB has one primary objective: to maintain price stability. All other goals are subordinate: they can be pursued only if they do not prejudice the primary mandate. The Fed is much less independent of the US Congress than the ECB is of the European Parliament. The Fed supervises and regulates the US banking sector; the ECB currently has no such supervisory and regulatory role.

In game theory terms, there is no systematic cooperative behaviour between the two monetary authorities, although there have been examples of cooperative actions, such as the swap arrangements made between the Fed and the ECB after 9/11 and since November 2007. No binding commitments are made as to contingent future actions. There is also no leader-follower relationship between the Fed and the ECB. Each authority takes the other authority's action and the rule that

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<sup>4</sup> For comparison, trade with the United Kingdom amounted to over 16 percent of euro area trade.

governs this other authority's future actions, depending on the state of the world, as given. It then chooses its own best policy and the outcome is a Nash equilibrium.

The central banks do share information, although not as much as they should. For example, the governor of the Banque de France failed to inform the Fed that the Société Générale's liquidation of the "Kerviel portfolio" was one of reasons for the collapse of the European stock markets at the end of the third week of January 2008. The Fed's 75 basis points rate cut, announced out of hours after an unscheduled meeting on January 21/22, might not have happened in the same manner if there had been more transatlantic communication.

Since US and euro-area monetary policies are not coordinated and are unlikely to be coordinated – except possibly for short periods after exceptional shocks – US monetary policy is an external shock for the euro area. The same is true about euro-area monetary policy for the United States. Without a domestic monetary policy response, an expansionary monetary shock originating from the other monetary policy maker will have a negative long-run real effect on the price level and, because of nominal rigidities, short-run contractionary real consequences as well. However, given the size of these shocks they amount to more of a nuisance than a major problem. There are other external shocks, such as the global increase in the relative price of non-core goods and services, that are much more significant to the inflation levels and the well-being of economic areas on both sides of the Atlantic.

#### *Interdependence of financial-stability-oriented policies*

The financial crises that emerged on 9 August 2007 was not characterised by conventional bank runs. A classical depositors' run, of the type that characterised early 20<sup>th</sup>-century financial panics, did bring down the UK mortgage-lending bank, Northern Rock, but such runs were absent in the United States, having been largely

killed off by a sensible system of deposit insurance. More modern runs of wholesale creditors were instrumental in bringing down the US investment bank and primary dealer, Bear Stearns, and IndyMac, a large US mortgage lending bank. But these runs were also exceptional.

Instead, the notable feature of this new-style crisis was the sudden vanishing of a whole range of financial wholesale markets, including the asset-backed commercial paper markets, the auction-rate securities market, other asset-backed securities markets, including the markets for mortgage-backed securities, and many other collateralised-debt-obligations and collateralised-loan-obligations markets. The unsecured interbank market became illiquid to the point that Libor is now sometimes referred to as the rate at which banks *won't* engage in unsecured lending to each other! The sudden increase in Libor rates at the beginning of August 2007 and the continuation of spreads over the overnight indexed swap (OIS) rate is shown for 3-month Libor, a historically important benchmark, in Chart 1, at the end.<sup>5</sup>

A striking feature of Chart 1 is that the Libor-OIS spreads for the dollar, the euro and sterling look similar for most of the period. This does not mean that the Fed, the ECB and the Bank of England implemented the same policies or all did equally well in addressing the liquidity crunch. Indeed, the ECB appears to have tackled the collapse of liquidity more aggressively and effectively than either the Fed or the Bank of England. The Fed took liquidity-enhancing measures that were similar to the ECB's, but that were smaller in scale and in scope. The Bank of England did little until the very end of 2007. No other central bank came close to injecting 95 billion euros of liquidity into the money markets in one day, as the ECB did on 9 August 2007.

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<sup>5</sup> The 3-month OIS rate is the fixed leg of a 3-month swap whose variable leg is the overnight secured lending rate. Ignoring inflation risk premia, this can be interpreted as the market's expectation of the official policy rate over a 3-month horizon.

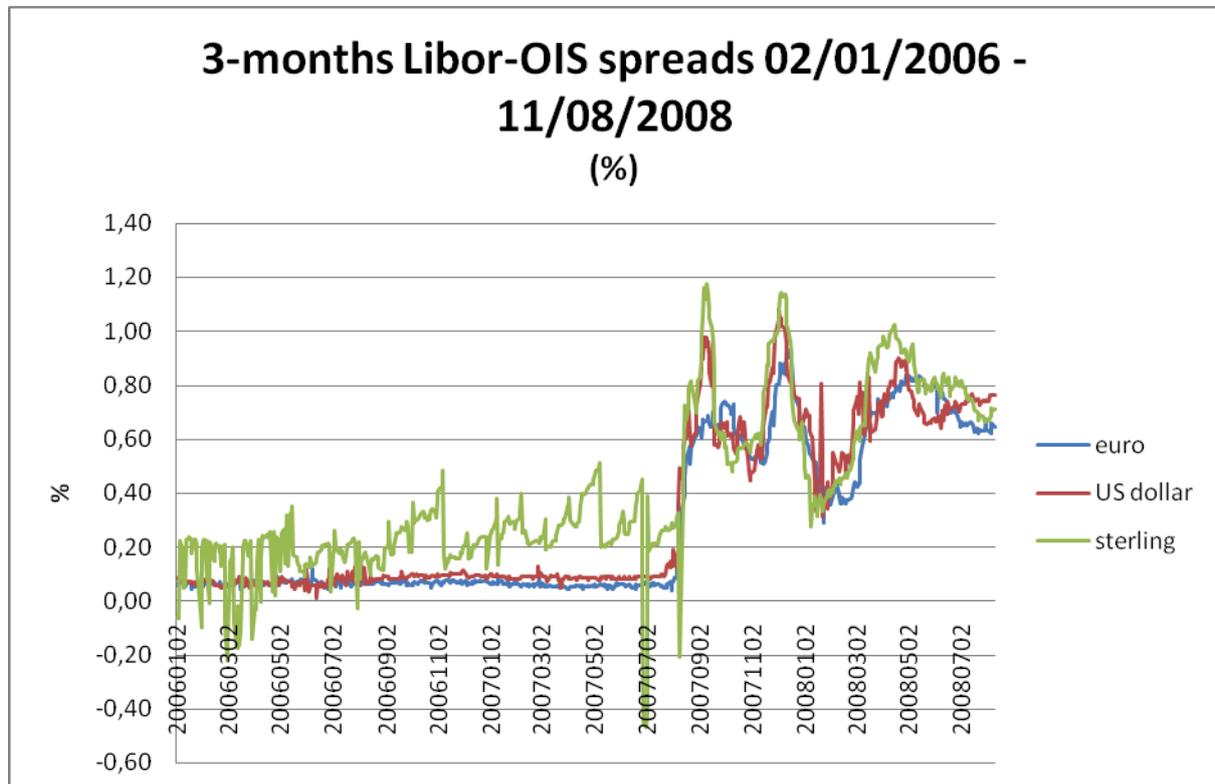
Given the differences in policy reactions, why do the spreads move together in Chart 1? There are three possible explanations. First, the scale of the crisis might have been larger in the euro area than in the dollar or sterling area. Second, perhaps it is not the spread that is the important variable, but the volume of borrowing and lending that took place. A 90-basis point spread in an active market may be less of a problem than a lower spread in a market where no transactions take place. Unfortunately, public data on turnover in interbank markets does not exist. Third, the actions of the ECB may have affected the dollar and sterling areas, as well as the euro area. In effect, the Eurosystem has been acting as lender of last resort, not just for the euro area, but also for UK banks, Nordic banks and US banks.

International financial integration ensures that liquidity can 'leak' between the jurisdictions of the different national central banks, as long as foreign exchange markets remain liquid, as they did for the major currencies. Foreign subsidiaries of internationally active banks tend to have full access to the discount windows of their host central banks and they are often eligible counterparties in the repos and other open-market operations of their host central banks.

Subsidiaries of UK banks made use of the liquidity facilities of the Fed and the Eurosystem. UK and Icelandic parent banks used their euro-area subsidiaries to obtain liquidity for themselves. At least one subsidiary of a Swiss bank accessed the Fed's discount window. In August 2008, Nationwide, a UK mortgage lender, announced that it was setting up an Irish subsidiary. Gaining access to Eurosystem liquidity, both at the discount window and as a counterparty in repos, was a key motivating factor. The phenomenon of using subsidiaries to obtain liquidity from the Eurosystem is occurring on such a scale that the ECB is considering measures to

restrict it. This will not be possible, however, without undermining the principles of free capital mobility and of the EU's competition policy.

**Chart 1**



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